Expert Systems for Financial Analysis of University Auxiliary Enterprises

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(ABSTRACT)

An essential task of university administration is to monitor the financial position of its auxiliary enterprises. This is an ill-defined and complex task which often requires more administrative time and information than is available. In order to perform this task in an adequate manner a large amount of expertise is required to: (1) determine what constitutes reasonable performance, (2) define unacceptable levels of performance, and (3) suggest courses of action which will alleviate an unacceptable situation. Thorough analysis requires a substantial amount of an expert's time.

The purpose of this research is to explore the opportunities for the enhancement of the financial analysis of auxiliary enterprises through the use of expert systems. The research has included: (1) a comprehensive review of analytical techniques that can be used in financial position analysis, (2) a determination of the the applicability of such techniques to auxiliary enterprises, and (3) an assessment of their amenability to expert system development.

As a part of the above described research, an expert system prototype was developed which addresses several of the above issues for one auxiliary enterprise at Virginia Polytechnic Institute and State University. It integrates the knowledge of an expert with both accounting data from the VPI & SU accounting system and other types of data from the auxiliary enterprise operation. The system provides a comprehensive, system-

atic analysis of the financial position of the Tailor Shop at VPI & SU. This analysis is performed in much less time than would be required by an expert.

As a result of the research conducted, it has been concluded that building such a system is possible and it can provide significant benefits to a user. However, financial position analysis requires a substantial amount of data and numerical calculations, both of which require large amounts of computer memory and computations. Therefore, designing an expert system to efficiently perform this task requires the use of a package or a language that efficiently utilizes computer memory and CPU.

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Chapter 1

Introduction

Colleges and universities provide support services and activities for their students, faculty, and staff through auxiliary enterprises. Auxiliary enterprises are generally self-supporting entities charged with the responsibility of performing operations that are important elements in the support of the institution's academic and related programs.

The financial management of the auxiliary enterprises of an academic institution can be a troublesome and time consuming task for the administration of colleges and universities. Monitoring the financial positions of auxiliary enterprises is especially important to insure overall fiscal control. The purpose of this research is to explore the opportunities for the enhancement of the financial analysis of auxiliary enterprises through the use of expert systems. This includes a comprehensive review of analytical techniques that can be used in financial position analysis, their applicability to auxiliary enterprises, and their amenability to expert system development.

1.1 Statement of the Problem

Monitoring the financial position of auxiliary enterprises at a college or university is an ill-defined and complex task, and often requires more administrative time and information than is available. This task includes: developing accrual based income statements and balance sheets; determining and calculating applicable financial ratios and trends; defining acceptable levels of performance; calculating the deviations between actual and acceptable performance; determining the underlying causes of unacceptable deviations; and, in some cases, determining what actions can be taken to correct unacceptable performance. To perform this task requires large amounts of data, much of which is not readily available. Also required is a large amount of expertise to determine what constitutes reasonable performance in a given situation, to define 'unacceptable' levels of performance, and to suggest courses of action which will alleviate the situation.

Obtaining all of the necessary information and performing the actual analyses often requires more time than administration has available. A consequence of this lack of time and information is that the task is often performed haphazardly resulting in situations where the financial positions of auxiliary enterprises are often neglected.

1.2 Purpose and Justification

The main purpose of this dissertation is to develop a framework which can be used in analyzing and monitoring the financial positions of university auxiliary enterprises. Such

a framework should increase the consistency of both the analyses performed and the interpretations of the analyses. In order to make this framework useable, some type of a system must be developed so that the analyses performed are thorough, detailed, and not constrained by time limitations.

In conjunction with the above stated purpose, a related goal is to build an expert system prototype which will enhance the analysis and decision making associated with monitoring the financial position of auxiliary enterprises. A system of this type will provide two major benefits to university administration. First, it should drastically reduce time requirements for financial position analysis, making time constraints less of a factor in the analysis. Second, it should reduce the time requirements for answering the what-if types of questions that would otherwise require too much time.

This research has three main objectives: (1) to explore types of analyses that appear to be most suitable for the analysis of university auxiliary enterprises' financial positions; (2) to show that these analyses are amenable to expert system application; and (3) to develop a prototype expert system for the financial analysis of a specific auxiliary enterprise.

Exploring the types of analyses that appear to be best suited for financial position analysis of auxiliary enterprises entailed a comprehensive search of the literature for material regarding financial analyses of profit oriented organizations, not-for-profit organizations, and university auxiliary enterprises. Since very little has been published concerning the analyses of auxiliary enterprises, literature devoted to analyses of profit oriented and not-for-profit organizations was searched, applicable information extracted, and ideas which are not directly applicable, but worthy of consideration, adapted. Establishing that the analyses applicable to financial position analysis of auxiliary enter-

prises are also amenable to expert system application entailed researching the literature devoted to expert system development, establishing a set of criteria by which to evaluate tasks, and evaluating the financial analysis techniques according to the set of criteria.

A final related goal of the research is to develop an expert system prototype for financial analyses of a specific auxiliary enterprise. This entailed selecting one auxiliary enterprise, determining which analytical techniques are applicable to that particular auxiliary enterprise, and actually building a system.

1.3 Background and Significance

An abundance of literature exists regarding financial statement analysis, but a vast majority of this has been developed specifically for profit oriented organizations. Furthermore, much of this research is oriented towards specific industries and does not provide analytical techniques which are applicable to organizations in all industries. Although there are some techniques which have been developed for all organizations, the interpretations of these techniques regarding what constitutes acceptable ranges for their measures often differ. Even in the cases where techniques have been developed for a specific industry, or subset of an industry, no optimal set of techniques has been established.

Due to the variability in appropriate analytical techniques for financial analysis among organizations and to the variability inherent in defining "acceptable" ranges of performance, a thorough analysis of an organization's financial position requires the knowledge

and experience of an expert. Within a university, one department, which may consist of a single individual, may be assigned the task of financial analysis for all auxiliary enterprises. Performing this task is generally too time consuming for an individual, even if the individual is an expert. Thus, often times financial analyses of auxiliary enterprises are either not performed at all, or are performed in a manner which is unorganized and does not provide adequate detail.

Literature devoted to expert system technology and applications is plentiful. However, an extensive review of the literature shows that there has been very little expert system development for financial statement analysis. There are three possible reasons for this: (1) the analysis of an organization's financial position is not a task amenable to expert system development; (2) expert system technology has not yet spread throughout the fields of accounting and finance; or, (3) expert systems are being developed, but the developers are keeping them a secret.

The significance of this research is twofold. First, it will expand on the current body of research regarding financial analysis of not-for-profit organizations, and in particular, university auxiliary enterprises. Second, it will extend expert system technology to an area where such technology has not previously been applied.

1.4 Methodology

The initial focus of this research was the determination of analyses which are most suited for the analysis of university auxiliary enterprises' financial positions. This was partially

accomplished by reviewing the current literature regarding financial position analysis, and determining which of these techniques are applicable to analyses of auxiliary enterprises. However, a review of the current research was not sufficiently comprehensive, since most related literature on this topic is devoted to the analysis of profit oriented organizations. Throughout this literature, emphasis is placed on measures of earnings and measures associated with stock ownership. Neither of these types of measures applies to auxiliary enterprises due to the differences in their goals and structure. The major goal of any university auxiliary enterprise is to provide a service to its customers at a cost which is related to the costs incurred in providing the service. This is in direct contrast to the major goal of a profit oriented organization, which is to earn a profit for its owners.

The structure of auxiliary enterprises is also very different than their counterparts in industry. Since their sole objective is to benefit the university constituents, many of the large assets which they use, such as land and buildings, are owned by the university and provided free of charge for their use. If the auxiliary enterprises need cash, the university provides this also. Therefore, they do not have owners and so have no reason to earn high levels of profits for them. The structure of profit oriented organizations is quite different from this. Regardless of whether they are proprietorships, partnerships, or corporations, their accounting system is set up with accounts which represent owners equity. Since these accounts are so important to the owners, many of the analyses that have been developed, are explicitly performed on these accounts for the benefit of the owners.

Due to the differences in goals and structure of profit oriented organizations and auxiliary enterprises, the analytical techniques developed for the former are often not directly

applicable to the latter. Therefore, part of this research is devoted to determining which techniques are applicable, which are applicable with minor adaptations and what those adaptations entail, and developing new measures which are specific to the analysis of auxiliary enterprises.

After it was determined which analytical techniques are applicable to auxiliary enterprises, the focus of the research turned toward expert systems. The purpose of this phase of the research was the establishment of analytic techniques suitable for analysis of auxiliary enterprises which were also amenable to expert system application. This encompassed: (1) reviewing the literature relating to tasks which are amenable to expert system development, (2) establishing a set of criteria by which to analyze a task for amenability, and (3) using these criteria to identify tasks that can be performed in financial position analysis of auxiliary enterprises. This approach was taken since a comprehensive search of the literature found no expert systems built to analyze the financial statements of not-for-profit organizations.

After establishing that financial position analysis is amenable to expert system application, a specific auxiliary enterprise was selected from among those at the academic institution serving as the benefactor for this study. The academic institution selected was Virginia Polytechnic Institute and State University, a comprehensive state supported university of approximately 22,000 students, located in Blacksburg, Virginia. This selection was made so that a prototype expert system could be built.

The auxiliary enterprise selected is the VPI & SU Tailor Shop. This decision was made in consultation with members of management in the Office of Business Affairs who are responsible for overseeing the finances of all auxiliary enterprises. They recommended the Tailor Shop because its recent financial situation has been a problem and has been

requiring a lot of their time and resources. Thus, they felt that an expert system that could assist in analyzing the Tailor Shop's financial position could assist them in the determination of what actions might put the Tailor Shop in a better financial position. Also, it could provide a tool by which they could monitor the Tailor Shop's financial situation over time.

An expert system prototype was then designed for the analysis of the financial position of the Tailor Shop. This system takes as its input financial statements and various information about the Tailor Shop's operations (e.g.s, current size and make-up of the Corps of Cadets, commutation allowances, charges for tailoring work, direct costs associated with specific operations, etc.). Given this information, the expert system calculates financial ratios and trends which have been found to be useful in an analysis by the human expert. It then compares these measures to benchmarks, notes which are not within acceptable ranges, and attempts to determine the underlying cause of unacceptable performance. This system is also capable of answering what-if types of questions for management. Examples of what-if type questions include: what would happen to the financial position if 50 sophomore cadets dropped out?; what if the Tailor Shop stopped offering tailoring services to the local community?; what if prices to the music department were doubled?; and, what if the Tailor Shop replaced a seamstress with a piece of equipment? Answers to what if questions could be very beneficial to management as it gives them an opportunity to easily explore the ramifications of different events or courses of action.

1.5 Scope and Limitations

This research is intended to determine properties of problems which make them amenable to expert system development, and to explore appropriate techniques for financial position analysis. In exploring financial position analysis, it is limited to analyses which are applicable to not-for-profit organization, in particular, university auxiliary enterprises. This research also examines the financial statements and accounting systems of auxiliary enterprises at universities. In doing so, the basis for the information was limited to one university, VPI & SU.

While many tasks are not suited to expert system application, this research concludes that performing financial position analysis for an auxiliary enterprise at an academic institution is an appropriate area of application for expert systems. In support of this conclusion, a prototype expert system was developed to perform this task. Although this expert system is limited to the analysis of one particular auxiliary enterprise, it could be expanded to include other auxiliary enterprises within the university. One final limitation regarding this system is that it may not be implemented. The reason for this is that the department which can benefit from such a system currently has neither the hardware and software to support it nor the funds to purchase them. However, central administration has indicated a willingness to consider allocation of funds to support such a purpose if it appears to be economically attractive.

1.6 Review of Related Literature

Much is available in the current research regarding financial statement analysis. The most common techniques studied include; ratio analysis, trend analysis, and common-size statements. Most of this research, such as that performed by Beaver, Bernstein, Conroy and Harris, Fleming, Foster, and Gibson, focuses on profit oriented organizations. An in depth discussion of this research is presented in Chapter 3.

An abundance of literature also exists regarding the fundamentals of expert system development, their applicability to specific tasks, and applications of such systems. Chapter 2 presents an in-depth discussion of literature related to these topics. Although much has been published about specific applications, there are very few financial applications. The possible reasons for this were given in the background and significance section of this chapter.

A thorough search of the literature revealed only one expert system designed to perform financial statement analysis. This system, developed by Sena and Smith, was designed to analyze the financial statements of companies in the oil industry. Its major purpose is to calculate a predetermined set of financial ratios, and determine whether or not they are within one standard deviation of the industry norm. Although this system has its merits, it offers little to guide the development of a system to analyze the financial positions of auxiliary enterprises. There are several reasons for this. First, comparing the ratios of auxiliary enterprises to 'industry averages' may not be possible as comparable organizations may not exist. For example, there is no auxiliary enterprise anywhere in the United States which has operations similar to those of the VPI & SU Tailor Shop.

Second, even if the averages of comparable organizations do exist, it is felt that it is better to compare an auxiliary enterprises actual performance with some ideal or expected level, rather than with that of some average. Third, Sena and Smith's system is limited to calculating ratios, and it is felt that trend analysis is also worthwhile in financial analysis. And fourth, Sena and Smith's system makes no attempt to interpret any of the ratios calculated. Rather, it just indicates whether a given company's performance is 'satisfactory' or 'unsatisfactory.' It is felt that a system should attempt to explain the underlying causes of unacceptable performance. Chapter 3 presents a more detailed description of Sena and Smith's system.

1.7 Plan of Presentation

Chapter 2, entitled Expert Systems, provides an overview of expert systems. Current technology and applications in the field of expert systems are discussed, and an example of the differences between traditional computer programs and expert systems is presented.

Chapter 3, entitled Financial Position Analysis, presents the state of the art in this area. In this chapter, techniques used in financial position analysis are reviewed and evaluated to determine the amenability of financial position analysis to expert system development.

Chapter 4, entitled University Auxiliary Enterprises, presents an overview of the operations and financial statements of auxiliary enterprises. It provides an in depth examination of auxiliary enterprises' financial statements, in order to establish what financial

position techniques are applicable to them, and to demonstrate how expert system technology can be useful in evaluating the financial positions of auxiliary enterprises.

Chapter 5, entitled A University Tailor Shop Auxiliary Enterprise, describes the financial statements of a specific auxiliary enterprise at the university studied. It also establishes what additional financial statements and information are necessary to perform financial position analysis, and demonstrates what analytical techniques are applicable.

Chapter 6, entitled An Expert System for Financial Analysis of a University Tailor Shop, describes in detail, the expert system built to perform the analysis of the VPI & SU Tailor Shop's financial position, including a sample session using the system.

Chapter 7, entitled Results and Conclusions, includes a summary of research results, a discussion of the system's limitations, and a discussion of possible system enhancements.

Chapter 2

Expert Systems

Expert systems are computer programs designed to emulate human expertise and intelligence within a narrowly defined area. Expert systems is one area of application and research within the broader field of artificial intelligence. Artificial intelligence (AI) has been described as "the study of ideas that enable computers to be intelligent" (Winston). Expert systems, also referred to as knowledge based systems, are typically defined in terms of one or more of the following: (1) what they do, (2) what type of knowledge is required, or (3) what type of reasoning is required.

A definition of an expert system based on what they do is given by Waterman.

> "expert systems are sophisticated computer programs that manipulate knowledge to solve problems efficiently and effectively in a narrow problem area. Like real human experts, these systems use symbolic logic and heuristics - rules of thumb - to find solutions. And like real experts, they make mistakes but have the capacity to learn from their errors. However, this artificial expertise has some advantages over human expertise: it is permanent, consistent, easy to transfer and document, and cheaper. In sum, by linking the power of computers to the richness of human experience, expert systems enhance the value of expert knowledge by making it readily and widely accessible" (Waterman).

A definition which focuses more on information about the system itself (what type of knowledge it contains and how it goes about 'reasoning'), is given by Feigenbaum.

> "...an intelligent computer program that uses knowledge and inference procedures to solve problems that are difficult enough to require significant human expertise for their solution. Knowledge necessary to perform at such a level, plus the inference procedures used, can be thought of as a model of the expertise of the best practitioners of the field. The knowledge of an expert system consists of facts and heuristics. The 'facts' constitute a body of information that is widely shared, publicly available, and generally agreed upon by experts in a field. The 'heuristics' are mostly private, little-discussed rules of good judgement (rules of plausible reasoning, rules of good guessing) that characterize expert-level decision making in the field. The performance level of an expert system is primarily a function of the size and the quality of a knowledge base it possesses." (Harmon & King)

An expert system will be defined here as a sophisticated computer program which rivals a human expert in a narrow domain (field or area), in an efficient manner. To do so, the program requires knowledge and inference. The knowledge encoded into an expert system consists of two types; facts and heuristics. Facts consist of information which is widely available and agreed upon. Heuristics are the private 'rules' of experts (rules of thumb, rules which proceed along empirical lines). Inference is the ability to derive a reasonable conclusion given data that may be nonquantitative, incomplete, and often inconsistent. To be a complete expert system, the system should have the ability to explain its reasoning and to update its own knowledge. A good expert system may actually have several advantages over its human counterpart. Advantages include: the knowledge is permanent; the results are fairly consistent; the knowledge and the entire system are easy to transfer; it is easy to document conclusions; and in the long run it may be less expensive.

2.1 Characteristics of Expert Systems

Expert systems possess several characteristics which distinguish them from other programming techniques. These include: the capability to solve problems in a manner similar to human experts; the ability to explain the line of reasoning used; the ability to learn; the ability to efficiently search through a large search space with a limited amount of processing resources; and the ability to obtain one of several satisfactory conclusions when the problem is of the type which has no optimal solution. These characteristics will be presented in detail in the following sections.

2.1.1 Level of Performance

The most distinguishing characteristic of an expert system is that it has the ability to perform at or above the level of a human expert within a specific domain. While most expert systems can only perform near the level of an expert, some actually perform better. This is because it is possible for them to possess vast quantities of knowledge and to utilize the knowledge at a very rapid rate. A good example is the expert system used by Digital Equipment Corporation (DEC) to configure the VAX family of systems. The expert system, called XCON, has been found to perform at a level similar to that of an experienced technical editor, but much faster. A system which takes an editor 20 minutes to configure, can be configured by XCON in less than one minute. (Waterman)

2.1.2 Uncertainty

Expert systems, like human experts, have the ability to deal with relationships which are not precise or exact. They can deal with qualitative information, and information which is not complete, precise or consistent. How expert systems deal with such information however, varies from one system to another. For example, different expert systems use different methods to deal with uncertainty. Within a specific application, two types of uncertainty are involved. First is the uncertainty associated with a single assertion (i.e., a factual statement), and the second is the uncertainty associated with combining assertions.

In an expert system, two-part rules are developed which are of the form *If .... then ....* The "if" portion of the rule is referred to as the *antecedent* while the "then" portion is referred to as the *consequent.* Generally, the antecedent combines two or more assertions while the consequent provides a single assertion. For example, if four facts, A,B,C, and D, are all known to be true and if a rule of the form *If A and B and C and D then Z* exists in the knowledge base, then the assertion *Z* must also be true. With a rule of this form, uncertainty may be present due to the uncertainty associated with the individual assertions in the antecedent and it also may be present due to the rule itself. When dealing with this uncertainty, most systems use some type of certainty (or confidence) factors.

A certainty factor is a number associated with an assertion which represents a subjective judgement as to the validity of that assertion. The difficulty encountered when utilizing certainty factors is in combining them. Probability theory would appear to provide a good basis, but due to the dependence of many of the assertions in any system, proba-

bility theory falls short of expectations. Nevertheless, many builders of expert systems have based their manipulation of certainty factors on probability theory. Other systems however, use different methods. For example, some take the minimum value of all of the assertions in the antecedent of a rule while others simply multiply them. Still some others are more complex, taking the minimum of all of the assertions in the antecedent of a rule and then multiplying that with the certainty factor associated with the rule itself.

2.1.3 Explanation Capabilities

An important feature of expert systems is the ability to explain the line of reasoning used. The method used however differs among systems. In simpler systems, a file is maintained in which all of the information gathered from a user is saved, along with the line of reasoning used by the inference engine to reach intermediate conclusions. Although the actual structure of this file will vary between systems, it is easiest to visualize it as a tree-like structure whereby the system can trace back to answer questions regarding the logic followed. More sophisticated systems include a feature called truth maintenance systems (TMS). These systems not only maintain information regarding how they came to a conclusion, but they also determine how the inference mechanism will handle different possible contexts, particularly when faced with contradictions.

TMS's are used to resolve conflicts in reasoning whenever they occur. Current research regarding these systems falls along a spectrum ranging from the less complex, to the very sophisticated assumption-based TMS (ATMS). In the less complex TMS's, if two or more alternative lines of reasoning appear likely, given the current state, the system will

choose only one. If later a conflict arises, implying that the line of reasoning chosen was incorrect, the system switches to a different line of reasoning (or context). This method of evaluating alternatives requires backtracking whenever a conflict arises (Petrie). Assumption-based TMS's allow for multiple contexts to be evaluated simultaneously. A system which utilizes an ATMS is capable of storing multiple contradictory states. Therefore, such a system will never be required to backtrack (Flann, et. al.).

2.1.4 Learning Capabilities

Another feature exhibited by the more sophisticated expert systems is the ability to learn. An expert system which can learn expands its own knowledge base as new knowledge is 'learned.' The mechanism by which learning occurs varies greatly among systems. The reason for this is that there is no known best, or most efficient method. At this time researchers cannot agree as to whether or not machine learning should mimic human learning. Some believe that an engineering approach would be sufficient, and that the mechanical component need not resemble its biological counterpart. The majority of researchers, however, believe that the method employed by computers should resemble that used by the human brain. One reason given for this is that computers must interact with humans and consequently the skills and concepts which they acquire must be understandable to humans (Carbonell, et.al.). Researchers have therefore had to turn to psychologists to find out just how people learn. This has presented quite a problem since psychologists themselves do not understand how people learn.

Within the field of psychology there are two different schools of thought regarding the learning processes exhibited by human beings. The stimulus-response theorists treat the

learning process as though it were a black box. They are only concerned with the input and response, but do not claim to model what is going on inside the brain. The cognitive theorists, on the other hand, attempt to describe the mental structures which are constructed within the nervous system (Forsyth and Rada). Neither school of psychologist has been able to fully understand just how learning occurs, but they do have some theories and are aware of some different methods of learning. Current research in machine learning uses information gathered by psychologists and tries to emulate the human process in the computer.

To date, most different approaches to machine learning fall into one of two categories. The first is the black box approach and the second utilizes search techniques. The black box approach has been used almost exclusively for pattern recognition, which is adequate for most types of applications as the expertise in most expert systems requires some sort of pattern recognition. For example, equipment fault diagnosis, medical diagnosis, fingerprint identification, and voice recognition are all tasks which require recognition of patterns (Forsyth and Rada). Black box approaches generally have two distinguishing features. The first is that they are based on mathematics, utilizing both statistics and control theory. The second is that the knowledge they gain is typically in a format which cannot be inspected and understood. Unfortunately, this poses problems for expert system developers as expert systems must be able to explain their line or reasoning. Within the black box category of learning two different methods are used. The first utilizes discriminant functions, adjusting the parameters until the result is optimal, or at least satisfactory, according to predetermined criteria. The second performs an indexing type of operation using signature tables (Forsyth and Rada).

Learning techniques which utilize searches progress through a type of feedback loop. The mechanism responsible for this progression can differ tremendously among systems. One of these systems starts with a set of rules. It first examines these rules to determine whether or not additional learning (i.e., deriving new knowledge) is possible. If it is not, then nothing further can be accomplished. If it is, then new rules are generated from the old ones. After being generated, the new rules are evaluated using some training data. Training data is obtained from a data base of examples for which the solutions are known. Rules which do not score high in this evaluation process are then thrown out. The system then examines its rules in the aggregate to determine whether or not they are good enough. If they are, then the learning session is complete. If not, the system uses more training data , if available, to re-evaluate the rules. It then goes back to the beginning to determine if further progress is possible. If no more training data is available then the system goes directly back to the beginning.

Systems differ drastically in how the different steps of this loop are accomplished, particularly in the rule generating and evaluation phases. Some model-driven generators are guided by prior assumptions about the form of hypotheses while data-driven generators are guided by patterns in the training set. In terms of evaluation, systems differ in the various measures of quality and also in the acceptance threshold. Also in the evaluation process, some systems utilize negative evidence, some utilize positive evidence and still others consider both positive and negative evidence (Forsyth and Rada).

2.1.5 Search Space

A characteristic of expert systems which makes them efficient, is that they can perform incomplete searches. An incomplete search is one which does not evaluate all alternative courses of action, but rather chooses one which is satisfactory. Thus, they have the ability to efficiently search through a very large space with limited processing resources and reach a reasonable conclusion. This is true regardless of how the knowledge is structured in the knowledge base. The concept behind this ability is known as opportunistic reasoning. Opportunism is "the practice or policy of adapting one's actions, judgements, etc., to circumstances, ..., in order to further one's immediate interests, without regard for basic principles or eventual consequences" (Webster's). Expert systems are designed so that the problem solving procedure is consistently directed toward those actions which appear most promising in terms of the current problem solving state. This type of reasoning mechanism is motivated by problem domains:

> "(1) where it is necessary to balance the combinatorics of a large search space with limited processing resources (implying incomplete search) and (2) where it is not possible to establish in advance a systematic procedure for traversing the space that permits effective focusing and pruning of alternatives." (Ow and Smith)

2.1.6 Satisficing

Often information in expert systems is not known with 100% certainty and so they are built to deal with this lack of definitiveness. Thus, conclusions are not necessarily optimal. In fact, expert systems are frequently used for problems which do not have 'opti-

mal' solutions. This can lead an expert system to conclude with two different courses of action at two different times, when given the same information.

2.2 *Uses of Expert Systems*

Expert systems can benefit an organization in several different ways. For example, they can be used to replace and/or replicate human experts; they can explore answers to what-if types of questions; and they can be used to train personnel. Each of these uses will be discussed below.

2.2.1 Assist Experts

Expert systems can assist or augment an expert. For example, an expert system can help a human expert make decisions faster than would otherwise be feasible, making it possible to deliver expertise to users where the human expert would not otherwise have time to help. Expert systems can also be used by human experts to check their decisions for consistency with previous decisions of the same type.

Expert systems can also be useful in helping experts document their decisions. Since expert systems can always trace back and tell a user how a conclusion was reached, they are useful for leaving an 'audit trail.'

2.2.2 Replacement of People

Expert systems can replace people. If an organization is very dependent on one particular individual it might wish to capture that expert's knowledge. If the human expert is retiring or leaving the organization for some reason, capturing his expertise before he leaves can be a very valuable asset for the future. A good example of such a situation was that encountered at the Campbell Soup Company. The Campbell Soup Company has huge cookers at all of their plants which are used to sterilize soup. These cookers vary quite a lot depending on brand and age. Several years ago, management realized that there was only one individual who was good at diagnosing malfunctions in the cookers. This individual was nearing retirement age, so management at the Campbell Soup Company hired the Texas Instruments Data Systems Group to come in and capture his knowledge in an expert system (Harmon, Maus, and Morrissey).

2.2.3 Replication of Expertise

Expert systems can be used in situations where expertise is required in many locations, at any given point in time. A program can easily be copied and sent to all of the locations requiring the expertise. An example of an expert system used for this purpose is DELTA (Diesel-Electric Locomotive Troubleshooting Aid), an expert system developed by General Electric in Schenectady, New York. This system was designed to help railroad maintenance personnel maintain their diesel-electric locomotives. Prior to DELTA the company relied on one expert, David Smith. Whenever a locomotive was in need of some type of repair, which the maintenance person at that location could not manage, Smith was either flown into the particular railroad yard, or the locomotive was

transported to Smith's location. Once DELTA becomes totally operational and available to all maintenance personnel, any maintenance person in any railroad yard around the country will be capable of maintaining their locomotives (Harmon & King).

Expert systems can also be used in hostile environments, i.e., environments unsuitable to humans. Examples of these types of environments include dangerous production areas and environments which are very uncomfortable (e.g., a freezer).

Decisions which require expertise, and which must be made quickly, are almost always good candidates for expert system development. This is particularly true when the expert is not always available or when it takes the expert a substantial amount of time to make a good decision.

2.2.4 Sensitivity Analysis

Another area where expert systems can be very useful is in sensitivity analysis, such as determining how different decisions might affect an outcome. Often a decision maker maintains the status quo when making decisions because either it is difficult to determine the outcome of other possible courses of action, or because there are too many courses of action available to evaluate. With expert systems, determining the probable outcomes of different courses of action is simpler and faster, and can be accomplished within a reasonable time frame.

2.2.5 Training

Still another use of expert systems is for training personnel. This may be accomplished by two methods. The first is through use of the system. This will teach less experienced personnel what information is important to use and how that information should be combined in reaching a conclusion. The second is by using expert systems which are specifically designed to aid in teaching. These are systems which have been designed to query a user as to what they know and how they go about solving problems. Given this information the system can teach them what they need to learn. Teaching in this manner is basically customizing the method to the user's need, and hence, is more efficient than many classroom methods.

2.3 Differences Between Expert Systems and Traditional Computer Programs

Although expert systems are programs designed to be run on computers, they are different from traditional computer programs. The term traditional computer program is used in this research to represent applications which are developed for situations where all applicable input is known with certainty and where the program can be represented by an algorithm. Examples of such programs include accounting and bookkeeping applications written in languages such as COBOL, and engineering and scientific applications written in languages such as FORTRAN. There are three major differences between expert systems and traditional computer programs. These are: 1) the control-

ling mechanism, 2) the driving mechanism, and 3) several capabilities commonly found in expert systems which are not generally found in traditional programs. Each of these differences will be presented in detail in the following sections.

2.3.1 Control

One of the major differences between traditional computer programs and expert systems is the control mechanism. In traditional computer programs, control is explicit and determined in advance. Given a program, anyone who understands the language can mechanically read through the program and obtain the same results in the same order as anyone else. Control is basically sequential and very explicit. Knowledge, on the other hand, is implicit in the assumptions made by the programmer. According to the Random House College Dictionary, knowledge is an "acquaintance with facts, truths, or principles," and also an "acquaintance or familiarity gained by sight, experience, or report." Thus, knowledge can be divided into two types. The first of these is facts, which are generally accepted principles and truths. The other type of knowledge can be referred to as heuristics, which are rules of thumb used by experts. In terms of programming then, knowledge can be thought of as facts and heuristics which may be presented in the form of decision rules.

While knowledge is implicit in the assumptions made by the programmer in traditional computer programs, knowledge in expert systems is in direct contrast to this. The knowledge encoded into the system is explicit and quite obvious. Control however is implicit; it is not sequential but is highly interactive and dependent on the path taken and information gathered thus far. For example, in a traditional program if you had a

statement of the form *If A then B* and A was not known at the time the computer reached the statement, then B would never be carried out. If the same statement was in an expert system, the system would never even evaluate the statement until it was known that A was true. Once A was found to be true, the statement would be evaluated regardless of its placement in the program.

In order to elaborate upon the different control mechanisms between traditional programming techniques and expert system programming techniques, an example has been developed. In this example, a couple which frequently attend the theatre are interested in a program which will tell them whether to walk or drive to the theatre, given the current weather conditions, the distance to the theatre, and the height of the woman's heels. If it is found that walking is the preferred alternative, the program must also tell them whether or not to carry an umbrella.

Figure 1 presents the flowchart for a traditional program while figure 2 presents the rule base which might underlie an expert system designed to accomplish the same task. A thorough examination of these will establish how the control of the traditional program is explicit and the knowledge implicit, while the reverse is true for the expert system.

An evaluation of the flowchart in figure 1 will serve to demonstrate that the knowledge in the program is implicit, that is, it is built into the program and not obvious. Knowledge in this situation consists of facts and heuristics which one would apply in the determination of the proper mode of transportation to the theatre. The fact in this situation would be that if it is raining, one should either carry an umbrella, or drive a car. This would be considered a general principle with which most people would agree. The heuristics, on the other hand, are more personal to the couple. In other words, principles which they use in making their decision may vary significantly from those used

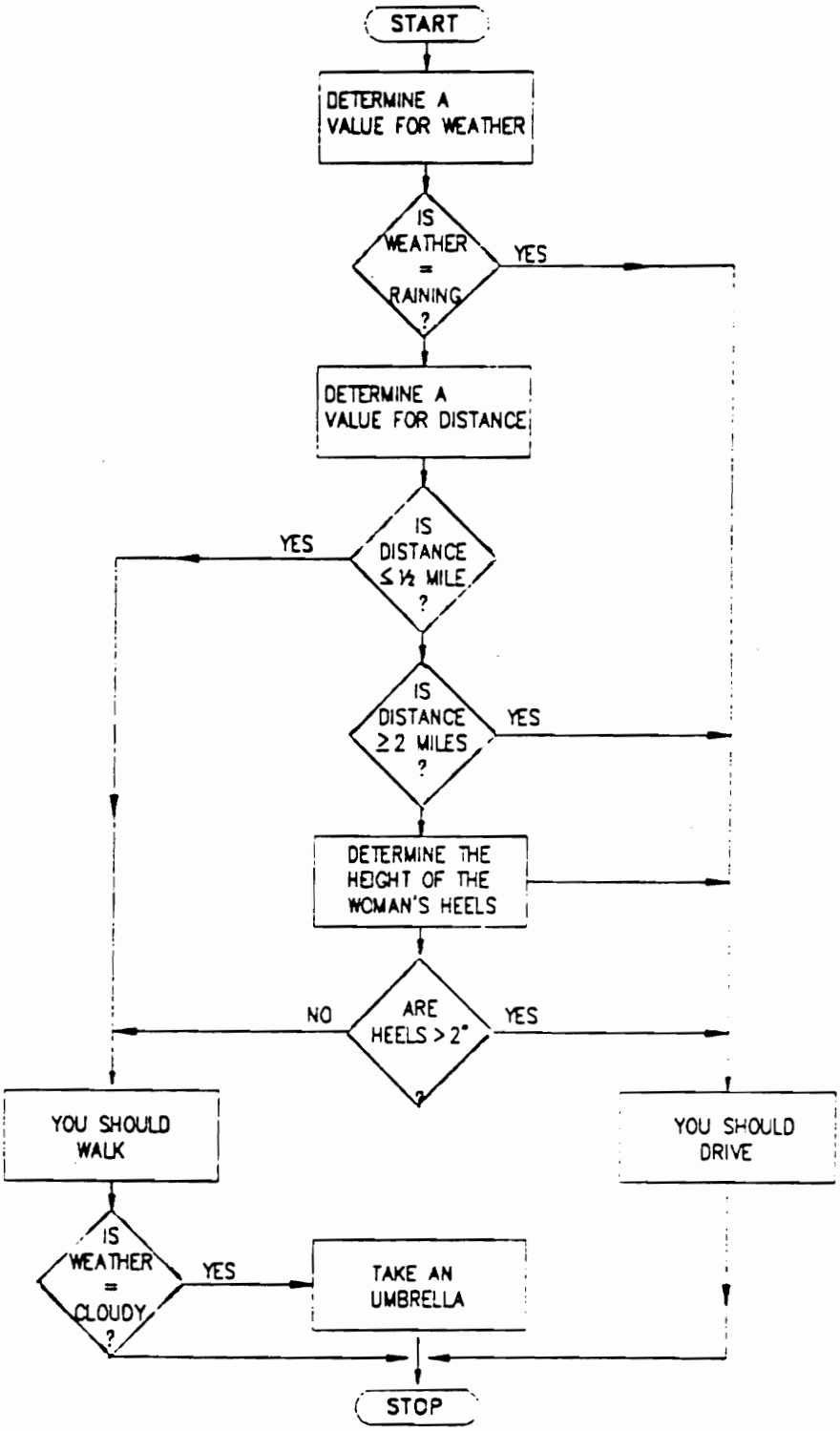


FIGURE 1
FLOWCHART OF THEATER EXAMPLE

Rule 1	IF	weather IS raining	THEN drive
Rule 2	IF	distance ≤ ½ miles	THEN walk
Rule 3	IF	(weather IS sunny OR weather IS cloudy)	
	AND	distance ≥ 2 miles	THEN drive
Rule 4	IF	(weather IS sunny OR weather IS cloudy)	
	AND	distance > ½ miles	
	AND	distance < 2 miles	
	AND	heels ≤ 2 inches	THEN walk
Rule 5	IF	(weather IS sunny OR weather IS cloudy)	
	AND	distance > ½ miles	
	AND	distance < 2 miles	
	AND	heels > 2 inches	THEN drive
Rule 6	IF	walk	
	AND	weather IS cloudy	THEN take umbrella
Rule 7	IF	walk	
	AND	weather IS sunny	THEN do not take umbrella

Figure 2

Example of Expert System Rules

by other couples in a similar situation. In this program, the heuristics would be decision rules regarding what constitutes a "reasonable" walk and what height heels are comfortable. In terms of a reasonable walk, some people believe 10 miles is reasonable while others consider a 2 block walk a strain. Likewise, some women are comfortable in 4" heels while others believe ½" heels are too high. It should be noted at this point that the knowledge here is not true expertise. However, it was felt that such an example would be simpler and easier to understand.

In order to demonstrate how knowledge (i.e., both facts and heuristics) is implicit in the traditional program and explicit in the expert system, consider an example. One of the heuristics used here is the fact that if the distance to the theatre is more than 2 miles, and it is either sunny or cloudy, then the couple should drive. An examination of rule 3 in figure 2 exhibits this decision rule, almost exactly. Thus, this piece of knowledge is explicit. In an examination of the flowchart in figure 1, this knowledge is far from explicit. However, if one reads through the flowchart with the facts that it is not raining and that the distance is greater than 2 miles, than the same conclusion will be reached, i.e., the couple should drive. Thus, knowledge here is implicit, and programmed in by the programmer. As one can see by examining figure 1, extracting all of the individual decision rules that went into designing this flowchart would be a rather tedious task.

Control of the traditional program however, is explicit and totally determined in advance. This is apparent when examining the flowchart. The first step in the flow of the program is to determine a value for weather. The next is to determine whether that value is raining. If it is, then the program follows the path to the right and finds that one should drive, and then the program ends at the next command in the sequence, which is the stop command. If the value is not raining, then control passes on down

through the flowchart. The program continues on in this manner until it reaches the command to stop. This progression of control is very obvious and no extraneous information will affect it in any way. For example, if the program was given the information that the distance to the theatre was 1 ½ miles, it might store it for future use, but it would not affect the sequence of the program in any manner. Thus, control of the program (i.e., the possible sequence of steps taken in any given run of the program) is totally determined in advance and built into the system. This is why program flowcharts are such a useful tool in documenting a program.

The control mechanisms used by the expert system are in direct contrast to those found in the traditional program. Control in this situation is implicit and very interactive. Which rules are activated and in which order they are activated is dependent upon the interaction with the user, rather than upon the sequencing arrangement determined by the programmer. Although it is possible that the expert system's processing mechanism evaluates every rule, starting with the first and ending with the last, it is unlikely. The sequencing arrangement of the rules in figure 2 is immaterial, i.e., the control of a session is not affected by the order of the rules. In order to demonstrate the interactive control inherent in the expert system, a sample session is discussed below.

Suppose that a user beginning a session with the system provides the fact that the distance to the theatre is 1 ½ miles. Rather than beginning with rule 1, the control of the expert system will pass to a rule which has a fact regarding the distance in the antecedent, and then determine whether or not the rule will apply. In this instance, control could pass to rule 2,3,4, or 5. Suppose that it goes to rule 3. For rule 3 to hold, the distance must not be less than 2 miles. Since the actual distance is only 1 ½ miles, the system moves on to another rule. It first searches for a rule which can be satisfied

with only the fact that the distance is 1½ miles. Finding none, it searches for one in which the mileage is valid but other facts in the antecedent are unknown. Suppose it chooses rule 5. In order to determine whether or not the entire rule is valid, both the weather conditions and the height of the woman's heels must be determined. Since neither of these conditions are known, it asks the user for both. Suppose that the user states the facts that it is cloudy and that the woman's heels are 1". An examination of the antecedent of rule 5 will show that not all necessary facts are valid. The system therefore takes the facts which are known, and determines whether they apply to any other rule. An examination of rule 4 shows that all of the facts in the antecedent of the rule are true. The system transfers control to that rule, and then adds the fact associated with the consequent of the rule to the knowledge base, that is, the couple should walk.

Given the new knowledge, that the couple should walk, the system examines all of its rules to determine whether this new fact can be useful. Rules 6 and 7 both have this fact in their antecedents, but rule 7 states that it is sunny, which is known not to be true. Therefore, control transfers to rule 6 and the new fact, take an umbrella, is added to the knowledge base. After this has occurred, the system searches for any other rule which might be valid. Finding none, it stops the program and the session is complete.

An examination of the path taken through the expert system demonstrates how control is dependent upon the current state of the system, rather than upon some predefined sequence. The path taken in this example was rule 3 → rule 5 → rule 4 → rule 6. In a traditional program, the control of the program would have progressed from rule 1 through rule 7 in sequence.

2.3.2 Driving Mechanism

Another difference between traditional programming techniques and those of expert systems is that the former are usually based on algorithms while the latter are based on heuristics. Algorithms are step-by-step procedures which arrive at an *optimal* solution, whereas heuristics, or rules of thumb are step-by-step procedures which often arrive at only a *satisfactory* solution in a finite number of steps. A large part of the reason for this difference is the nature of the subject matter being dealt with. Traditional programs deal with numeric data or at least alphanumeric data which can be numerically processed (e.g. alphabetizing). Expert systems however, often deal with non-numeric (qualitative) data and process symbolically, often using languages based on formal logic.

2.3.3 Capabilities of Expert Systems not Generally Found in Traditional Programs

Expert systems often have some capabilities which are not customarily found in traditional programming. These include: the ability to learn and to update rules as situations change; the ability to deal with incomplete, inconsistent, and uncertain information; and the ability to easily explain their line of 'reasoning.' This last ability is something which can be programmed into a traditional program, although it is quite difficult. Another capability of expert systems which is foreign to traditional computer programs, is the ability to reach two different, but equally acceptable, conclusions given the same situation at two different times. This is possible because of the highly interactive nature of expert systems and their ability to deal with inexact information.

Although it may seem that expert systems are superior to traditional programs, this is not necessarily the case. Each has their own place, and the most comprehensive systems in the future will probably be either a combination of the two, or an expert system which calls on traditional programs as necessary. At this time, expert systems are best for solving problems where there is no optimal solution, where there is no way to determine whether or not one exists, or where the necessary information is incomplete or uncertain. Traditional programming is still best for algorithmic processing where all of the input data is known. Examples of such applications include; calculating checking account balances, billing, storing customer records, and alphabetizing lists of names.

2.4 Example Application Programmed Using Traditional Techniques and Expert System Techniques

In order to contrast the differences between traditional programming and expert systems, two programs were written to perform the same task. One was written in a traditional programming language, BASIC, and the other as an expert system (using GoldWorks, an expert system development package). The application selected for this example will be presented in the following sections, including the similarities and differences.

2.4.1 Example Application: Household Budget

The task selected for this comparison was the determination of a household budget. Although this task is quite simple, it is one which changes over time and therefore is quite amenable to expert system development. Also, it is easier to contrast the differences in a smaller application. The two programs were developed to help determine the bills which should be paid in a particular household during any given month.

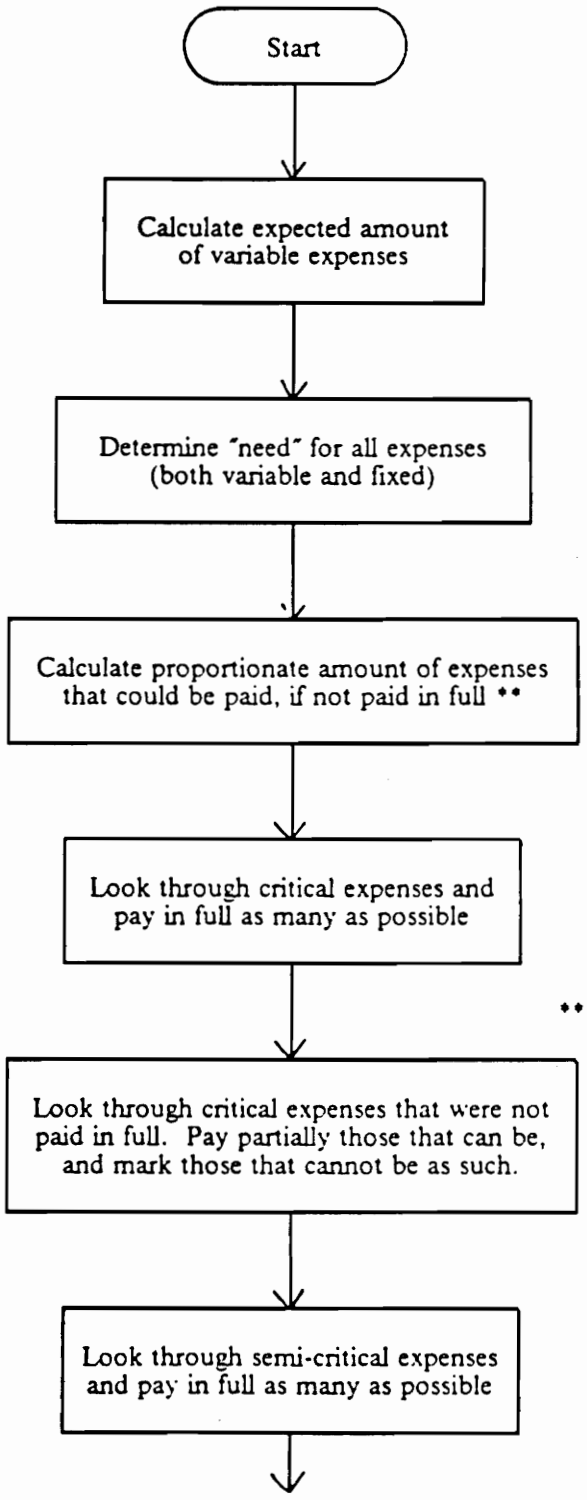
In this particular budget there are two categories of expenses, fixed and variable. The fixed expenses include the mortgage payment and college loan payments. The variable expenses include; electricity, phone service, food to sustain (that is, the bare minimum), food to enjoy (that is, beyond sustenance), recreation, partying supplies, and VISA/Master Card payments. Since different individuals have different priorities, and since the priorities of any individual change over time, the programs were developed so that the user could input their priority for each individual item. It was assumed however, that to survive one needs housing and food and therefore, the mortgage payment and food to sustain were built into the programs as critical expenses. For the rest of the items the user is asked how important they consider the items to be. The choices available for each are; critical, semi-critical, convenient, or luxury.

The amounts of the fixed expenses are input directly into the programs, but only the minimum and maximum amounts are written in for the variable expenses. The actual amounts of variable expenses are determined using rules which depend upon the season. Also input into the programs for each expense are the proportions that must be paid. For example, banks require that customers pay at least 10% of their VISA or Master Card bills, while grocery stores require 100% of payment for food.

2.4.2 Program Structure

Figure 3 shows the general flow of both programs. Figures 4 and 5 display the BASIC flowcharts while appendix A.1 displays the BASIC program. Appendices A.2 through A.4 give the GoldWorks rule priority structure, actual rules, frames and instances. As can be seen in figure 3, the general flow of both programs is the same. Even though the BASIC program is much more structured than the GoldWorks expert system program, both have a general flow of tasks which must be performed sequentially. As shown in figure 3, both programs start by calculating the expected amount for variable expenses and then proceed by determining the need category for each expense. If necessary, they accomplish this by asking the user. Once this information has been determined, along with the amount of money available, and the month and season for which the budget is being developed, the programs have enough information to calculate the actual budget. Both programs start with the critical expenses, and pay in full all that can be paid. The critical expenses which cannot be paid in full are then evaluated further to determine whether or not partial payment is a viable alternative. If it is, they are partially paid and marked as such. If it is not, they are marked not paid.

After all of the critical expenses have been evaluated and either paid in full, partially paid, or it has been determined that they cannot be paid, then the semi-critical expenses are evaluated. These expenses go through the same process and are also either paid in full, partially paid, or marked not paid. After all of the semi-critical expenses have been fully processed, the convenient expenses and then the luxury expenses respectively, go through the same process. Once this has been accomplished, the budget is complete and the results are printed.



** In GoldWorks,but not necessary in BASIC.

Figure 3
General Flow of Household Budget Program

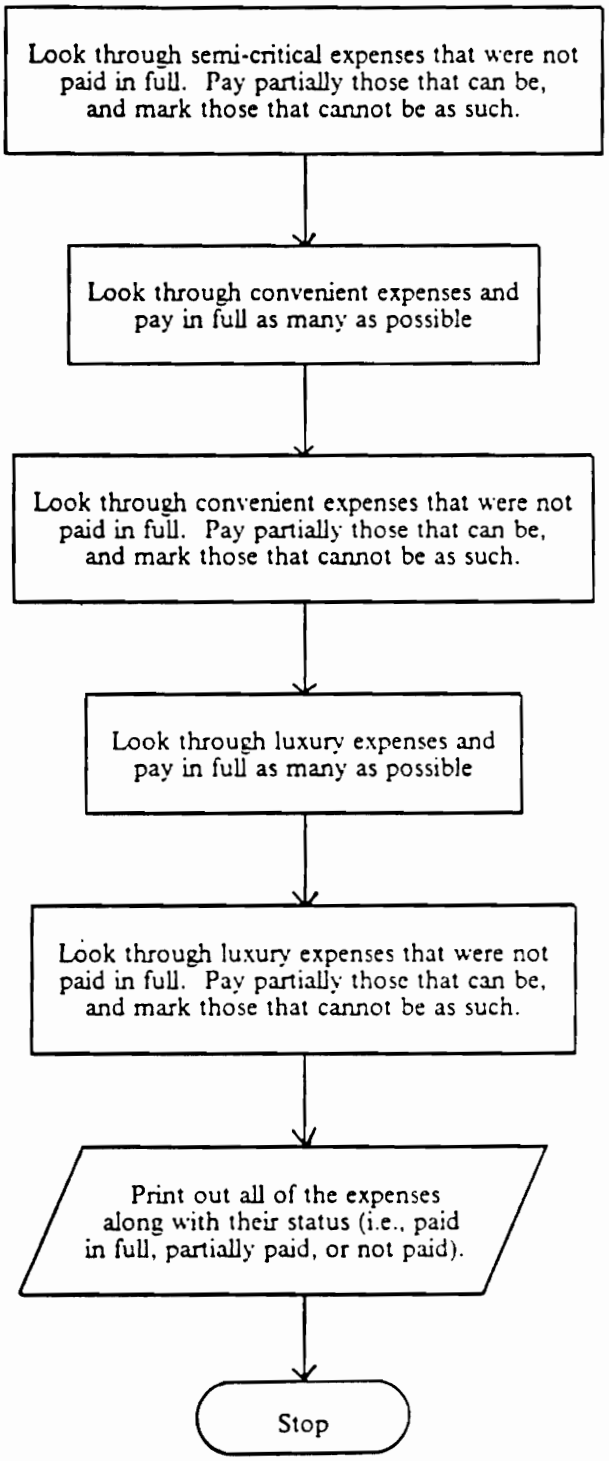


Figure 3 (continued)
General Flow of Household Budget Program

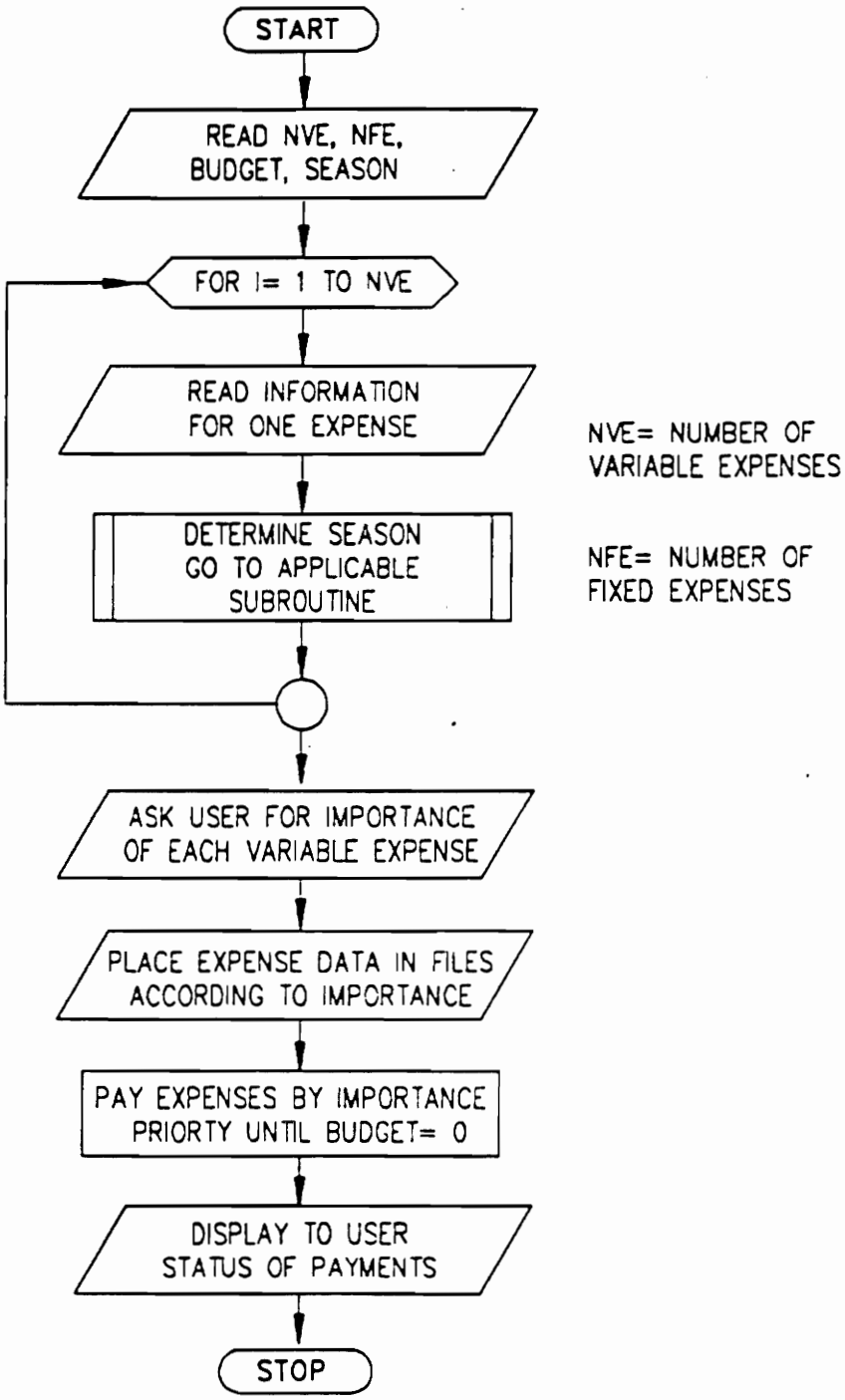


FIGURE 4
BASIC PROGRAM FLOWCHART

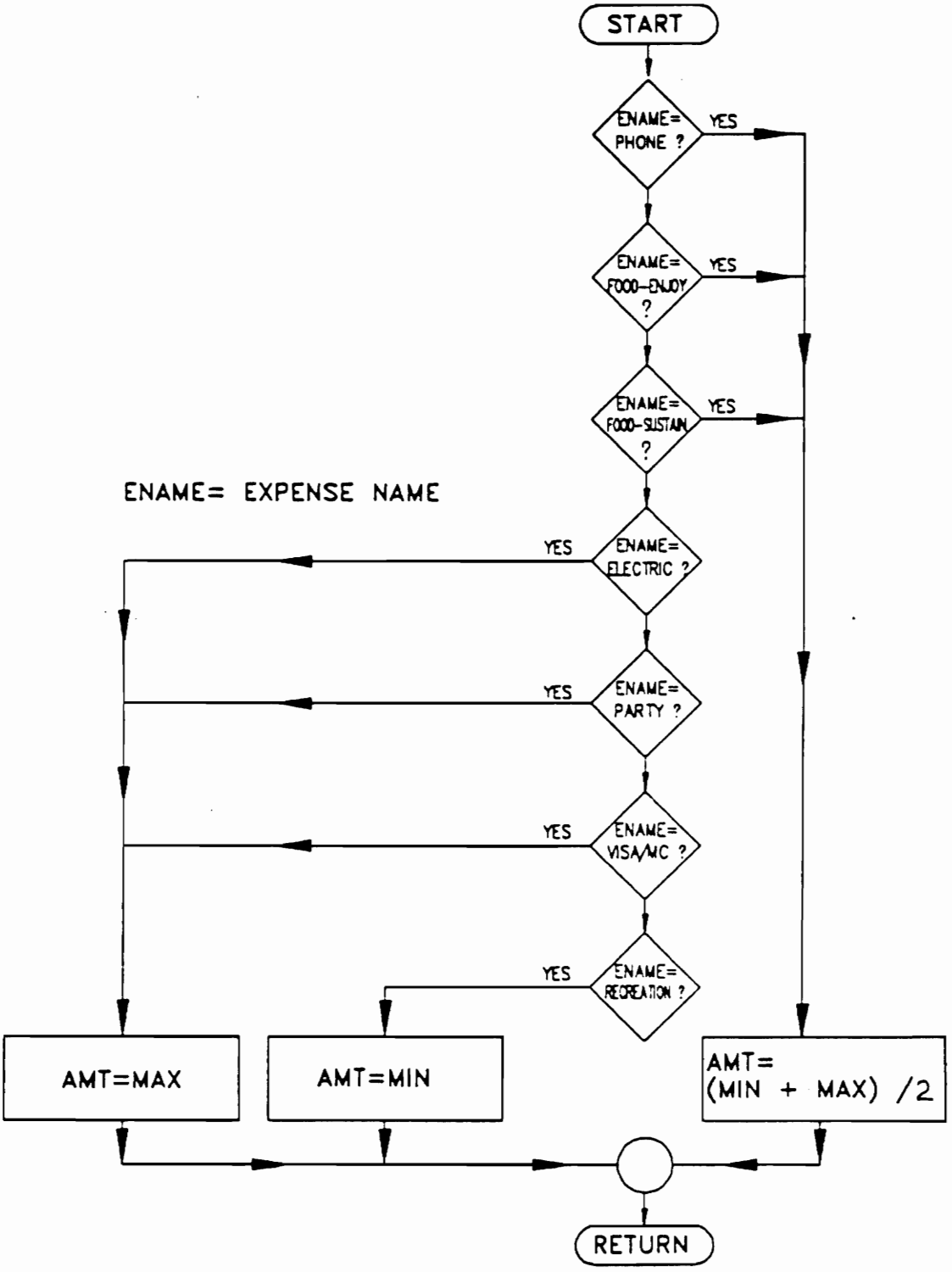


FIGURE 5
EXAMPLE OF SEASONAL SUBROUTINE

Although the general flow of the two programs is comparable, a detailed examination will exhibit differences, as the determination of the flow is very different. In BASIC, as in any structured language, the flow of the program is predetermined and built into the program, making flowcharts a good explanatory tool. In expert systems, the flow is not determined in advance. To actually run an application, the GoldWorks expert system program uses pattern matching and agendas. Pattern matching is a process whereby each rule is evaluated to determine whether or not every premise in the if portion of the rule is known to be true. One of the features that makes this method such a powerful tool, is that any given rule can be bound to many different variables. The concept of binding variables can be seen in the following example. Suppose an expert system has the following rule in its knowledge base:

If X is person
    with car
Then X can drive to the theatre.

Suppose further that the expert system has the knowledge that persons John, Joe, and Mary all own cars while persons Joan and George do not. The expert system will *bind* each person who fulfills the requirements (that is, has a car) to the X variable. After doing so, the following assertions (or facts) will be added to the knowledge base:

John can drive to the theatre;
Joe can drive to the theatre; and
Mary can drive to the theatre.

In effect then, one rule can serve to enter many different assertions into the application. For any given rule then, all objects that can be bound to it, will be. And, if all of the clauses in the antecedent are then found to be true, it is possible for the rule to be activated. Rule activation may occur anytime after all of the clauses in the antecedent of a rule are found to be true. When activation actually occurs, which is referred to as "firing", the facts associated with the conclusion of the rule are added to the list of currently

known facts. Just because a rule is ready to fire however, does not mean that it will. GoldWorks controls which rules fire through the use of an agenda. An agenda is nothing more than an ordered queue of rules which are ready to fire. The order of this queue is determined by the priorities given to the rules. The priority structure of the rules for this application can be found in Appendix A.2, while the actual rules are located in Appendix A.3. It should be noted that there is a direct correspondence between the priorities of these rules and the general flow of the program shown in figure 3.

To compare the two programs in greater detail, an examination of a section of code in the BASIC program and the corresponding rules in GoldWorks will be given. Consider, for example, the variable expenses and the calculation of expected amounts. In the BASIC program, a loop is required which goes through all of the variable expenses one at a time. In this application there are seven variable expenses, so the program must progress through the loop seven times. Each time through the loop, the name of a variable expense is read in along with the attributes of that expense, e.g., minimum, maximum. For example, the first time through the loop the data pertaining to the phone bill is read, the second time through the data pertaining to the electric bill is read, and so forth. This means that the number of variable expenses must be either programmed in directly or read in. In this application, the parameter is read in. After each expense is read in, one of several subroutines is called. The subroutine chosen depends on the season. As can be seen in figures 4 and 5, there are four subroutines (one for each season). Within each subroutine there is an if statement or 'rule' for each possible expense to determine what the expected amount of that expense should be. The result of this type of program structure is that each expense must go through each rule in the subroutine even though only one will apply. An important point to notice in this program

is that the flow of the program is totally determined in advance, including the order in which the expenses are evaluated.

The approach taken by the GoldWorks program is quite different. In determining the expected amount for variable expenses there is a set of rules. These rules are all at the same priority but there is no structure within that priority level to dictate the order in which these rules are to be applied. In other words, all rules at a given priority level will be applied before any of the rules at a lower priority level, but within that level, there is no specified order in which those rules will be applied. Furthermore, due to GoldWorks' matching mechanism, only rules that have variables which can be bound to them will be evaluated.

2.4.3 Data Arrangement

The arrangement and utilization of data in the two programs is also very different. In expert systems reading to and writing from data is very interactive, whereas in traditional programming it requires substantial effort. In a traditional program, data can either be read into a program directly, or input interactively by the user when given a prompt. In this application the BASIC program uses both approaches. It prompts the user for their assessment of need for each of the expenses (except for the mortgage and food to sustain) while it reads in all of the data concerning dollar amounts. Regardless of which approach is used, once the program has the data it must use arrays to store the data. Although this approach is effective, in some languages one must keep track of the location of the data along with its format. In BASIC for example, a file must be explicitly opened prior to reading from it, and then closed afterwards. A file must also be opened

prior to writing to it. Unfortunately, opening a file for input and opening a file for output are different. Thus it is impossible to read from and then write to a given file without closing it and reopening it. If it is desired to print something from a file to the user and prompt them for more information to be stored with the current information, the process of opening, closing, reopening, and reclosing is quite inefficient, particularly if it is desired to do so for each record in the array.

GoldWorks uses a very different storage arrangement which utilizes frames. A frame is a template for structuring information with fields called slots (i.e., attributes) which give structure to the data. Frames can be placed in a hierarchy or lattice type of structure so they can inherit slots from other frames higher up in the lattice. Frames are used to define instances which represent the actual data. An example of a frame in the household budget application is one called expense which contains slots for need of payment, percent that must be paid, amount actually paid, and one which tells whether or not the particular expense has been paid. The expense frame then has two child frames, one for variable expenses and one for fixed expenses. The variable expense frame has slots for the minimum amount expected, the maximum amount expected, and the actual amount expected (which is determined by the program) along with the four slots inherited from the expense frame. The fixed expense frame has a slot for amount of expense along with the four inherited slots.

In order to give the program actual data, instances have been created from the frames. For example, the variable expense frame has seven instances which include; phone bill, electric bill, food to live, food to enjoy, VISA/Master Card, partying, and recreation. Each of these instances has actual values in the slots. It should be noted however, that it is not necessary for all slots to have values. In fact, many of the values are determined

and placed in the slots as the program runs, while others are even changed. Appendix A.4 provides a complete listing of all of the frames and their slots, while Appendix A.5 provides a listing of all of the instances.

2.4.4 Updating Requirements

One of the features of expert systems often cited in the literature is their flexibility in dynamic situations. This flexibility is due to the fact that expert systems are generally written in non-procedural languages. In non-procedural languages, the order in which statements are place is immaterial, as program execution does not proceed through all of the statements in a predetermined order. In contrast, in procedural languages, such as FORTRAN and COBOL, placing statements in the correct order is extremely important, as program execution proceeds through all of the statements in a predetermined order.

Since the knowledge and data are not placed in any specific sequencing arrangement in a non-procedural language, like an expert system, changing or adding to it only requires locating the applicable data and changing it. Such changes need not cause concern as they will not precipitate other changes in the program as often occurs in traditional programming. For example, suppose that in this application it was desired to add another expense such as a car payment. To add this to GoldWorks, all that would be required is the addition of another instance of the fixed expense frame. Adding this expense in the BASIC program would not be quite as simple. To add the information, a new data statement would be required which would have the same information as the frame added in GoldWorks. Filling in the actual information would not be as simple,

as it would not be merely filling in slots, but rather would require a new data statement consistent with the read statement. Of course this would not be difficult either as long as the program documentation was adequate. The variable for the number of fixed expenses would also need to be changed. Unfortunately, if this adjustment was forgotten it would not cause the program to print an error message. The program would run, but the new information would not be included, resulting in a budget that was incorrect.

The ease of using an expert system as opposed to programming in a more structured style has been demonstrated, but the differences have not shown real substance. Suppose for example that it was desired to change the focus of the program to answer specific questions. As was shown, both programs start at the beginning and continue until the end, determining the entire budget. Specific questions will be answered, but the option of obtaining just the answer to a specific question is not available. This method is highly inefficient as it requires that the entire program be run and it also requires that a user sort through large amounts of irrelevant output. Although this particular GoldWorks application is set up to run in this manner, (referred to as forward chaining) it was also set up to be able to answer any specific questions that the user might have. This was accomplished by using bidirectional rules, or rules that can be used in either backward or forward chaining. By using these rules, if a user wants to ask a specific question, GoldWorks can use its backward chaining capability to answer the question. For example, suppose that the user wants to know whether or not there is enough money in any given month to pay the electric bill. Rather than running the entire program, the user can just ask the question by querying an attempt. Querying an attempt is the equivalent of posting a goal and asking whether or not that goal can be obtained. In this case the goal is to see if the electric bill can be paid. GoldWorks' method for determining whether or not this can be done is to go through the rules as far as necessary

to determine whether or not it is possible to pay this bill, and then to print out the answer. If the user looks at the status of all of the expenses after querying the attempt, it will be found that the expenses which have higher priorities than the electric bill will be paid, while those with lower priorities will not be paid, and the amount left in the budget, will have been reduced accordingly. Contrast this situation to that characterized by the BASIC program, where if the user is interested in asking a specific question of the program, the only possible way to obtain just that answer is to write a totally new program.

2.5 Aspects of Tasks Which Make Them Amenable to Expert System Development

A brief examination of the literature will show that some tasks are better suited to expert system development than others. For example, most types of diagnostic problems are amenable to expert system development. Many systems can also be found, which were designed to aid in planning and design. On the other hand, systems which attempt to predict a future event when all of the applicable input is not known (e.g. stock market) are extremely rare, implying that technology in this area is not developed enough for such applications. It follows then that an effective expert system can be developed only if the task which it must perform is amenable to expert system development.

The most commonly cited constraint on a domain considered for expert system development, is that it be narrow. If the domain is too large, it may be impossible to gather all the necessary information in a reasonable amount of time. But even if gathering the

knowledge is possible, the knowledge base may become prohibitively large, making execution unreasonably slow and modifications quite difficult (Harmon & King, Waterman). The application selected should also be well defined and understood (Harmon & King). The more well-defined and structured the situation, the simpler it will be to develop the system and ascertain that the conclusions drawn are correct.

The task selected for expert system development should not require common sense. Common sense is "sound practical judgement that is independent of specialized knowledge, training, or the like; normal native intelligence" (Stein 1982). By definition then, common sense requires very broad knowledge which would require too large a knowledge base.

The task selected for development must not require sensory data either. It must be possible to put all of the applicable knowledge into symbols. At this time, the smelling capabilities of computers are non-existent while their hearing, vision, and feeling capabilities are quite limited. Therefore trying to develop an expert system to perform a task which requires one or more of these capabilities would be impossible.

Another requirement for applying an expert system to a specific application is that a genuine expert exist (Harmon & King). If almost everyone can do the task well, then no true experts exist and developing a system would be wasted effort. And if no one can do it, then there is no source for obtaining the knowledge. Assuming experts exist, it must still be possible to extract the knowledge from them. Therefore the experts must be able to articulate their methods, or there must be a knowledge engineer available that can extract it from them.

2.5.1 Aspects of Tasks Which are Not Crucial but Enhance the Developmental Process

There are several factors which enhance, but are not critical to, the expert system developmental process. For example, available experts who are helpful, and positive employee attitudes make knowledge extraction and system acceptance both quicker and easier than would be possible otherwise. It is also an advantage if the task is decomposable, as the system can be broken into subsystems allowing for rapid prototyping. Rapid prototyping can help in obtaining expert and employee acceptance since it gives them a system early in the developmental process. It is also beneficial to the expert in learning about the system itself. Also, if the expert system does not have to perform the entire task to be useful, then the initial development and knowledge acquisition phase can concentrate on a subdomain, which again has the advantages of rapid prototyping.

A general rule for selecting a task suitable for expert system development is to select one which requires from three hours to three weeks of human expertise time to solve (Harmon and King). It is not efficient management to expend scarce resources developing an expert system for a task which is simple. On the other hand, a task which is too complex will result in an expert system which is never complete as the amount of knowledge required will become prohibitively large. Another factor to consider prior to undertaking an expert system development project is payoff. As with most projects, one should only be undertaken if the ultimate payoff or benefit, exceeds the cost. And finally, the task selected must have outcomes which can be evaluated in some manner. If the systems performance cannot be measured, the system will never be accepted.

2.6 *Properties of Problems Which are Particularly Suitable for Expert System Development*

Some problems exhibit properties which make them prime candidates for expert system development. This is not to say that a problem must possess these properties in order to be considered for development. If a problem possesses one or more of these properties however, then expert system techniques will be likely to yield much better results than traditional EDP approaches.

Problems which have many combinations of input are good candidates for expert system development. This is because expert systems do not necessarily evaluate all possible combinations of input, but use heuristics and opportunistic reasoning to find 'likely' combinations. An example of such a problem and a system designed to solve it is the computer configuration performed by XCON at DEC. When XCON was developed, there were 420 different components which could be used in the configuration of a VAX system (Harmon, Maus, and Morressey). If every possible combination of components needed to be considered in the configuration of each system, it would take almost an infinite amount of time. Therefore, any program which took such an approach would be virtually useless.

Problems which require sorting through large amounts of information, be it relevant or not, are also likely candidates. Expert systems have the capability to determine which information is relevant to a particular situation, and to ignore entire sections of knowledge which is irrelevant. An example of a problem of this type is a diagnostic problem.

All of a patient's (or a machine's) symptoms and characteristics may be available, but only a few of them are relevant in diagnosing a disease or malfunction.

Problems in which the conclusions may vary greatly are also good candidates for expert system development. In a problem of this type, an expert system will search for a good solution, rather than an optimal one. Design expert systems often utilize such search mechanisms. Again, XCON is an example as it 'designs' computer configurations. XCON can find a good configuration but it cannot be said that it is the best one possible. There are also some expert systems which perform more obvious design tasks. For example, RTEXPERT was developed to design roof trusses, and HIRISE was developed to perform the preliminary structural design of high-rise buildings (Adeli and Al-Rijleh).

Expert systems are also suited for problems where it is difficult or impossible to define precise, exhaustive relationships. This is because an expert system does not have to evaluate every possible combination of input to be effective as it uses opportunistic reasoning. Problems of this type abound in real life. Examples of this type of problem include job shop scheduling and sequencing. At this time, several expert systems have been developed to perform job shop scheduling (e.g., ISIS (Waterman) and OPIS 0 (Ow and Smith)); however, none have gone beyond the prototype stage.

There are also some properties of work situations where the development of an expert system can lead to a high payoff. If there is a high turnover of experts, or if human expertise is being lost, then capturing the expert's knowledge in an expert system before it becomes unavailable could prove to be invaluable. If expertise is available but scarce, an expert system could make that expertise readily available to all that require it.

2.7 *Categories of Expert System Applications*

Expert systems have been designed to solve many different types of problems, all of which may be categorized according to their major type of activity. Waterman categorizes these types of activities as follows: interpretation, prediction, diagnosis, design, planning, monitoring, debugging (prescribing), repair, instruction, and control (Waterman). Each of these categories will be discussed in the following sections. Every expert system will fall into at least one of these categories and some will fall into more. For example, it is common for a system which diagnoses to also prescribe.

2.7.1 Interpretation

A system which falls into the interpretation class is one which makes inferences about a situation based on some sensory data. Such systems generally deal with raw data which makes this process especially difficult since raw data is often incomplete, unreliable, or noisy. The type of data the system deals with differs among systems. For example, a vision system interprets visual images, a speech understanding system interprets audio signals, and a geological interpretation system interprets dipmeter logs (which yield measurements of rock conductivity in and around holes bored into the earth) (Waterman).

2.7.2 Prediction

Prediction expert systems infer the likely consequences of a given situation. This is often accomplished through the use of a model which can simulate possible scenarios for a given set of input. An example of this type of system is Comax. Comax was designed to help cotton growers determine when to fertilize, irrigate and harvest crops. Throughout the season, Comax aids the grower with the determination of when to irrigate, and when, and how much to fertilize, taking as its input weather conditions and current conditions of the crop. Maintaining all of this history, along with that from previous years, Comax feeds this information to its simulator which actually simulates the cotton boll growth. From the simulated scenario, Comax is able to *predict* when the best harvest date will be. It should be noted that the problem of the optimal harvest date is not as trivial as it appears, as often rains destroy cotton crops before they are harvested if they are left until the cotton bolls mature (Lemmon). Another example of a predictive system is HIT (Hostage-taking Information and Tactics). This system was developed to aid police in the tactics which are most successful in hostage taking situations. In such a situation, HIT queries the user as to what has transpired thus far, and then *predicts* what the hostage taker's next move will be. HIT then recommends to the users (i.e., the police) what their next move should be (Vedder and Mason). Thus, HIT not only *predicts* but also *prescribes.*

Another prediction area where expert system technology can be extremely useful is in the prediction of stock market behavior. Braun and Chandler developed a system which can predict intermediate fluctuations in the movement of the market for nonconservative investors. This system has been found to be a better predictor of these intermediate fluctuations than the analyst which it was designed to emulate. (Braun and Chandler)

In a comprehensive search of the literature one will encounter very few researchers devoted to the topic of stock market analysis. Due to the complexity of the area and the uncertainty of inputs, it may be that few are attempting to develop this type of application. Or, it may be that such applications are being developed but are being kept secret.

2.7.3 Diagnosis

Diagnostic expert systems are ones which make inferences about systems' malfunctions from situation descriptions, behavior characteristics, or knowledge about a component design (Waterman). One of the oldest and best known systems, MYCIN, falls into this category. MYCIN was developed to aid physicians in the diagnosis and treatment of meningitis and bacterimia infections. MYCIN takes as its input a patients symptoms and test results, and from that information is able to *diagnose* the disease. Another example of a diagnostic system is DELTA. DELTA's patients however, are diesel-electric locomotives. As cited earlier, DELTA was designed to help railroad maintenance personnel maintain General Electric's locomotives. It queries the user as to what the locomotives symptoms are, asks a few questions, and then is able to *diagnose* the problem. Still another example of a diagnostic system is the one built by Texas Instruments Data Systems Group for Campbell Soup, called Cooking Advisor. This system was designed to diagnose problems with the huge cookers in which their soup is sterilized.

A complete listing of diagnostic expert systems would be impossible to compile as this is the most common type of system, and many have been built. One reason for their popularity is that expert systems have been proven to do well at this type of task. Another factor which may contribute to this is that much of the original research on expert

systems was done in the medical area, and making diagnoses is a critical part of that field.

2.7.4 Design

Design expert systems are systems which can develop configurations of objects based upon a set of problem constraints. Examples include *designing* roof trusses (as in RTEXPERT), *designing* the layout for a computer configuration (as in XCON) and *designing* integrated circuits. Design systems often use some type of synthesis to construct partial designs and simulation to verify or test design ideas. Because design is so often paired with planning, many systems provide for strategies which develop and then refine plans to achieve the desired design. This is accomplished by creating plans for a configuration and then evaluating them in the context of the problem constraints. (Waterman)

2.7.5 Planning

Planning expert systems decide upon an entire course of action before acting. Examples include creating an air strike plan projected over several days for reducing a particular military capability of enemy forces, and creating a plan for applying a series of chemical reactions to groups of atoms in order to synthesize a complex organic compound (Waterman). Due to the complexity of the information being dealt with, planning systems must often back track and change their line of reasoning, which is often extremely costly in both time and resources. Therefore, designers of such systems often try to

break the task down into smaller more manageable subproblems, and order them in a manner which reduces the amount of backtracking. The most common application areas for planning systems are chemistry, electronics, and the military. (Waterman)

2.7.6 Monitoring

Monitoring expert systems are ones which continuously compare actual results or behavior with expected results, or with assumptions about possible deviant behaviors. Monitoring systems must take time into consideration, adding another dimension of complexity to the system. Thus they must be real-time systems. Real-time systems are systems which not only must respond to incoming data at a rate as fast or faster than it is arriving, but must also be able to deal with data whose validity may deteriorate or even become invalid over time (Laffey, et.al.). The most frequently found examples of monitoring expert systems are in the fields of aerospace and process control, although there are a few applications in other areas. An example of an aerospace application is expert systemSOC (Expert System for Satellite Orbit Control). Expert systemSOC assists in a satellite's station-keeping maneuvers by continuously processing satellite telemetry data. It then determines from this information, the appropriate commands to execute a successful maneuver. An example of a monitoring system from the financial industry is called Trader's Assistant which was developed by Arthur D. Little. This system provides assistance to security traders by monitoring such factors as the instantaneous supply and demand of the stock market and the significance of current rumors (Laffey, et.al.).

2.7.7 Debugging

Debugging (or prescriptive) expert systems are ones which find remedies for malfunctions. Many of the current debugging systems are actually both diagnostic and debugging systems combined. For example, MYCIN first completes a diagnosis of a patient and then *prescribes* treatment. DELTA determines what is wrong with a locomotive and then *prescribes* treatment. And, Cooking Advisor determines what is wrong with a cooker and then *prescribes* treatment. Many of todays diagnostic/prescriptive systems perform the prescriptive part of their task by utilizing fairly simple tables and charts. That is, once it has been determined what malfunction has occurred the prescription is found in some sort of a table. In some systems however, such a canned prescription is inadequate, so these systems must actually *design* the treatment.

2.7.8 Repair

Repair expert systems are ones which can actually execute some prescribed treatment. Such systems would also contain components to diagnose, debug (prescribe), and perhaps design. Examples of repair systems are extremely rare due to their complexity and possible need for physical capabilities (Waterman).

2.7.9 Instruction

Instruction expert systems are systems which diagnose, debug, and repair student behavior. This is accomplished by developing a model of the student's current knowledge,

determining how that knowledge should be applied to solving problems, and then diagnosing the student's deficiencies by analyzing the model and either devising or prescribing plans for correcting the deficiencies. Such systems then repair the student behavior by direct interaction with the student. There have been several systems developed for instructional purposes. Three examples are DEBUGGY, GUIDON and DELTA.

DEBUGGY develops a model of a student so that it can continually modify its instructions to maximize its effectiveness. It was designed for the domain of place value subtraction, and looks for patterns of errors, or 'bugs' that occur. Each 'bug' has been given a name and the system has developed a collection of all possible 'bugs' that a student might exhibit. This collection includes both primitive bugs and compound bugs. In the domain of subtraction alone there are about 20 possible primitive bugs and about 110 possible compound bugs. A session with this system begins by giving a student a set of problems to solve. Then, through a limited search technique, it forms a hypothesis about which bugs that particular student might have. It then develops a new set of problems for the student, which are designed to catch this particular student's bugs to test its hypothesis. If the student makes the expected errors, then DEBUGGY assumes that its hypothesis is correct. It then concentrates on correcting just one of the bugs and works forward to ascertain whether or not the student understands how to handle the additional manifestations of the bug when it occurs in various compound situations. DEBUGGY is currently being researched in the classroom and it is hoped that programs such as this can replace the old drill and practice exercises (Harmon & King).

GUIDON is basically MYCIN rearranged for tutorial purposes. In fact, it contains all of the knowledge and case histories of MYCIN. This system was designed to train physicians to conduct MYCIN-like consultations, but works almost the opposite of

MYCIN. When a student starts a session, GUIDON provides a case to study (that is, the symptoms of a particular patient) and asks for a diagnosis. When GUIDON first selects the patient, it solves the case just as MYCIN would, and stores a tree like structure of how the case was solved. The student is allowed to ask questions, but if GUIDON 'believes' that the student is heading down the wrong branch, it will query the student as to why they are asking the question. If the students' response does not satisfy the system, it will tell the student that the question is irrelevant and explain its reasoning. When the student finally makes a diagnosis, GUIDON tells the student whether or not MYCIN would have reached the same conclusion and also whether or not the student has sought all of the necessary information to reach such a conclusion. The major limitation of this system is that it assumes its students have a technical vocabulary. As of 1985, GUIDON was still in the research stage. (Harmon and King)

DELTA can also be considered an instructional expert system, although it is not as sophisticated in its instructional techniques as DEBUGGY or GUIDON. Recall that DELTA diagnoses problems on diesel electric locomotives and then prescribes treatment. If a maintenance person does not understand the prescription, DELTA is equipped with a videoplayer which the worker can watch, and in doing so learn how to make the necessary repair.

2.7.10 Control

The last type of expert system is a control system. These systems "adaptively govern overall system behavior" (Waterman). Such systems must include a monitoring component also and will often include one or more of the other types of components dis-

cussed above. Since monitoring systems by themselves are so complex (because of the time dimension involved), adding a control component to such a system makes an incredibly complicated system. Therefore, at this time, such systems are rare. One example of this type of system is called the Emergency Procedures Expert System (EPexpert system). This system works in the area of in-flight emergency procedures to detect emergencies, warn the pilot, and initiate corrective action (Laffey, et.al.).

Chapter 3

Financial Position Analysis

The purpose of this chapter is to review and evaluate techniques used in financial position analysis and to determine the amenability of financial position analysis to expert system development. The objectives of financial position analysis are discussed along with applicable techniques, models, and sources of information. The techniques used include both cross-sectional and time-series techniques. The sources of information discussed range from concrete financial statements to non-quantitative elements. The differences between the goals and objectives of profit oriented organizations and not-for-profit organizations are presented along with the resulting differences in accounting methods and their affects on financial position analysis. Emphasis is placed on using financial position analysis to analyze not-for-profit organizations such as academic institutions. This chapter concludes with an examination of the applicability of financial position analysis to expert system development for not-for-profit organizations.

3.1 Perspectives in Analyzing the Financial Position of an Organization

In any organization, there are numerous decision makers, many who have different objectives in using financial position analysis. Due to these differences in objectives, many different perspectives must be considered when presenting financial position analysis. The objectives of decision makers depend on their relationship to the organization, and generally fall into one of several groups. These groups include; credit grantors, equity investors, auditors, acquisition and merger analysts, employees, other interested groups, and management.

The major objective of both long-term and short-term creditors in evaluating an organization's financial position is to ascertain in advance that payment of both principal and interest will be received. But, the analyses required by these two types of creditors is different. Short-term creditors are concerned primarily with the current financial condition of an organization, the liquidity of their current assets, and the rate of current asset turnover. Thus, their analysis is limited to measures related to these factors. The analysis performed by long-term creditors is usually more detailed, as they must not only look at the current financial position, but must also look to the future earnings ability of the organization for repayment.

Equity investors' need for a comprehensive analysis of a firm's financial position is quite substantial. Their interest in the enterprise is affected by all aspects and phases of operations, profitability, financing, and capital structure (Bernstein). It follows then from

this broad range of interests that a mere analysis of the firm's financial statements is not adequate for the comprehensive evaluation that they require.

The objectives of acquisition and merger analysts are much the same as those of equity investors, although their requirements for an analysis are more stringent. Like equity investors, they are interested in the future earnings potential of a firm and thus the overall intrinsic value. Unlike equity investors, they are further interested in the economic value of a larger entity, one formed by the combination of the organization under evaluation and the one looking for a merger or acquisition candidate.

Auditors have two objectives in examining an organization. The first is to ascertain that all record keeping has been done in accordance with generally accepted accounting principles, and the second is to prepare a statement regarding their opinion of the organization as a going concern. Financial statement analysis can benefit the auditors in fulfilling both of their objectives, as it is a place to begin when looking for irregularities. It can also help the auditors in determining the strength of the organization as a whole.

The major objective of employees and perspective employees when evaluating the financial situation of an organization is in determining whether or not the organization will continue operations and how successful those operations will be. It can be an especially useful tool for perspective employees interested in several different enterprises, as greater opportunities for career advancement come from organizations with good outlooks for expansion. Unions can also make use of financial position analysis, as it can help them determine where their strengths may lie when bargaining with management.

There are also 'other' interested groups who can find financial statement analysis beneficial in assessing the value, or the value of some particular facet, of an organization. The Internal Revenue Service, for example, may use financial statement analysis to determine the reasonableness of certain figures when auditing a tax return. Other supervisory governmental agencies often use financial statements when setting rates. Non-governmental groups may also have interests. For example, customers may use it when assessing the staying power of their suppliers, particularly when they are very dependent on a certain supplier.

Management of an organization has the greatest need for the analysis of their financial position. Since all of the groups discussed above affect the organization's operations, management is interested in how all of them view the enterprise and how their opinions could affect the organization's operations and financial position. Management can also use financial statement analysis for the continual monitoring of the organization. Such an approach can track trends and ratios and notice any irregularities.

3.2 Sources of Information

The thorough analysis of an organization's financial position requires several sources of information. These include; financial statements, information which can be obtained internally, and information which can be obtained externally. Each of these sources, along with a few examples of each, are presented in the sections which follow.

3.2.1 Financial Statements

The most easily obtainable and widely used source of information used in financial position analysis is the organization's financial statements. This includes; the income statement, the balance sheet, the statement of changes in financial position, and any footnotes and comments which belong to one of these. Many of the analyses performed from this source are straight forward and easily understandable. A thorough discussion of financial statement analysis will be presented in a subsequent section.

A thorough analysis of a given organization requires more information than is available in the financial statements of that organization. Obtaining the financial statements of competitors is also important, as they are a good tool for comparison.

3.2.2 Internal Sources

Many factors other than those present in financial statements can affect an organization's financial position. Unfortunately, many of these factors are not quantifiable while many others cannot be determined with certainty. An example of this is human resources. People are generally one of the biggest assets an organization possesses, one which plays a major role in determining its future, yet trying to put a reasonable dollar value on a person is impossible. An organization's reputation with the surrounding environment also greatly affects public opinion, and hence the overall value of the organization. Management of an organization can often provide information of this type to analysts.

3.2.3 External Sources

Many factors external to an organization also affect its financial position. The political climate and economic climate are two examples of external forces. Incumbent politicians' priorities can greatly affect some organizations, while the economic climate affects all organizations. The extent to which organizations are effected by the economy differs among organizations and depends upon factors such as capital structure, operations, and competition.

An important external source of information for organizations which rely on either stocks or bonds to obtain financing, is the capital markets. For corporations which obtain capital through the issuance of stock, the market's valuation of that stock's worth is critical to the company in determining whether or not to float an issue. This also applies to bonds, both corporate and government. Therefore, the capital markets and the theories surrounding them are a very integral part of the evaluation of an organization's financial position. This source of information is also important to equity investors, as the ultimate value of their investment is determined in the market.

3.3 Basic Approaches to the Evaluation of an Organization's Financial Position

The evaluation of an organization's financial situation typically begins by an analysis of its financial statements. The following sections will discuss in detail financial state-

ment analysis, problems often encountered in obtaining all of the necessary information for financial statement analysis, and some models developed to predict financial distress.

3.3.1 Techniques used in Financial Statement Analysis

There are two types of techniques used in financial statement analysis: cross-sectional techniques, which evaluate financial statements at a particular point in time; and time-series techniques, which evaluate performance and trends over time. Within these two techniques there are several different types of analyses available. Many of these will be discussed in detail, however, this will not be an exhaustive census as financial statement analysis is not a technique in which only one correct approach exists. Analyses which work best for some organizations often differ from those that work best for others. The following sections present some of the more common cross-sectional and time-series techniques used by organizations.

3.3.1.1 Cross-Sectional Techniques

Two frequently used cross-sectional techniques are common-size statements and financial ratio analysis. With both of these techniques, the results of a specific organization are compared with some benchmark.

3.3.1.2 Common-Size Statements

Common-size statements were developed to aid in the comparison of organizations of different sizes. To develop common-size statements, all of the components of the balance sheet are expressed as a percentage of total assets and all of the components of the income statement are expressed as a percentage of total revenue. In comparing either different companies to each other or one company to industry averages, the analyst makes note of any large deviations. These deviations are then used as a starting place for further analysis.

3.3.1.3 Ratio Analysis

One of the most widely used and extensively discussed cross-sectional techniques is financial ratio analysis. Many different ratios have been developed over time, but only some of these will be discussed here as a complete listing would be extremely long, and the list of those described in subsequent sections is quite comprehensive. Ratios are typically divided into five categories; liquidity ratios, leverage/capital structure ratios, profitability ratios, turnover ratios, and common stock security ratios. A discussion of each category of ratio, along with a few examples, will be presented in the following sections.

Liquidity Ratios

Liquidity ratios are designed to measure an organization's ability to meet its short-term financial obligations when, and as they fall due. There are several of these ratios. One of the oldest is the current ratio.

$$\text{Current Ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

In this ratio, the main categories of current assets include; cash, short-term marketable securities, accounts receivable, inventories, and prepaid expenses. The main categories of current liabilities include; accounts payable, dividends, taxes due within one year, and short-term bank loans (Foster). The larger this ratio, the more liquid an organization is and hence, the easier it should be for them to meet their current obligations.

Although the current ratio is considered fairly important by analysts (Gibson) it is not without its critics. One criticism associated with this measure is that it can change rapidly. For example, if the ratio is anything other than one, the purchase of inventory on account will cause a decrease in the ratio. The result of this is that at any given point in time the current ratio may not be representative of its average. Also, such a situation offers management an easy method by which to windowdress financial statements. Another problem associated with the current ratio can arise during times of inflation. When inflation is high, tax savings can be obtained by using the LIFO inventory valuation method, yet LIFO results in a lower asset base and hence, a lower current ratio. Another frequent criticism of the current ratio is that it does not consider the timing necessary to liquidate assets and liabilities. This can be a problem since most current liabilities require payment within a relatively short period of time, often 30 days or less, while many current assets take considerably more time to liquidate (Fleming).

Concerns regarding the time necessary to liquidate inventories and prepaid expenses, and the effects caused by the inventory valuation method chosen, led to the development of the quick ratio.

$$\text{Quick Ratio} = \frac{\text{Cash + Short-term marketable securities + Accounts receivable}}{\text{Current liabilities}}$$

OR

$$\text{Quick Ratio} = \frac{\text{Current assets - Prepaid items - Inventory}}{\text{Current liabilities}}$$

The assets in the numerators of these equations are referred to as quick assets since they can be quickly liquidated.

Although some analysts prefer the quick ratio to the current ratio, it still accounts for neither the timing nor the magnitude of future cash inflows and outflows. These criticisms led to proposals for cash-based and fund-flow-based liquidity ratios. An example of one of these is the defensive interval measure. This ratio was designed to measure the number of days the defensive assets can service the daily operating expenditures of an organization.

$$\text{Defensive Interval Measure} = \frac{\text{Total defensive assets}}{\text{Projected daily operating expenses}}$$

Defensive assets include; cash, short-term marketable securities, and accounts receivable. Projected daily operating expenses include all projected operating costs requiring the use of defensive assets (Davidson, et. al.).

Leverage/Capital Structure Ratios

Leverage/Capital structure ratios are designed to measure both the extent to which non-equity capital is used in a firm and the long-run ability of a firm to meet payments to its non-equity suppliers of capital. One of the more commonly stated ratios is the long-term debt to equity ratio.

$$\text{Long-Term Debt to Equity Ratio} = \frac{\text{Long-term debt}}{\text{Shareholders'equity}}$$

This ratio gives an indication of a firm's long-run ability to meet payments to non-equity suppliers of capital. Unfortunately, this is a difficult ratio to use when comparing firms, as there is not general agreement in either the accounting literature or in published financial reports on the precise distinction between liabilities and equity. Thus, prior to calculating the above ratio, an analyst needs to determine how items such as deferred tax, preferred stock, etc. will be treated (Foster).

Equity investors are often concerned with the extent to which a company is being financed by external parties. The long-term debt to equity ratio does not measure this as it only includes long-term debt. Therefore, another ratio has been developed to address their concerns.

$$\text{Total Debt to Equity Ratio} = \frac{\text{Current liabilities} + \text{Long-term debt}}{\text{Shareholders' equity}}$$

Due to the different possible valuation methods of stocks and bonds, and the different definitions of long-term debt, valuation questions have arisin with both of the above Leverage/Capital structure ratios. A criticism which has also been cited concerning

these ratios is that they do not account for the funds-flow necessary to service long-term debts. These criticisms have led to another type of Leverage/Capital structure ratio.

$$\text{Times Interest Earned Ratio} = \frac{\text{Operating Income}}{\text{Annual interest payments}}$$

This ratio, which measures the number of times an organization's operating income can cover its interest on debt, was designed to evaluate a firm's ability to meet its interest payments (Foster).

Profitability Ratios

Profitability ratios are used to measure the relative profitability of two or more organizations. Profitability refers to a firm's ability to generate revenues in excess of its expenses. One such measure is the return on total assets.

$$\text{Return on Total Assets} = \frac{\text{Net income after tax} + \text{Interest expenses} - \text{Tax benefit of interest expense}}{\text{Total assets}}$$

This ratio was designed to measure how efficiently a firm is utilizing its total assets.

Another profitability ratio, one which was developed to measure the percentage of each sales dollar remaining to provide for other expenses and to contribute to net profit after the cost of the goods sold is covered, is the gross profit ratio.

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}}$$

Unfortunately, total gross profit is greatly affected by inventory rate. Therefore, it should be used only as a guideline to indicate whether the company in question is in line with others in the same industry (Hopson, et. al.).

A more conservative measure of profitability than the gross profit ratio, is the net profit ratio.

$$\text{Net Profit Ratio} = \frac{\text{Net Income before Taxes}}{\text{Net Sales}}$$

This ratio is important in comparing prior years' profitabilities to industry averages in order to determine a company's financial position (Hopson, et.al.).

Common stockholders are often concerned with the efficiency with which their equity is being used by the firm. A common measure of this is return on equity.

$$\text{Return on Equity} = \frac{\text{Net available to common}}{\text{Common shareholders' equity}}$$

Another profitability ratio, one which was designed to measure how much of each revenue dollar is consumed before taxes, is the expenses to revenue ratio.

$$\text{Expenses to Revenue} = \frac{\text{Expenses (before tax)}}{\text{Revenues}}$$

A ratio of greater than one indicates that a firm is not generating enough revenue to meet its before tax expenses.

Turnover Ratios

Turnover ratios are designed to measure the efficiency with which an organization is employing its assets. One of the more common ones is the total asset turnover ratio.

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Average total assets}}$$

This ratio measures the number of times annual sales cover total assets. When examining this ratio, it is important to also examine the earnings/sales ratio, as firms may trade off an increase in asset turnover ratio for a decrease in the earnings/sales ratio (Foster). This can be achieved by lowering prices to increase sales to the point where earnings are compromised.

Another turnover ratio of interest is the accounts receivable turnover ratio.

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales}}{\text{Average (net) accounts receivable}}$$

This ratio gives an indication of how many times a year receivables are turned over. By dividing 365 by this ratio, an analyst can also obtain an estimate of the average collection period of credit sales.

Another turnover ratio of interest is one which measures how fast a company turns over its inventory.

$$\text{Inventory Turnover} = \frac{\text{Sales}}{\text{Average inventory}}$$

Common Stock Security Ratios

Several ratios have been developed for the benefit of equity investors. One of the most important of these ratios is earnings per share (EPS).

$$\text{EPS} = \frac{\text{Net income available for common}}{\text{Number of shares outstanding}}$$

Differences in EPS across firms can be difficult to interpret as policy choices regarding stock varies among firms. For example, two firms with the same assets, same earnings, etc. could have different EPS figures because of a choice made years ago concerning the number of shares to issue, or because of differences in in dividend policies (Foster).

Other frequently computed ratios for equity investors are book value per share and dividends per share.

$$\text{Book Value per share} = \frac{\text{Shareholders' equity}}{\text{Number of shares outstanding}}$$

$$\text{Dividends per share} = \frac{\text{Dividends paid on common}}{\text{Number of shares outstanding}}$$

The above three ratios are examples of ratios published by investment services such as Value Line, Moody's, and Standard & Poor's (Foster).

3.3.1.4 Commonly Used Ratios

Earlier it was stated that the ratios presented in this research do not represent an exhaustive listing, rather they include some of the more common ones. Of interest to re-

searchers and practitioners alike is the determination of ratios which analysts actually use. An examination of the objectives of the different groups of decision makers gives an indication of which decision makers use which categories of ratios, but such an examination does not suggest the specific ratios which a given decision maker would use. In order to determine which ratios are most commonly used in practice, several researchers have conducted surveys of analysts while others have performed studies based on empirical evidence.

Hopson, Ormsby and Hemingway compiled a list of ratios which they feel are important when gathering information for a loan proposal. Their research is concerned with determining what information is pertinent to a bank when determining whether or not the bank should extend credit to a particular client. They do not explicitly state whether such loan proposals are for short-term or long-term credit, however, organizations tend to use banks much more often for short-term credit. Interestingly, the list of ratios Hopson et. al. feel are appropriate are not just measures of liquidity, as one would expect of short-term investors, but rather liquidity, turnover, leverage and profitability ratios. In particular, the ratios they suggest include; current ratio, quick ratio, accounts receivable turnover ratio, debt-to-equity ratio, times interest earned, gross profit ratio, net profit ratio, return on assets, and return on equity (Hopson, Ormsby and Hemingway).

Charles Gibson conducted a survey of certified financial analysts (CFA's) regarding their views on 60 financial ratios. They were each asked to rate each of the ratios according to how they viewed its relative importance. The CFA's chosen were members of the Financial Analysts Federation and had titles such as partner, vice president-investments, vice president-research, and president and investment analyst. Gibson found that these

CFA's gave the highest significance ratings to profitability ratios. They considered return on equity after tax to be by far the most significant ratio and four of the next five most significant ratios were also profitability ratios. These include; earnings per share, net profit margin after tax, return on equity before tax, and net profit margin before tax. The measure that received the second highest rating overall was the price-earnings (P/E) ratio, which these analysts put in the category of 'other' ratios (Gibson). The P/E ratio is a measure of what price investors stand willing to pay for a specified earnings level, for a specific organization.

In the debt-ratio category, Gibson found that the two highest rated ratios were fixed charge coverage and times interest earned, rated seventh and ninth respectively. The two highest rated liquidity ratios were the quick ratio and the current ratio, rated eighth and twentieth respectively. From these results one can infer that CFA's are more concerned with long-term profitability than with the ability to pay current debts (Gibson). It should be noted that Gibson's categorization of ratios is slightly different from the one discussed earlier. In particular, he does not have a specific category for turnover ratios, therefore there are no results concerning this category. An examination of his results though show that these ratios were placed under the liquidity ratio category and were all given ranks of average importance (Gibson).

The five categories of financial ratios discussed earlier are the categories most frequently cited in the literature. However, such a classification scheme has little in explicit theoretical or empirical underpinnings. There is little in economic theory to suggest that such categories are either a mutually exclusive or a collectively exhaustive set of financial characteristics of an organization. Therefore, Pinches, Mingo, and Caruthers published a study in 1973 that contains some empirical evidence regarding this topic.

Pinches, Mingo and Caruthers cited two major criticisms of the traditional classification scheme. These being that it 1) is "ad hoc," and 2) fails to "take account of the empirical relationships existing between and among financial ratios." Therefore, they performed a study in order to develop empirically-based classifications of financial ratios (Pinches et. al.). The sample they used was 221 Compustat industrial firms over the 1951-1969 period. Beginning with 40 financial ratios, they used factor analysis to group these into seven factors or independent categories. Then looking at the financial ratios within each category, they attached the following seven labels to the factors:

1. Return on investment,
2. Financial leverage,
3. Capital intensiveness,
4. Inventory intensiveness,
5. Receivables intensiveness,
6. Short-term liquidity, and
7. Cash position.

A couple of interesting differences between Pinches et.al.'s categories and the traditional ones are worthy of note. First, there are three different categories of intensiveness, or activity, while under the traditional approach all measures of activity are grouped under the turnover ratios. And second, cash position and liquidity fall under separate categories while they are grouped into one under the traditional approach (Foster).

The greatest motivation for grouping financial ratios into categories such as those established by Pinches et.al., is to aid in the understanding and prediction of financial patterns in an organization. Unfortunately, due to the diversity of contexts in which financial statements are used, there is no one classification which will always be appropriate. Thus, financial analysts are left with using classifications developed by others

which may not be the best for their purposes, or with developing categories for themselves.

3.3.2 Time-Series Techniques

The evaluation of an organization's financial position over time can be useful to management and analysts alike. With this information, they can make predictions about future measures of interest such as earnings, sales, ratios, etc. An analysis of this type requires time-series analysis and there are three types of analyses available using such techniques. These are trend statements, common-size statements, and financial ratio analysis (Foster). An examination of each will be presented in the following sections.

3.3.2.1 Trend Statements

Trend statements are the financial statements of several years, expressed as percentages of one of those years. A base year is chosen, typically the first year in the series, and then for each item in subsequent years, the dollar value of the item is divided through by the dollar value of the corresponding item in the base year, resulting in a value which is in percentage terms of the base year. From these statements, analysts look for trends, both within the organization, and between the organization and the industry. From these trends, analysts watch for signs of opportunity as well as for signs of distress. Trend statements will not tell an analyst the underlying factors responsible for a trend, but they will aid an analyst in determining where further analysis is warranted.

3.3.2.2 Common Size Statements

The common-size statement technique discussed earlier can also be used in time-series analysis. By placing several successive common-size statements together, changes in the composition of an organization's assets, liabilities, and capital structure can be observed. This technique will not establish the underlying causes of changes in composition, but it will make such changes clearly observable.

3.3.2.3 Financial Ratios

Time-series analysis can also be performed on financial ratios. Most of the literature devoted to this topic focuses on ratios associated with earnings. One of the more widely researched of the earnings ratios is the earnings per share ratio.

When using time-series analysis to predict annual earnings, several researchers have found that using only annual historical earnings figures results in forecasts which are no more accurate than those of an essentially random process (Foster, Albrecht et. al., and Watts and Leftwich). But, models developed which use both annual earnings and external information, have been found to yield significant results (Chant). Therefore, many researchers have turned away from the idea of models based only on historical earnings to either models based solely on external information, or models based on a combination of the two.

Brown and Rozeff, Collins and Hopwood, and Elton, Gruber and Gultekin have all concluded from their research that analysts' predictions are more accurate than time-series models based on historical information. All of this research has been concerned

with finding a best forecasting method. Conroy and Harris expanded upon this research by combining forecasting methods. They had three objectives in performing their study. First, to further test the hypothesis tested by several before, that analysts' forecasts are better predictors than time-series models. They 'further' tested the hypothesis by using more current data, that is, data from the early 1980's. Second, to construct a consensus of both analysts' and time-series forecasts. And third, to explore the effects of various factors on the relative accuracy of analysts and on the benefits that may be derived from forming consensus forecasts including; number of analysts, dispersion of their forecasts, and horizon of forecast (Conroy and Harris).

Conroy and Harris tested six different methods of forecasting earnings per share, which include; the mean of analysts' forecasts, a random walk model, the best of five different time-series models, and three different models which are combinations of analysts' forecasts and either the random walk model or the best time-series model. They found that over short horizons, the mean of analysts' forecasts outperformed each of the other methods, however, as the forecast horizon increased, there was a clear deterioration of analysts' ability to predict earnings per share. Concerning the number of analysts used in calculating the mean analysts' forecast, they found that forecast errors tend to decrease as the number of analysts increases. This intuitively seems reasonable, although not for the reason cited by Conroy and Harris. They state that this occurs because "more analysts follow companies whose underlying earnings streams are less variable and hence amenable to more accurate forecasting even with a random walk model" (Conroy and Harris,p. 733). Their overall findings then were that the combinations of analysts' and time-series forecasts provide forecasting benefits over longer time periods, although this effect is lessened as the number of analysts that follow a specific stock increases. In terms of weighting the factors incorporated in a model, they found that a

simple average of analysts' and random walk forecasts typically outperforms combinations using weights based on past forecasts (Conroy and Harris).

The results of all of this research are fairly consistent, suggesting that accounting data alone is helpful but analysts' predictions are better, and a combination of the two will generally yield more accurate results than either one independently. Therefore, if one is interested in predicting a given organization's earnings, one should use a technique that uses all available information. This includes; accounting data, analysts' forecasts, and market data.

3.3.3 Problems with Obtaining and Applying this Information

Obtaining all of the information necessary to perform a thorough analysis of an organization's financial position can be difficult, and at times even impossible. Financial statements can generally be obtained fairly easily, but not always. Some factors which affect an organization's financial position are not quantifiable, others are surrounded by uncertainty, and still others are totally unknown. Therefore, collecting *all* of the applicable information can be a very arduous task.

The following sections present a discussion of the limitations of accounting data, the problems inherent in determining industry norms, how different accounting methods may affect the results of financial analysis, and information which is applicable to financial analysis.

3.3.3.1 Limitations of Accounting Data

Although financial statement analysis appears to be a fairly objective operation, there are limitations inherent in any accounting data that an analyst might use. In order to represent an organization's operations in the form of financial statements, highly complex economic events and activities must be simplified, summarized and are often subjected to personal judgements and estimates. This simplification process is necessary in order to categorize the great number of economic events into a workable number of classes, but this simplification can only occur at the expense of retaining detail. The result of this simplification is that financial statements may not be as clear and descriptive as an analyst might desire (Bernstein).

The frequent need for reporting via financial statements rarely, if ever, coincides with the total life span of an organization. Therefore, many of the numbers reported are merely estimates, some of which are more accurate than others. For example, firms must frequently estimate the timing of receivables, along with the expected loss inherent in receivables (Bernstein).

The accounting profession's generally accepted method of recording the value of an asset, is to record it at actual cost. Although this is the most objective technique available, it is not without limitations. In the assessment of the value of an organization, a creditor or analyst is not interested in the cost less depreciation value of assets, but rather in their current market prices.

Money has not maintained its quality as a standard of value over time due to the effects of inflation (deflation). Thus, summing the money cost of goods purchased in 1975 with

those purchased in 1985 may result in serious distortions. Since financial statements are expressed in monetary terms, they are very much subject to this type of distortion.

3.3.3.2 Industry Norms

A problem often encountered when comparing organizational averages to industry averages, is the determination of that industry. If some measure of a given organization is compared with the corresponding industry average, a difference (or similarity) could be very misleading if the industry average is not appropriate. Barron lists several causes of poorly specified averages:

1. "Groupings based on conventional product-based industries may not be appropriate,
2. Even when conventional industries are an appropriate basis, they are extremely difficult to define in practice since so many companies span several industries,
3. The existence of subsidiary and associate relationships makes it difficult to completely avoid double counting certain companies,
4. Good quality computer readable data are only available for large companies. It is hard or even impossible to acquire similar data for smaller companies,
5. During any sample period some new companies will be born while others will die. Since these companies may be somewhat atypical, their inclusion or exclusion is likely to be important and may lead to systematic bias, and
6. Sample companies are unlikely to share one year end. Unless care is taken, actual year ends may span as much as twelve months" (Baron, pp. 275-276).

Even after a determination of the industry has been made, there is still another issue to be resolved, which is the determination of the industry norm. When comparing individual ratios to those of the industry, some analysts prefer to use the industry mean while others prefer the industry median. Although there is no theoretical underpinning for their choice, both Robert Morris Associated's *Annual Statement Studies* and Dun &

Bradstreet's *Key Business Ratios* report median values (Foster). For those who prefer to use industry averages, two other issues must be addressed. The first is to determine whether the arithmetic mean or a value-weighted mean should be used. The second is to determine how outliers and nonsense values should be treated.

3.3.3.3 Accounting Methods

The different accounting techniques used by different firms may affect the results of compiled industry norms. For example, some firms value their inventory using LIFO while others use FIFO. All firms do not agree on what constitutes equity capital. Therefore, when compiling industry averages it must be determined first whether or not these differences in accounting methods could bias the industry averages in any way, and if it is determined that they can, a decision must be made regarding how to deal with this situation.

Research Findings Regarding Differences in Accounting Methods

Much research has been done regarding how different accounting methods affect financial statements. Two of the more extensively researched areas have been LIFO versus FIFO inventory valuation methods and historical cost versus general price level adjusted accounting. Since these are two of the more extensively studied areas discussed in the literature, these will be the ones discussed in the sections which follow.

LIFO versus FIFO

Derstine and Huefner examined the effects of LIFO versus FIFO inventory valuation methods on the dividend payout ratio and the average leverage ratio, over the 1951 to 1960 period. From their analysis, they obtained a correlation coefficient of .971 for the dividend payout ratio and one of .997 for the leverage ratio and concluded from these that the difference in inventory valuation method used has little effect on either ratio (Derstine and Huefner).

Also interested in the effect of LIFO versus FIFO, Holdren examined their different effects on the current ratio, the inventory turnover ratio and the net profit to sales ratio, over the 1950 to 1958 period. The correlation coefficients for these ratios, like those of Derstine and Huefner, were quite high, ranging from .822 for the current ratio in 1953 to 1.0 for the current ratio in 1951 (Foster). Thus, the results of these two studies were consistent, leading one to the conclusion that the inventory valuation method an organization chooses has little effect on financial ratios.

Historical Cost versus General Price Level

Because historical value is rarely a good estimator of the true value of assets, it is often questioned whether or not performing financial statement analysis on balance sheets which use historical costs is adequate. It has often been hypothesized that using a general price level adjusted (GPLA) valuation of assets would result in a better representation of an organization's true financial position. Rosenfield performed a study to test the effects the pricing valuation method used would have on net income, using the data collected by the AICPA after issuing Accounting Research Study No. 6 (*Reporting the Financial Effects of Price-Level Changes*). He concluded that ignoring inflation in historical-dollar statements resulted in understating net income for some companies and overstating net income for other companies (Rosenfield). In this study, Rosenfield did

not examine the correlation between any relative measures of income. Since most measures used in financial statement analysis are relative ones, Foster took Rosenfield's study one step further to examine the relationship between historical cost rate of return and GPLA rate of return. He found that the Pearson correlation coefficient between these two was .98, implying that relative measures are less sensitive to different asset valuation methods than absolute ones (Foster).

Another study examining historical cost versus GPLA numbers was conducted by Peterson. He was interested in determining whether or not a difference existed in the rankings of companies based on GPLA numbers and historical cost numbers. His research tested this difference for both the return on equity ratio and the net income ratio. His results showed Spearman rank correlation coefficients of .974 for the return on equity ratio and .989 for the net income ratio (Peterson).

A much more recent study, one conducted by Lovata and Philipich, was also performed to determine whether or not using replacement cost to value assets, rather than historical cost, might have an effect on the rankings of firms. They divided the firms used in their study into industries and then examined the differences in rankings only within each industry. Lovata and Philipich compared the rankings using both historical cost and replacement cost of five measures; operating income, net assets, return on assets, the current ratio, and the debt to equity ratio. Their findings were that for all of the ratios combined, about 64% of the industry correlations were not less than .89, while only 13% were less than .80. They conclude from these results that using replacement cost data in order to better represent the financial position of an organization, relative to that of others in its industry, is highly questionable, given the costliness of obtaining such data (Lovata and Philipich).

The results of all of these studies appear to be fairly consistent, leading one to conclude that differences in accounting methods have little effect on financial analyses. Thus, for financial statement analysis purposes, little concern needs to be given regarding these differences in accounting policies.

3.3.3.4 Applicable Information

A problem inherent in developing a model to perform any type of financial analysis is in determining what factors apply and how they can be incorporated into the model. Earlier it was established that many non-quantitative factors have an effect on an organization's financial position. Some examples are employee relations, customer relations, and relations with those whose environment is affected by the operations and actions of the organization. Due to the difficulty encountered in trying to validly incorporate these factors into models, most models found throughout the literature involving any type of financial analysis are based on empirical grounds, rather than on theoretical grounds.

3.3.4 Financial Distress Prediction

The early prediction of financial distress can be very beneficial to many people. The actual detection of such distress is not a simple task as there is no predetermined criteria for establishing financial distress. The following sections discuss the parties which have an interest in predicting such distress, some models which have been developed to predict financial distress, and the limitations inherent in these models.

3.3.4.1 Parties Interested in Financial Distress Prediction

Many decision makers who have an interest in the maintenance of a given organization can benefit from the prediction of financial distress. One of the main groups of benefactors of this information are the issuers of public policy and regulatory authorities. In some industries, regulatory agencies monitor the financial solvency and stability of companies on a regular basis. For example, insurance commissioners monitor the solvency of insurance companies to protect policy holders, while the Interstate Commerce Commission monitors the solvency of railroads to protect the public in general (Foster).

Financial distress prediction models can also be useful in legal decisions, for example, in antitrust cases. One defense against violating an antitrust law is the failing company doctrine. This doctrine holds that "the likely harm to communities, employees, creditors, and owners associated with a failing business that might be forced into liquidation proceedings outweighs harm to competition caused by allowing a failing and presumably weak but still intact firm to merge with a competitor" (Blum). Thus, the courts may allow a merger between two companies that otherwise would not have been legal.

Banks can find financial distress models helpful in both evaluating loan proposals and in monitoring outstanding loans. Auditors can also use such models to address the assumption that the business they are auditing will remain a going concern. The greatest benefactors of financial distress models are the management and investors of a firm, as early prediction of distress can lead them into quick action (Foster).

3.3.4.2 Problems in Predicting Financial Distress

A problem encountered when trying to determine financial distress in an organization is with the definition of the term itself. It is extremely rare to find an organization which is a healthy viable economic enterprise one day and bankrupt the next. Financial degradation is something which occurs over time. There is generally a continuum of events which leads up to liquidations, e.g., declining share of major product markets, deferment of payments to short-term creditors, omission of a preferred dividend, and finally the filing of a chapter X or XI bankruptcy. Research on developing financial distress models seeks to determine points on this continuum that can serve as criteria for distinguishing distressed from non-distressed organizations (Foster).

Detecting financial distress in not-for-profit organizations is much more difficult than in profit oriented ones, since fulfillment of their goals cannot be measured in monetary terms. Suppose for example that a private university is having trouble meeting its operating expenses. They have several options available to them. For example, they could close down the school and sell the physical facilities, they could merge with another university, they could reduce research grants and library acquisitions or they could increase existing faculty loads. Any of these options would result in a change in the goals and missions of the university, but such a change in goals is not in and of itself a predictor of financial distress. For an outsider trying to predict financial distress only the first alternative (closing the school) would be evidence of distress.

3.3.4.3 Financial Distress Prediction Models

Several univariate models and several multivariate models have been developed to aid in the determination of financial distress. The univariate approach involves the prediction of distress from a single variable. This approach involves 2 assumptions:

1. "the distribution of the variable for distressed firms differs systematically from the distribution of the variable for the non-distressed firms, and
2. these systematic differences can be capitalized on for prediction purposes" (Foster).

The validity of the first assumption can be determined by using a statistical test for the difference between two means. If the results show that a statistically significant difference exists, then step two involves determining how the differences in mean values can be used for prediction purposes (assumption 2). There are several univariate approaches to prediction. One is that developed by Beaver, called the Dichotomous Classification Test, which involves ranking organizations in a sample by the ratio involved and visually choosing a cut-off rate between distressed and non-distressed organizations. The cut-off rate chosen is the one which misclassifies the fewest number of organizations. The study conducted by Beaver consisted of a sample of 79 failed firms and 79 non-failed firms, which were paired on the basis of industry and asset size. Using the Dichotomous Classification Test, he compared the means of 30 financial ratios for each of the failed and non-failed firms for the 5 years prior to failure. In general he found that there was a marked difference in the behavior of the mean financial ratios of the two groups. The two ratios that exhibited the largest differences were the cash flow to total debt ratio and the net income to total asset ratio. These both showed a misclassification rate of only 13% one year prior to failure (Beaver).

A major problem associated with using univariate models for the prediction of financial distress is that if more than one model is used, the results may be inconsistent. For example, the cash flow to total debt may predict distress for a given firm while the current ratio makes the firm look extremely stable. This problem has caused several researchers to develop multivariate models. In building a multivariate model there are several issues which must be addressed:

1. "what form should the model take (e.g., linear or multiplicative)?
2. what variables should be included?, and
3. what weights should be applied to the variables?" (Foster).

Unfortunately, there is little in the theoretical literature to aid a model builder in addressing the above issues. Therefore, most research in this direction has been of an empirical nature.

One example of a multivariate model built for the prediction of bankruptcy is that developed by Altman. He used a sample of 66 firms which consisted of 33 non-bankrupt firms paired on the basis of industry and asset size with 33 bankrupt firms. For each firm, 22 ratios were found and then the following five ratios were finally used as the variables in his model; working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, market value of equity to book value of total debt, and sales to total assets. The discriminant function chosen after numerous computer runs showed fairly good results. From his sample, the misclassification rate was 5%, the type I error rate 6%, and the type II error rate 3%. He then ran 2 validation tests on this model. The first was a sample of 25 bankrupt firms, only one of which was misclassified by the model. The second was a sample of 66 non-bankrupt firms which had "suffered temporary profitability difficulties" but had not gone bankrupt. His function correctly predicted 52 out of these 66 to be non-bankrupt (Altman).

3.3.4.4 Limitations of Models

Several limitations have been cited regarding the use of financial distress models. As noted earlier, the models to date have all been based on empirical grounds. Since no theory is available for determining the variable(s) or weights in a model, the practice of generalizing to a population from a sample is questionable. Another commonly cited criticism of much of the current research is the sampling techniques used. Often researchers require that organizations in their sample have 3 or 5 years of financial data available. Unfortunately, the probability of organizations failing is highest in their earliest years. Thus, many of the likely candidates for such samples are passed over (Foster). An assumption inherent in using any model validated using historical data to predict the future, is that the future will replicate the past. This assumption is impossible to validate and even difficult to justify in a changing environment.

3.3.5 Differences Between Profit Oriented Organizations and Not-for-Profit Organizations

The goals and objectives of profit organizations are quite different from those of not-for-profit organizations. As the name implies, one of the major goals of profit oriented organizations is to earn a profit. This is very often not the sole objective, but without profits an organization cannot survive and prosper. Not-for-profit organizations, on the other hand, do not strive to earn a profit. Rather, their major objective is something other than to earn a profit. Quite often their objective is to provide a service for the benefit of either society as a whole, or for a particular group. This difference in goals and objectives may result in differences not only in the operations of the organization,

but also in the accounting methods used and their degree of reliance on budgeting. The following section presents some common differences in accounting methods and is followed by a discussion of the differences in budgeting.

3.3.5.1 Accounting Methods

The main purpose in keeping accounting records for any organization is to account for funds which have been received and disbursed. Since profit oriented organizations exist primarily to earn a profit, their financial statements have been developed to make measures of profitability easy to read. In contrast, not-for-profit organizations' financial statements have been developed so that revenues and expenses can be justified, with no interest in measuring profitability.

There are six areas where accounting methods followed by not-for-profit organizations often differ from those of profit oriented organizations. These include; cash versus accrual accounting, fund accounting, treatment of fixed assets, transfers and appropriations, contributions, pledges and noncash contributions (Gross and Jablonsky), and the determination of the value of a new project. Each of these areas will be presented in the following sections.

Cash versus Accrual Accounting

Most profit oriented organizations follow accrual methods of accounting. In an accrual system, one records not only transactions resulting from the receipts and disbursements of cash, but also those resulting in obligations, such as money the organization owes others or others owe them. Accrual based systems also record fixed assets at their ori-

ginal value and expense them over their useful lives. Many not-for-profit organizations use the cash basis method of accounting. Under this method, only transactions in which cash is involved are recorded. Generally, the accrual method of accounting gives a more accurate representation of an organization's financial position. The reason that many not-for-profits still use cash basis accounting is that it is simpler to maintain and because often they owe very little to others and vice versa. If this is the case, then the difference between a cash system and an accrual system is immaterial. Also, the accounting profession does not require that not-for-profits adopt accrual accounting methods. Even so, many not-for-profits, particularly larger ones with sizable amounts of receivables and fixed assets, have switched over to accrual accounting methods as it gives them a better representation of their financial position.

Fund Accounting

Not-for-profit organizations very often use fund accounting, which is never used in profit oriented organizations. Fund accounting is a system in which assets restricted by their donors are segregated into categories, or funds, according to their restrictions. The organization then presents a different set of financial statements for each fund. Although this concept is easy enough to understand, it results in financial statements which are quite voluminous and often difficult to comprehend. This sometimes causes problems in terms of both meaningful disclosure and comparability with the financial statements of commercial enterprises (Gross and Jablonsky).

Treatment of Fixed Assets

The treatment of fixed assets often causes the most confusion for readers of not-for-profit organizations' financial statements. In profit oriented organizations, fixed assets

are almost always recorded as assets on the balance sheet and depreciated over their expected lives. In not-for-profit organizations, there is no standard regarding fixed assets. Some treat them as profit oriented enterprises do. Others write them off as an expense item when they are purchased. And still others write them off as fixed asset purchases and then turn around and capitalize them on the balance sheet. Some of these depreciate them while others do not (Gross and Jablonsky).

Transfers and Appropriations

Not-for-profit organizations frequently make transfers between 'funds.' If these transfers are not carefully disclosed, they can be a source of confusion for readers of the financial statements. Some organizations also make appropriations for specific future projects, that is, they set aside money for a specific purpose. These also tend to cause confusion for readers. There are no counterparts for either transfers or appropriations in profit oriented organizations.

Contributions, Pledges, and Noncash Contributions

Profit oriented organizations do not recognize 'pledges.' If someone is indebted to them, it is a legally binding agreement and can be recorded as such on the balance sheet. In not-for-profit organizations, pledges may or may not be legally binding, depending upon the circumstance. Thus, whether or not to record pledges which are not legally binding is often an issue of concern to them. Another issue facing not-for-profit organizations, which is not applicable to profit oriented enterprises is the determination of where and how to report both restricted and unrestricted noncash contributions in financial statements (Gross and Jalonsky).

Capital Budgeting versus Cost Benefit Analysis

When determining whether or not a new project should be undertaken, profit oriented organizations generally use some type of capital budgeting technique. Such techniques compare expected inflows of cash with expected outflows, and accounting for their timing, determine whether or not the project is economically beneficial to the organization. Unfortunately, such quantifiable techniques cannot generally be used by not-for-profit organizations. The reason is that the benefit derived from their projects is not an inflow of cash, but rather the fulfillment of some socially desirable need. Many not-for-profit organizations use cost benefit analysis to help them evaluate the worth of their projects. Cost benefit analysis compares the costs of a given program with some non-monetary measure of the benefits that are expected as the results of incurring the cost. Generally, the costs can be calculated in monetary terms. The benefits, which usually cannot be calculated in monetary terms, are carefully described in words. Such analyses cannot give management a simple go or no go decision, but it is a structured approach to evaluating projects that is be especially beneficial in ranking projects.

3.3.5.2 Budgeting

Budgeting is a cost control technique which is almost always used in not-for-profit organizations. It is frequently also used in profit oriented enterprises, however, it is not as important to them. In profit oriented enterprises, budgets are used to serve as a guideline. Deviations are monitored for signs of trouble, but a deviation in and of itself does not signal a problem. In not-for-profit organizations, budgets serve as more than guidelines, they are usually considered binding laws, or limits which must be stayed within. For example, many governments prepare budgets and submit them to the proper

authorities. The authorities then evaluate them, perhaps rearrange and/or cut them, and finally authorize them. After this process is complete, the budget is legally binding. Thus, if it appears that a department cannot live within its budget, it must obtain permission from the supervisory authority to spend beyond its limits. Many other not-for-profit organizations are also set up in this manner to keep management under control. Many of these budgets are line item budgets which are even more restricting. A line item budget is one in which a specific dollar amount is set aside for each line item, and transfers between line items cannot be made without the proper authorization. For example, if a university department was set up in this manner, and a professor decided that he would rather have a new computer (which had not been budgeted for) rather than a trip to a conference in Hawaii (which had been budgeted for), he could not just decide to buy the computer as that would overspend the computer allowance. Rather he would have to go through the proper channels to have the budget changed. This type of budgeting can be quite cumbersome for management but it does control them. Such budgeting techniques however, can lead to behavior which is dysfunctional to the organization. Since yearly budgets are often determined by the previous year's budget, management should spend up to their limit if they do not want their budgets reduced. This factor of budgeting has been known to cause incredible waste.

3.3.6 Financial Analysis of Not-for-Profit Organizations

The techniques used to evaluate an organization's financial position discussed earlier, were developed primarily for profit oriented organizations. Some of these techniques are directly applicable to not-for-profit organizations, while others are not. Those that do apply should be performed directly on not-for-profit organizations only after adjust-

ments have been made to the organization's financial statements which make them conform to generally accepted accounting principles. The accounting methods used in not-for-profit organizations which are not used in profit oriented organizations may cause an analyst some problems, but these problems are not insurmountable. The analyst merely needs to make the financial statements mirror those of a profit oriented enterprise. In other words, cash basis financial statements must be put on an accrual basis and fixed assets must be capitalized and depreciated. This is not to suggest that the financial statements presented to the public must use the 'standard' methods of accounting, just those used for financial statement analysis.

An issue that an analyst must address when facing a not-for-profit organization is how to deal with the fund accounting. It must be determined whether each fund will be treated as a separate entity and analyzed accordingly, or if the funds will be compiled into one and analyzed in the aggregate. If the first approach is taken, difficulties will be encountered when assigning each fund its representative share of expenses. If the second approach is taken, difficulties will arise due to the restrictions placed on many of the funds. Unfortunately, there is no easy way to deal with this problem, and a comprehensive search of the literature provides no framework.

Once the financial statements of a not-for-profit organization have been converted to a form based on generally accepted accounting principles, many of the techniques discussed previously can be applied. The following sections discuss cross sectional techniques and time series techniques which can be either applied directly, or with slight modifications, to the financial statements of not-for-profit organizations.

3.3.6.1 Cross Sectional Techniques

There were two cross-sectional techniques discussed earlier; common size statements and ratio analysis. Common size statements, which put financial statements in relative terms in order to make them comparable to competitors' statements or industry norms, can be used in the same manner in not-for-profit organizations as they can in profit oriented enterprises.

Ratio analysis, as developed for profit oriented organizations, is not directly applicable to not-for-profits. Some ratios will never be applicable, some of them will, and still others can be adapted. Liquidity ratios for example could be directly applied to not-for-profits and their interpretations would be the same as for those of profit oriented organizations. Many not-for-profits would not find them very useful, as their current liabilities are negligible, but others would, as they have substantial current obligations and are concerned with being able to pay these obligations as they come due.

Using leverage/capital structure ratios on not-for-profit organizations is highly questionable, although in a few instances, some of these might apply. Since no shareholders are involved in financing not-for-profits, there is no concern for how much of the organization is financed with non-equity capital. Also, since much of not-for-profits' financing comes from fluctuating donations, most do not go deeply into debt without knowing for sure how they will repay it. When this is the case, there is no need for concern regarding their ability to meet payments in the future.

Municipalities and state governments could find some of the leverage/capital structure ratios to be the most beneficial. These organizations often float bond issues for specific

purposes and earmark specific revenues to pay them back. For example, a municipality might float a bond issue, buy a water tower with the proceeds, and pay back the bonds from its residents monthly water bills. Or, a state might build a bridge with long-term debt and look to the collection of tolls to pay it back. In either case, the times interest earned ratio could help in the determination of whether or not the project is paying for itself and whether or not the earmarked revenues will be sufficient to pay back the bonds.

Profitability ratios, for the most part, are not applicable to not-for-profit organizations, as such organizations are not concerned with profitability. However, there are a couple which might be useful. For example, expenses to revenue will tell an analyst whether or not an organization is generating enough revenue to cover its expenses. Return on assets might also be useful in some cases, as it gives an indication of how efficiently assets are being used. If an organization is heavily dependent upon unpredictable donations, neither of these ratios would be useful.

Many turnover ratios are directly applicable to some not-for-profit organizations. Accounts receivable turnover is directly applicable to any organization which provides goods or services on account and inventory turnover is applicable to any organization which carries inventory. For many not-for-profits inventory is immaterial, but not for all. University services provide several examples; food in the dining halls, books in a bookstore, and uniforms in a tailor shop all are examples of substantial quantities of inventory. Although these services are not in business to make profits, large inventories can be a sign of waste and eventually higher costs to the students. Therefore monitoring inventories through inventory turnover ratios can be beneficial.

The last category of ratios, common stock security ratios, do not apply to any not-for-profits. Since not-for-profits do not have common stock, no adaptation of such ratios could apply.

3.3.6.2 Time Series Techniques

There are three time-series techniques often used in financial statement analysis; trend statements, common size statements and financial ratio analysis. All of these can be used, at least to some degree, in the analysis of not-for-profit organizations.

Trend statements, which are financial statements over several years expressed as percentages of one of those years, are directly applicable to not-for-profits. Common-size statements for several years, which are financial statements put in relative terms, are also directly applicable to not-for-profit organizations. The reason that both of these apply to such organizations is that they are just as interested in tracking trends and changes in their composition as their profit oriented counterparts.

Time-series analysis for financial ratios of not-for-profit organizations could probably be beneficial, however, the literature in this area is virtually nonexistent and the corresponding literature for profit oriented organizations (which might be applicable to not-for-profits) is limited to measures of earnings and profitability. Therefore, applying this research directly to not-for-profit organizations would probably not be worthwhile.

3.3.7 Expert Systems and the Analysis of an Organization's Financial Situation

The analysis of an organization's financial situation can be viewed as a three stage process when examining its amenability towards expert system development. The first stage is the determination of what tasks need to be performed; this entails determining which set of financial ratios are applicable to a given organization, which industry or competitors the organization should be compared with, and which particular models are the most useful for time-series analysis. The second stage of this process is the compilation of the data required to perform the techniques decided upon in stage one, along with the actual calculations. And the third stage is an evaluation of the output obtained in stage two. Each of these stages will be presented in detail in the following sections.

3.3.7.1 Stage 1 - Determining what an Analysis Entails

The first stage in the analysis of an organization's financial situation is amenable to expert system development. This can be established by reviewing the aspects of tasks which make them amenable to expert system development in Chapter 2, and determining whether or not they apply to this situation. These aspects include; the domain is narrow, the task is well-defined, understood, does not require common sense or sensory data, and genuine experts exist.

Although the domain associated with the determination of an approach to financial position analysis might be considered fairly broad, ranging from concrete financial data to competitive forces, social climate, and political climate, most of the information ac-

tually used falls within a narrow range. An example of the type of data actually used includes; financial statements, information on operations and market share, competitors' financial statements, interest rates, industry norms, and information concerning the economy which can be obtained from the market.

Determining how to approach a financial analysis is a fairly well-defined, understood task. There is an abundance of research concerning what models and ratios are appropriate for given situations. And, much of the knowledge used by financial analysts is easily quantifiable, as are many of the rules of thumbs which they use.

Stage one of analyzing an organization's financial situation does not require much common sense, at least not in the definitional sense, that is, it is not independent of specialized knowledge and training. Nor does it require sensory data; all of the data can easily be typed into a terminal.

It is often said that experts must exist in an area for expert system development to be worthwhile. This appears to be the case as financial analysis requires specialized training. Also, since the people trained in the area are so much better at performing analyses than the general public, then by definition, these people must be 'experts.'

3.3.7.2 Stage 2 - Performing the Calculations

Stage two in the analysis of an organization's financial situation, that is, actually performing the calculations, can be done by using either an expert system approach or a traditional EDP approach. A traditional EDP approach would actually be more efficient. Since stage two involves only calculating ratios and filling in the variables for

models, an approach which can efficiently perform a large number of calculations given precise data, would be the best approach to use for this situation. Thus, a FORTRAN or PASCAL program could perform the task quite quickly and efficiently.

3.3.7.3 Stage 3 - Interpretation

Stage three in the analysis of an organization's financial situation, that is, the interpretation of the output from stage two, is amenable to expert system development. This can be established by reviewing the aspects of tasks which make them amenable to expert system development and determining whether or not they apply. These aspects include; the domain is narrow, the task is well-defined, understood, and does not require common sense or sensory data, and genuine experts exist.

Part of the domain associated with interpreting ratios and trends is fairly narrow, while the task itself is well-defined and understood. A system designed for this purpose would have two major functions. The first function would entail looking for deviations from expected behavior and noting these deviations, while the second function would involve interpreting the deviations. Locating deviations is a very well-defined, objective task. The only uncertainty which might be encountered in performing such a task is in determining acceptable ranges for the deviations. This however would not pose a problem, as acceptable ranges could be established by the expert in advance and programmed into the system.

The domain associated with interpreting deviations is not very well-defined, as underlying causes may vary quite a bit. An expert systems' capabilities in this area would be limited to comparing present deviations to past deviations, noting the conditions asso-

ciated with the past deviations, and querying the user to determine whether or not the same conditions are present. If it is found that the present conditions are comparable to those of the past, then the expert system would be able to draw a conclusion regarding the cause. Unfortunately, many deviations will be caused by situations which have not been encountered before. In examining these, an expert system would be limited to providing the deviation and an explanation of that deviation to the user. For example, an expert system could tell a user that the current ratio is lower than usual because current assets are down. It could also tell the user which current assets are low, e.g., inventory. It could not however, present the user with the reason that the inventory was low unless it was a condition which had occurred in the past. Although performance at this level does not compare with that of a human expert, it does provide worthwhile information.

The interpretation of ratios and trends does not require sensory data, as all of the applicable information can be typed into a terminal. It does however require some common sense. The common sense in this area is that associated with interpreting the causes for deviations not encountered previously. In the above example, common sense could be applied in determining the reason for the low inventory. Genuine experts exist in this area. Since only a few are so much better at interpretation than the general population, by definition this minority constitutes the 'experts.'

3.3.7.4 Summary

The analysis of an organization's financial situation is quite amenable to expert system development. It is a decomposable task, and therefore development can progress in stages making the system usable at an earlier date. The first and third stages, (deter-

mining what analyses to use and interpreting the output) are directly applicable to expert system development, while the second stage (the actual calculations) can be done more efficiently using traditional programming methods. The most efficient method by which to accomplish this would be to build an interface. Thus, the original information would be given directly to the expert system. The expert system would determine what models and techniques should be applied along with the data necessary for these models and techniques. The expert system would then pass this on, through the interface, to another program, perhaps a FORTRAN program. After the program runs, it would send the output, through the interface, back to the expert system. The expert system would then interpret the output for the user.

3.3.7.5 Previous Research

An extensive review of the literature shows that there has been very little expert system development done to date for financial position analysis of profit oriented organizations. There are three possible reasons for this; 1) The analysis of an organization's financial position is not an amenable task to expert system development, 2) expert system technology has not yet spread throughout the fields of accounting and finance, or 3) expert systems are being developed, but the developers are keeping them a secret. Since it has been established that expert system development is worthwhile for financial statement analysis, number one is not a plausible reason. It is thought that the true reason for the lack of literature devoted to this topic is a combination of numbers two and three. Expert system technology was initially developed in the fields of geology and medicine, and has only expanded into financial applications during the past few years. Also, it is known that several financial institutions, most notably banks, are working on expert systems but will not divulge their purposes to the public. (Chithelen)

An extensive review of the literature also shows that there has been virtually no expert system development done to date for financial position analysis of not-for-profit organizations. It is thought that this is due to the fact that the general research regarding not-for-profit organizations is so much less developed than that concerned with profit oriented organizations.

Two of the few researchers who are working and publishing in the area of financial position analysis for profit oriented organizations, are James Sena and L. Murphy Smith. They have been building an expert system to perform financial statement analysis for oil and gas companies. Their system however does not incorporate all of the stages listed earlier. The ratios and techniques used are programmed directly into the expert system, so there is no need for the expert system to determine which ones apply. This is a valid technique when dealing with only one company or one industry, and one which makes the knowledge base smaller and more manageable. The expert system developed by Sena and Smith basically compares the ratios of a given company to the averages in the industry. Ratios which are more than one standard deviation below the industry average are considered unsatisfactory, those more than one standard deviation above are considered favorable, and those within one standard deviation are considered to be satisfactory. The results of these ratios are weighted together to determine whether or not the firm's financial position is satisfactory. This expert system can tell a user why a given company was marked unsatisfactory, that is, which ratios were considered unsatisfactory, but it cannot give the reasons behind the unsatisfactory ratios. Although this system can perform some of the basic calculations required in financial statement analysis, it is far from encompassing the three stages described above which are necessary for a thorough analysis. Sena and Smith's expert system however is still in the develop-

mental stage, so the final system may be able to perform a more comprehensive financial analysis (Sena and Smith).

Chapter 4

University Auxiliary Enterprises

Colleges and universities generally provide support or service activities for their students, faculty, staff, and sometimes for residents of the community. These activities fall into three categories; auxiliary enterprises, sales and services of educational activities, and service departments. A service may be classified according to its source of revenue, its relation to the educational process, and its relation to the consumer. These classifications often vary among colleges and universities, depending upon the size of the institution and the complexity and purpose of the activity. For example, the Equine Center at Virginia Polytechnic Institute and State University is currently classified as an auxiliary enterprise, since it derives its revenues mainly from fees charged to horse owners who use the facility. However, if its purpose was oriented more toward the education of veterinary students, it could have been classified as an educational activity.

Auxiliary enterprises furnish services directly or indirectly to students, faculty, and/or staff, and charge a fee related to, but not necessarily equal to, the cost of providing the

services. Traditionally these services have included food services, student housing, and college stores. Many colleges and universities however, have expanded these services to include faculty dining, ice cream parlors, vending machines, day-care centers, bus service, skating rinks, tennis pavilions, guest houses, athletic concessions, golf courses, ski lodges, etc. Auxiliary enterprises are designed to provide operations which are important elements in the support of an institution's educational programs, e.g., student health services and intercollegiate athletics. They are mainly to provide services to students, faculty, and staff, although some auxiliary enterprises, such as golf courses, tailor shops, and concession stands, may incidentally serve the public at large.

The characteristic of auxiliary enterprises which distinguishes them from other university services is that they are managed essentially as self-supporting activities, although sometimes a portion of student fees or other support is allocated to assist these activities. If student fees are used however, it must be felt by administration that the service is one which will be used by all students who are required to pay fees. For example, health services and student unions are for the most part used by all students and hence, often receive revenues out of student fees. Student housing, on the other hand, provides benefits only to students who live on campus. Therefore, using student fees to support housing would be unfair to students who live off campus.

"Auxiliary enterprises should contribute to and relate directly to the mission, goals, and objectives of a college or university. They should not be regarded merely as service activities or as businesses, but as active expressions of an institution, reflecting its history, style, and relation to its various constituencies. Such enterprises should reflect the quality of service that a college or university desires for its students, faculty, staff, alumni, and public" (NACUBO, 3:2, p.1). Management of auxiliary enterprises should

develop strategies and objectives which support the goals and missions of the overall institution. A thorough set of objectives will include objectives pertaining to sales, marketing, net income, efficiency, quality of product and/or service, employee relations and social responsibility (NACUBO). Thus, the operational requirements for an auxiliary enterprise are quite similar to those of a small commercial enterprise.

The organization of auxiliary enterprises within a college or university often differs among institutions, as there are several acceptable organizational structures. In some institutions, there is an auxiliary department managed by an officer in the division of business and financial affairs. This is the organizational structure used at VPI & SU. Other institutions have an auxiliary department managed by an officer in the division of student affairs. Still other institutions allow their auxiliary enterprises to operate totally independent of one another. In this situation, the director of each auxiliary enterprise reports directly to the chief business officer or other senior officer. Other institutions have adopted a very different approach. In these institutions, there is an administrative division managed by an officer who reports to a board representing the institutional community (students, faculty, administration, staff, and governing board) (NACUBO).

Management of an auxiliary enterprise may be performed by either employees of the institution or by an outside agency. In the former case, the operation should have detailed, written administrative policies and procedures. In the latter case, written policies are replaced by a contract with the agency. At VPI & SU, all auxiliary enterprises are run by employees of the university.

4.1 Operation of Auxiliary Enterprises

Since auxiliary enterprises are generally self-supporting entities, their operations and accounting methods should be very close to those in commercial enterprises. To be self-supporting they must be able to not only generate enough revenue to cover direct operating expenses, but should also be able to cover debt servicing, provisions for renewal and replacement of equipment, and administrative overhead. Also, in order to render continuing service, auxiliary enterprises should have a solid financial base that includes sufficient reserves and enough working capital to cover inventory and receivables. Therefore, the management of an auxiliary enterprise requires determining in advance what all the costs and necessary reserve build-ups will be so that they can then set selling prices, rents, and fees at a level adequate to obtain the necessary revenues. At times they will find it necessary to increase rates to cover costs. These increases should be anticipated in advance so that they can be discussed with, and approved by the appropriate authorities, and announced to the users of the service in advance.

Management of an auxiliary enterprise, like that of any enterprise, should set financial goals. This includes developing budgets, which are especially critical in auxiliary enterprises. Budgets are important to them for two reasons. First, they are required by supervisory authorities who must authorize them well in advance. Second, budgets are critical in the determination of rates and fees. This is particularly important for auxiliary enterprises that obtain revenues from student fees, as they cannot simply increase fees at any point in time.

Auxiliary enterprises have the same need for accounting records as their counterparts in industry. According to NACUBO, (the National Association of College and Business Officers),

> "it is important to have cost accounting methods to use in evaluating, analyzing and controlling income and expense items of the auxiliary operation, and to assist in establishing appropriate fees and prices. Classification codes should clearly identify revenue and expenditure items for the purpose of analysis and control. All expenditures and transfers that relate to operation of auxiliary enterprises should be recorded, including those for operation and maintenance of plant and for institutional support, as well as other direct and indirect costs, whether charged directly as expenditures or allocated as a proportionate share of costs of other departments or units" (3:2,p.3).

Unfortunately, these standards recommended by NACUBO are not always the standards used in practice. This is probably due to the lenient framework the accounting profession has provided for accounting methods used by not-for-profit organizations. For example, while many industrial organizations use cost study data to relate fees charged to costs incurred so that they can justify their fees, the cost accounting records found in several of the auxiliary enterprises at VPI & SU are not sufficient to do this.

Adequate accounting records for each individual auxiliary enterprise are essential in order to ascertain the degree of self-support and to provide a basis for controls. According to NACUBO, financial reports should be based on the accrual method of accounting and should be available promptly following each month's operation. These reports should show both sources and uses of funds and should be accompanied by any other management data which might be useful, such as statements of comparable auxiliary enterprises at other institutions or comparable commercial enterprises (NACUBO). Many auxiliary enterprises at colleges and universities do not follow the above practices suggested by NACUBO. VPI & SU's system is a good example of this. With one exception, all auxiliary enterprises use the cash based method of accounting. The Continuing Education Center (CEC) uses the accrual method for internal purposes, however,

when their statements are compiled in the Office of Business Affairs, the cash method of accounting is used. It should be noted however, that VPI & SU developed a new accounting system which went on line on July 1, 1988 and this system has the capability of using accrual methods of accounting. At this time though, there is no schedule for the auxiliary enterprises to switch their accounting methods.

4.2 Auxiliary Enterprises at VPI & SU

The auxiliary enterprises associated with all colleges and universities are not be the same, as some are associated with institutions which have specialized facilities not available at all institutions, such as veterinary schools and corps of cadets. However, many auxiliary enterprises are the same, as some services are fairly standard for all colleges and universities. For example, most schools provide housing facilities, food services, and bookstores. The purpose of this research is not to give an exhaustive listing of all auxiliary enterprises that one might encounter anywhere, but rather to give a general idea of those which one might encounter at a 'typical' university. The 'typical' university used for this research is VPI & SU and therefore a listing and description of all auxiliary enterprises found at VPI & SU will follow.

At VPI & SU, some auxiliary enterprises are treated as one entity and given one account for the purposes of the accounting system, while others are given more than one account. This occurs when one item for a particular auxiliary enterprise is very substantial. For example, the purchase of electricity by the electric service and capital expenditures associated with the residence halls are such large expenditures for the university that

they are given their own accounts. Each of these different accounts will be discussed, and when more than one account pertains to one entity, all of those which pertain will be discussed together along with their relationship to that entity.

The maintenance of food services at VPI & SU is a large operation and encompasses 13 accounts. Nine of these are associated with individual entities, such as dining halls, and are responsible for the actual operation of providing food services to students. Another three accounts in this category provide the overall administration for the food service operation. These are Food Stores Administration, Food Stores Operation, and Food Stores Inventory Over/Short. Food Stores Administration actually purchases the food for the dining halls, the Continuing Education Center (CEC), and the student union. The dollar amount found in this account is the actual cost of the food purchased. The Food Stores Operation account is where administrative costs associated with the purchasing function are posted. The cost of providing this service is billed to the food service operation auxiliary enterprises at a rate of 8% of the cost of the food they purchase. Food Stores Inventory Over/Short, as its name implies, is an account which tracks shortages and overages in the food inventory. The last account associated with the food services is Reserve Maintenance: Food Service. This account is used for capital expenditures associated with any of the other food service accounts.

Providing residence halls for students is another substantial service offered at VPI & SU. This service is actually provided through the use of three auxiliary enterprise accounts. The auxiliary enterprise which actually provides for the operation of dormitories is called Student Housing Service. Since security of dormitories is such a large expense, security has their own auxiliary account called Additional Security for Dorms. The third auxil-

iary enterprise account associated with housing is for capital expenditures and is called Reserve Maintenance: Housing.

Another common service which is provided by an auxiliary enterprise at VPI & SU, is the Student Health Services. This auxiliary enterprise offers students health education, preventive medicine and treatment for illness and injury. The infirmary is staffed by physicians, registered nurses, a pharmacist and medical technologists. This service is funded primarily through student fees, although they do receive a small portion of their revenue from other auxiliary enterprises and services connected with the university.

VPI & SU, like most universities, provides a student center for students. This service is provided through two auxiliary enterprises, i.e., Squires Student Center and Squires Reserve Maintenance. Prior to June 1988, Squires Student Center provided many sources of activity for students such as a bowling area, billiard tables, ping-pong tables, videogames and the rental of out-door equipment. The building also offered meeting rooms, a 500-seat theatre, a TV lounge, a browsing library, a program lounge, music practice rooms, an art gallery, and two ballrooms. The Squires Food Service provided a snack bar and catering services for large and small banquets and receptions held in the building. Squires' primary source of revenue is from student fees although they also receive a substantial amount from the services they provide, such as equipment rental, fees for bowling, billiards, and ping-pong, etc. At the present time, i.e., 1990-1991, Squires Student Center is undergoing some very major renovation, 13.2 million dollars worth to be exact, and is closed for the time being. The services offered by Squires however, can still be found at various locations around campus. Upon reopening, the Squires Student Center will provide all of the above mentioned services plus a new ballroom, a theatre, a music recital hall, increased meeting space for student groups, a Hardee's and a Mama

Jean's Pizza. The auxiliary called Squires Reserve Maintenance is the capital expenditure account associated with the student center.

Laundry service is available to students of VPI & SU through an auxiliary enterprise called Laundry. For the more economy minded students, they provide coin operated self-service laundry equipment in some women's dorms and in laundry stations located throughout campus. They also provide finished laundry service on a cash-and-carry basis, and a linen rental service. Most of their revenue comes from these services, however, they also provide services to some other auxiliary enterprises.

The Tailor Shop is an auxiliary enterprise that provides services which are fairly unique to VPI & SU. They, like most tailor shops, provide tailoring and alteration services to students and the community on a cash-and-carry basis. This however, is not their major source of revenue. The Tailor Shop is responsible for all aspects of placing and keeping the Corps of Cadets in uniform. This entails measuring cadets, purchasing uniforms, fitting the uniforms to the cadets, and providing any alterations required (including rank changes) throughout the year. They receive income for these services from the Navy, the Army and the Air-Force. They are not, however, reimbursed for costs incurred. Rather they receive specific commutation allowances which they receive per cadet, which vary with sex and with class. Thus, the Tailor Shop receives a substantial amount more for a female junior than for a male freshman. This method of payment means additional responsibilities for the Tailor Shop. Given a set allowance per cadet, they must determine what quality of uniform they can provide each cadet along with what quantity of each uniform item. The differences in payment per class add yet another dimension to their decisions. Upperclassmen provide more revenue per cadet, but freshmen are the ones which require a full new uniform. Since the corps has such a low retention rate,

this situation can cause financial problems for the Tailor Shop. Along with services provided for the Corps, the Tailor Shop also provides services to other departments at VPI & SU. For example, the music department has a contract with them to maintain uniforms and perform alterations on the uniforms used for the marching band, the pep band, and the symphony orchestra.

Several of the computer services offered to VPI & SU students, faculty and staff, along with the telephone system, are offered through two related auxiliary enterprises. One of these auxiliary enterprises, called Telecommunications, is generally referred to as CNS (Computer Network Services). Telecommunications is responsible for maintaining the phone service throughout the university along with maintaining the communications network associated with the computer system. Their revenue is derived from providing these services and therefore comes from other departments, services and auxiliary enterprises at VPI & SU. The other auxiliary enterprise associated with offering computer services is EE/PC Maintenance. This auxiliary enterprise sells maintenance contracts on Zenith and IBM PC's to all faculty, staff, and students affiliated with the university who are interested. They also repair PC's not under contract, perform on-site set up of PC hardware and peripheral devices, install boards, provide consultation services in regards to hardware, and perform pick-up and delivery service to on-campus locations.

The Tennis Pavilion is an auxiliary enterprise which offers students and faculty indoor tennis facilities. The Tennis Pavilion obtains its revenues from two sources. The first is selling time on the courts to interested students and faculty. The second is through the Athletic Association, which reimburses them for time used by the tennis team.

Another source of activity available to students, faculty and the community, through an auxiliary enterprise is the Golf Course. This auxiliary enterprise provides a golf course,

cart rental, club rental and a pro shop to anyone interested in using such facilities. Green fees may be payed on a per game basis, but memberships are also available.

The Memorial Chapel is another auxiliary enterprise which provides services to all interested parties. It is a non-denominational structure which is available for services by recognized religious groups, for weddings and initiations by approved groups and for organ recitals, lectures, drama, and art exhibits related to religious topics. It is also open daily for private meditation.

The Equine Center, located in Leesburg, Virginia, is an auxiliary enterprise set up to aid both horse owners in northern Virginia and VPI & SU veterinarian students. The Equine Center is a hospital for horses which is open to all who might have a hurt or sick horse. The College of Veterinarian Medicine often sends students there for educational purposes. The revenue from this auxiliary enterprise is primarily from the fees collected from horse owners, however, there is often conflict surrounding its ability to be self-supporting since it is also considered an educational facility.

The operation of an electric facility which provides electricity for all of the university and part of the local community is quite a large service provided at VPI & SU, one which encompasses four auxiliary enterprise accounts. These accounts include; Maintenance & Operations of Electric Service, Purchase of Electricity, Town of Blacksburg Tax, and Electric Service Reserve Maintenance. Maintenance & Operations of Electric Service is the auxiliary enterprise which actually runs Tech Electric. This encompasses the operation of the plant, the provision and maintenance of electricity to the university and residents of the community, and the collection of fees. The Purchase of Electricity account is for the purchase of electricity from the Appalachian Power Company. Since this purchase is such a large expense for Tech Electric, it was set up as a separate account.

Town of Blacksburg Tax is the auxiliary enterprise set up to provide the payment of taxes from Tech Electric to the town. Since Tech Electric provides service to residents of the town, it must pay taxes to the town. The Electric Service Reserve Maintenance auxiliary enterprise is the account set up for capital expenditures associated with the electric service.

The Donaldson Brown Continuing Education Center (CEC) is an auxiliary enterprise which is available on a year-round basis to both profit and not-for-profit organizations for conferences, meetings, seminars, and training programs. The staff at the CEC offer all of the services one might require in planning, organizing and running a conference or seminar. Their facilities for such conferences include; seven conference rooms which accommodate from 12 to 80 people and a 620 seat auditorium (divisible into two sections), audio-visual equipment, satellite and teleconferencing arrangements, a copy center, and sixteen personal computers. The CEC also offers food and lodging facilities. The food services of the CEC include; banquet arrangements, a coffee shop for individual dining, and food and beverage service for social hours, receptions, and coffee breaks. The lodging facilities include 120 rooms equipped with a study desk, a color television, a phone, and a private bath. These accommodations are available to both conference participants and visitors in Blacksburg on university business.

Prior to August 1988, the VPI & SU Athletic Association was a private corporation, but as of that date, it became an auxiliary enterprise. The Athletic Association provides a vehicle through which all athletic teams which compete with other schools can operate. This encompasses recruiting and selecting players, and operating the facilities necessary to support the teams. Their largest source of revenue is obtained from ticket and gate sales for football and basketball games, but they also receive a substantial amount from

student fees. Their major costs are for operating expenses, scholarships for athletes, and upkeep of facilities.

The newest auxiliary enterprise created at Virginia Tech was created to maintain parking facilities. The function of the Parking auxiliary enterprise is to collect fees for parking, maintain the lots, and also to give parking tickets (and collect fines) for vehicles parked in places where they are not authorized to park. This last function however, may be contracted out to the Tech Police.

The Financial Coordinator auxiliary enterprise at VPI & SU, which is located in the Office of Business Affairs, provides accounting services for all of the other auxiliary enterprises. Management of auxiliary enterprises are not provided with their own accountants, as many are much too small to justify the expense. Also, by having the accounting functions all maintained at the same place, their record keeping methods are consistent and it also gives the university a vehicle through which to continuously monitor the financial situation of all of the auxiliary enterprises.

4.3 Differences between VPI & SU Auxiliary Enterprises' Financial Statements and Corporate Financial Statements

Several differences exist between the financial statements of VPI & SU auxiliary enterprises and those of profit seeking corporations. Some of these differences, which are caused by the differences in their goals, are reflected in both accounting methods and

analytical measures of performance. The following sections present differences in their accounting methods, business activities, and measures of financial position.

4.3.1 Accounting Methods

A major difference between the income statements of university auxiliary enterprises and those of private profit seeking organizations is due to the underlying accounting methods used by the organizations. Commercial enterprises generally use accrual methods of accounting while auxiliary enterprises use cash based methods, and these differences are reflected in their income statements. To perform an accurate financial statement analysis, it is critical that the income statements used be compiled on an accrual basis. On a cash basis, revenues earned and expenses incurred are not recorded until a cash transaction takes place. Such accounting methods will often result in figures for income which are not truly indicative of the organization's true earned income. Therefore, prior to any analyses being performed, auxiliary enterprises' income statements must be converted to statements based on accrual accounting methods.

A set of corporate financial statements always includes a balance sheet and a sources and uses of funds statement, along with the income statement. Neither of these statements is compiled for auxiliary enterprises. Since a balance sheet is a critical element of any financial analysis, such statements will need to be compiled for auxiliary enterprises prior to undertaking an analysis. Sources and uses of funds statements are not crucial in financial statement analysis and therefore will not need to be compiled.

4.3.2 Business Activities

The accrual based financial statements of auxiliary enterprises are different from those of corporations, due to the inherent differences in the make-up of the organizations. For example, the balance sheets, once compiled for auxiliary enterprises, will be much simpler than those of corporations. On the asset side, auxiliary enterprises do not have marketable securities or long-term investments. Furthermore, they do not own or rent land or buildings, as the land and buildings they use are the property of the university. It should be noted however, that although they do not own buildings, they are responsible for expenses associated with debt servicing if the buildings in which they reside are not fully paid. On the capital and liability side of the balance sheet, auxiliary enterprises do not have accounts for equity capital and retained earnings, and the number of current liability accounts used is quite small. Since auxiliary enterprises do not have equity capital, they are not concerned with accounting methods and financial analyses associated with common stock, different levels of preferred stock, convertible bonds, stock splits, etc. Although auxiliary enterprises do not have retained earnings accounts, they do have reserve accounts which are used for the same purpose, i.e., to close out the income account at the end of the year. One account which is common to auxiliary enterprises but not to their commercial counterparts, is a liability account called Due to Other Auxiliary Enterprises. Although this account cannot be found on a corporate balance sheet, it may possess accounts which are almost equivalent, such as revolving credit accounts with banks. These however differ from a Due to Other Auxiliary Enterprises account as because they require interest payments and occasionally must be paid in full.

4.3.3 Measures of Financial Position

Since the financial statements and goals of auxiliary enterprises differ from those of corporations, some of the factors to consider when analyzing their financial positions also differ. For example, since auxiliary enterprises do not have stockholders there is no need to measure profitability for stockholders. Likewise, since stockholders do not exist, an auxiliary enterprise has no need to put itself in a highly levered position (one characterized by high amounts of debt when compared to equity capital), and hence, measures of leverage are unnecessary.

Auxiliary enterprises, unlike their counterparts in industry, can operate with deficits for extended periods of time. They can do this by borrowing from the reserves of other auxiliary enterprises, just as the Tailor Shop is doing at present. Commercial enterprises are not afforded this luxury of interest free borrowing over extended periods of time. If they cannot pay their debts, they eventually go bankrupt. Since auxiliary enterprises can operate indefinitely under such conditions, a financial analysis must incorporate a measure to determine whether or not a given auxiliary enterprise is abusing its situation, i.e., not self-supporting. One way to determine if an auxiliary enterprise is self-supporting is to monitor the balances in the due to other auxiliary enterprises account over time. An occasional balance is acceptable, but one which is continuous and large should signal trouble. Also, due to other auxiliary enterprises account balances which are small but continue to increase, or reserve balances which continue to decrease may be cause for concern.

Auxiliary enterprises and commercial enterprises both have a need to measure efficiency, and can do so through the use of profitability/efficiency ratios. Acceptable ranges be-

tween them however will differ. Commercial enterprises concerned with earning a profit will have an acceptable lower cut-off limit, while auxiliary enterprises will have both lower and upper cut-off limits. For example, for a commercial entity it is desirable to have as high an ROA (return on assets) ratio as possible. For an auxiliary enterprise, a high ROA indicates that they are earning too much. Either they are overcharging their customers, or their level of service or facilities has deteriorated from the level originally provided. Auxiliary enterprises, unlike their counterparts in industry, will also have to monitor trend statements for excessive earnings. It is a very desirable situation for a corporate trend statement to show that over time revenues are increasing faster than expenses. If an auxiliary enterprise shows the same type of trend, it could signal a problem. Once again, their earnings could be too high.

Since earning a profit is one of a commercial enterprise's most fundamental goals, and one which may be indirectly effected by subsidiary goals (such as customer satisfaction and social concern), measures of profitability are very important indicators of how well that entity is obtaining its objectives. Auxiliary enterprises, on the other hand, are mainly concerned with providing services. Therefore, measures of service level, as opposed to measures of profitability, may be better indicators of how well they are fulfilling their purpose. Unfortunately, little is available in the literature regarding this issue, however,an examination of the goals of auxiliary enterprises can help an analyst determine what measures would be appropriate.

Since auxiliary enterprises have different purposes, they will also have different measures of service level. It will often be the case that these measures cannot be taken directly off of the financial statements. They are however, very important as circumstances often arise where profitability is up when service level is down, since there is a trade-off be-

tween the two. Food services provide an example. Some service level measures which might be calculated include: total number of meals served per semester; number of meals served per student per semester for each meal option plan; and cost per meal served. It could be that the food services appear to be healthy from a profitability standpoint, i.e., revenue is increasing faster than expenses. Yet an examination of service level measures might indicate that a problem exists. It might be found that the number of meals served is down while the cost per meal is up. The cause of this could be that many students are not actually eating the meals for which they have paid. From a profitability standpoint, this is a desirable situation. If food services were run by a profit oriented enterprise, which was not in danger of losing customers, such a situation signals no need for concern. But this is not true for an auxiliary enterprise. An auxiliary enterprise's major concern is providing a service and such circumstances indicate that many dissatisfied students, many of whom are required to pay for food service, are not using it. A situation such as this which could not be uncovered using traditional measures of profitability, certainly requires attention. Therefore, measures of service level are very important when evaluating auxiliary enterprises. Other examples of measures of service level that might be useful include: number of rounds played per season at the golf course; number of hours each facility offered at the Squires Student Center is used; number of double dormitory rooms housing only one occupant; and number of double dormitory rooms housing three occupants.

4.4 The Financial Statements of Auxiliary Enterprises

The financial statements of auxiliary enterprises within a college or university differ somewhat due to the inherent differences in the nature of their businesses. Within an institution however, if one department is monitoring all the auxiliary enterprises, the accounting methods used, and therefore the resulting financial statements will follow basically the same format and offer the same amount and detail of information. Among institutions, accounting methods and financial statements are likely to differ substantially. Since VPI & SU Financial Administration was the site chosen for this research, the accounting methods used and the resulting financial statements for their auxiliary enterprises will be discussed.

VPI & SU uses the cash based methods of accounting, although an examination of their financial statements would lead one to believe otherwise. This is because cash based systems do not post payables and receivables, but such categories can be found on the VPI & SU statements. These are not posted as they are earned or become obligations however, as would be done in an accrual system. Rather, computer programs are run during July and August (VPI & SU's fiscal year ends June 30) of each year to determine which payments were made and collections received for transactions occurring prior to June 30. Then, for the purpose of the annual financial statements, receivables and payables as of June 30 are determined.

Since VPI & SU's accounting system is a cash based one, the individual systems associated with each auxiliary enterprise are also cash based. As noted earlier, the CEC is an

exception to this, but only the records they maintain for internal purposes are based on accrual accounting methods.

Due to VPI & SU's accounting methods, the financial statements of the individual auxiliary enterprises are far from that of their counterparts in industry. It was noted in Chapter 3 that financial statements generally consist of three parts; the income statement, the balance sheet, and the sources and uses of funds statement. As one further reads through Chapter 3 it becomes apparent that most analyses are done using the income statement and the balance sheet. The sources and uses of funds statement is a good management tool to track the flow of funds through an organization, but it is not of much use in financial statement analysis. Therefore, in order to perform the financial analysis of an auxiliary enterprise, an analyst will only require its income statements and balance sheets.

Income statements, which the Office of Business Affairs refers to as financial statements since auxiliary enterprises are not supposed to produce 'income,' are compiled individually for each auxiliary enterprise. These financial statements list revenue and all sources of expenses. Typically, the revenue is not very detailed, i.e., it generally only separates student fees from other revenues, however much more detail is available. The costs, both direct and indirect are fairly detailed. Thus, if one wanted to perform financial statement analysis on one of these statements, all of the applicable information except receivables and payables would be easily obtainable. The income statements of auxiliary enterprises compiled by Business Affairs also provide the budgeted amount for each line item. This can be very beneficial in financial analysis when comparing budgeted to actual figures.

Balance sheets, which are critical to a thorough analysis of an organization's financial position, are non-existent for VPI & SU's auxiliary enterprises. Therefore, in order to perform financial statement analysis, reasonable balance sheets will have to be developed. This task is not as large at it first might appear, as most of the necessary information is available. Cash and reserve balances can easily be obtained from the the Office of Business Affairs as can a valuation of inventories. Receivables and payables are necessary items which will require obtaining estimates from the management of individual auxiliary enterprises. Assets which many commercial enterprises hold, such as long-term investments and marketable securities are unheard of at the individual auxiliary enterprise level, so there is no need to consider such items. Capital assets however, are important to individual auxiliary enterprises and therefore should be reported on the balance sheets. A valuation of these assets is not available, however accurate figures can be obtained as the purchase price and useful life is available for each asset. It is recommended that for the purpose of valuing assets for balance sheets, the equipment be depreciated using the straight-line method. Since there are no tax advantages which can be obtained in this situation by using an accelerated method, a straight-line method will result in a better representation of actual costs.

4.5 Techniques Which may be Used in Financial Statement Analysis of Auxiliary Enterprises

Budgeting is a very important element of the accounting system in almost all not-for-profit organizations, and auxiliary enterprises are no exception. Budgets are typically

formulated well in advance, sometimes as much as ten to fifteen years ahead of time. At VPI & SU for example, the budgets are developed seven years in advance, and updated on an annual basis. Budgets for auxiliary enterprises are typically compiled on a line item basis, as is the case at VPI & SU. These budgets can be a great asset for a financial analyst. Comparing actual performance to expected performance can show a lot about an organization's performance. Also, such a technique can be performed continuously as all of the necessary information is always available. Spotting deviations from expected performance will not in and of itself signal trouble, but it does relay the message that further investigation is warranted. Therefore, budget analysis is a very good starting point for financial statement analysis.

Many auxiliary enterprises do not have accrual based income statements or balance sheets. Unfortunately, a thorough analysis of one's financial position cannot be performed without them. Therefore, if a thorough analysis is desired, the necessary statements will have to be compiled. As mentioned earlier, at VPI & SU cash based income statements are readily available, and cash based balance sheets, although not available, can be compiled with the aid of management. Accrual based statements can also be compiled with a little time and effort.

Common-size statements could be of some use in the analysis of auxiliary enterprises' financial statements. Recall that a common-size balance sheet is one in which all components are expressed as a percentage of total assets while a common-size income statement is one in which all components are expressed as a percentage of total revenue. These statements are used to compare organizations of different sizes. As far as auxiliary enterprises are concerned, common-size statements would be a good tool for comparisons of similar auxiliary enterprises at different institutions. Such a comparison can

be beneficial to both authorities which oversee many institutions, and analysts within institutions. Within a college or university, using common-size statements to compare different auxiliary enterprises would for the most part prove worthless. For example, the fact that inventory is a higher percentage of total assets in a dining hall than in the tennis pavilion is not very useful information. Common-size statements however, may be useful where a particular service is split into two or more equivalent auxiliary enterprises, as is often the case in food services.

Ratio analysis, can be a very useful tool in the analysis of auxiliary enterprises' financial situations, although which ratios apply may differ among the different auxiliary enterprises.

Liquidity ratios can be used for almost all auxiliary enterprises in helping determine their ability to meet their short-term financial obligations. Although meeting financial obligations in a timely manner should be important to all auxiliary enterprises, it is not as important to them as it is to their counterparts in industry. This is because auxiliary enterprises can borrow from the reserves of each other, a luxury not afforded to most commercial enterprises. A good example of such borrowing can be seen at the Tailor Shop at VPI & SU. Their inventory is extremely large and they have never been able to build up enough reserves to support this large inventory. Therefore it is being financed by the reserves of other auxiliary enterprises. A situation such as this is far from optimal, but if it were only temporary, it would cause no problem and in fact might be considered wise cash management. In order to determine which auxiliary enterprises are borrowing from the reserves of others and for how long a period these borrowings involve, a continual monitoring of their liquidity positions, through the use of ratios, can be used.

In Chapter 3 there were three liquidity ratios discussed, i.e., the current ratio, the quick ratio, and the defensive interval measure. It is suggested that for the purpose of analyzing auxiliary enterprises that the first two ratios be used. Although the current ratio is often criticized, it is well known. Therefore, it is suggested that this ratio be calculated and large deviations from expectations noted, but that more emphasis be placed on the quick ratio, as the quick ratio provides a better indication of the true liquidity position of an organization. It is recommended that the defensive interval measure not be used for auxiliary enterprises because in their case, it provides no more information than can be obtained from the quick ratio.

The times interest earned ratio is the only leverage/capital structure ratio that would apply to auxiliary enterprises, and that would apply to only a few. The times interest earned ratio was designed to determine the ability of an organization to meet its interest payments. Thus, such a ratio will apply only to auxiliary enterprises which have debt. Examples of such auxiliary enterprises at VPI & SU include; the residence halls, food service, Squires Student Center, and the electric service.

Using profitability ratios in the analysis of auxiliary enterprises' financial situations may be very beneficial. Although auxiliary enterprises are not concerned with profitability, they are, or should be, concerned with efficiency, and many of the 'profitability' ratios actually measure efficiency. A good example of this is return on assets, which measures how efficiently an organization is utilizing its total assets. All auxiliary enterprises could find this ratio beneficial. The gross profit ratio is an important ratio for any organizations which are heavily dependent on sales of merchandise. Thus, it would apply to any auxiliary enterprise with a large sales volume. Since most auxiliary enterprises provide services, rather than goods, the gross profit ratio is not applicable to most auxiliary en-

terprises. A notable exception to this at most universities however, is a college bookstore. The net profit ratio was also designed for organizations which derive a substantial part of their revenue from the sale of merchandise. Therefore it would also only apply to auxiliary enterprises which sell goods. This ratio however, could be adapted to be useful to organizations which provided services rather than goods to their customers. This adaptation could be done by merely substituting net revenue for sales in the denominator of the equation. The expenses to revenue ratio is a good ratio for all auxiliary enterprises as it measures, in relative terms, how much of each revenue dollar is being consumed by expenses. This ratio would be a good comparison tool to use among the different auxiliary enterprises.

Turnover ratios, like profitability ratios, are designed to measure efficiency, and therefore can be beneficial in the analysis of an auxiliary enterprise's financial position. The total asset turnover ratio can be useful to any auxiliary enterprise with a large sales volume, for example, a bookstore or seller of PC's. This ratio will measure the number of times annual sales covers total assets. Any auxiliary enterprise which has both a large sales volume and a large volume of accounts receivable may also find the accounts receivable turnover ratio helpful. This ratio will tell management how many times a year receivables are turned over. This ratio will not apply to many auxiliary enterprises however, as those whose main consumers are students do not like to extend credit. The inventory turnover ratio, which measures how fast an organization is turning over its inventory, could be useful to any auxiliary enterprise which has both sales and inventory, e.g.s, bookstore, pro-shop, and confectionary shop. Adaptations to this ratio may also be useful to other auxiliary enterprises. For example, the VPI & SU Tailor Shop does not sell cadets uniforms but rather issues them out of its inventory. Therefore, a turn-

over ratio based on amount issued, rather than on sales, might be very beneficial to them.

Trend statement analysis could be a useful tool in analyses both within auxiliary enterprises and among auxiliary enterprises. Recall that trend statements are a series of financial statements for one organization over several years, which are expressed in terms of a base year. As the name implies then, they show trends over time. An analysis of trends of this sort can be beneficial to any organization as it can signal trouble areas and also monitor if the organization is moving in the direction desired by authorities. Auxiliary enterprises are no exception. In fact, trend analysis can be especially useful in the examination of auxiliary enterprises as it can be used as a tool for comparisons.

The most thorough approach to analyzing auxiliary enterprises with trend statements is to compile trend statements for each auxiliary enterprise and also to compile an aggregate statement for all of them together. Since the university financial statements show auxiliary enterprises only in the aggregate, the aggregate trend statement will be a tool by which to evaluate overall trends.

Trend statements for individual auxiliary enterprises can also be very beneficial. Since they are engaged in very different businesses, they will have different problems and opportunities. These will not be apparent in the aggregated statement, as the aggregated statement will not show enough detail. The aggregated statement could also tend to nullify the effects of individual auxiliary enterprises, as the effects caused by some might be cancelled by others.

Comparing individual auxiliary trend statements to the aggregate trend statements can also be useful in explaining trends. If a trend for an individual auxiliary enterprise is also

apparent in the aggregated statement, it may be a university trend of which the individual auxiliary enterprise has no control. On the other hand, if an individual auxiliary enterprise's trend is moving in a direction which is opposite of the aggregate trend, it might signal management that a particular area may require some attention.

Several common-size statements, placed in successive order to accentuate trends, can also be a useful tool in the analysis of auxiliary enterprises' financial positions. Such statements will show changes over time in the composition of assets, liabilities, reserve balances revenues, and expenses. Once again, these statements can be helpful at both the individual and the aggregate level. Since individual auxiliary enterprises are considered individual business entities, an analysis at this level is crucial. Aggregate statements can also be helpful as they will show the direction of all auxiliary enterprises together, which is what is published in the university financial statements.

4.6 Expert Systems and the Analysis of Auxiliary Enterprises' Financial Statements

The analysis of auxiliary enterprises' financial positions is quite amenable to expert system development. For financial statement analysis, an expert system should be broken down into three stages. The first stage is deciding what precisely is to be done. This encompasses determining what ratios should be computed and what techniques should be applied along with what information will be necessary to perform these techniques. The second stage is the actual compilation of necessary data along with performing the calculations. And the third stage is the evaluation of the output obtained in stage two.

4.6.1 Stage 1 -Using an Expert System to Determine what

Analytical Techniques Apply to Individual Auxiliary Enterprises

The first stage in the analysis, i.e., determining what techniques to apply given a particular auxiliary enterprise, is very amenable to expert system development. For an expert system to function effectively, the domain of knowledge and information required must be narrow. This is very true in this instance. In fact, the domain which applies to the financial analysis of auxiliary enterprises is narrower than that which applies to commercial organizations. This is true for two reasons. First, auxiliary enterprises are not concerned with profitability in the same sense as profit oriented organizations, do not have equity investors, and therefore have no association with the stock market. Consequently, measures incorporated into an analysis which reflect any of these factors would not be applicable to auxiliary enterprises. And second, the environment surrounding an auxiliary is much smaller and exhibits more stability and certainty than that surrounding a commercial enterprise. This type of environment also makes them privy to information which would be almost impossible to gather by their counterparts in industry. Therefore, most information which affect them and could affect their financial performance is available to them or at least obtainable. The result of this is that the domain of knowledge required to determine what techniques and information are applicable to the analysis of a particular auxiliary enterprise's financial statements is fairly narrow and can be determined with certainty. For the most part then, the data that will be used in the financial statement analysis will include; the financial statements of a given auxiliary enterprise, averages of those of similar auxiliary enterprises at other institutions, averages of those of other auxiliary enterprises within the same institution, and information which can be obtained from the university, e.g.s, expected number of incoming fresh-

man, composition of those students in terms of curriculum, housing preferences and meal preferences, number of entering cadets, etc.

For a task to be amenable to expert system development, it is often cited that the task must be fairly well understood, not require common sense or sensory data, and that genuine experts must exist. Given a specific auxiliary enterprise, the task of determining what information is required along with what techniques apply to the analysis of its financial situation, certainly passes all of the above conditions. Since financial analysis is a fairly well developed field, performed mainly by those who are certified or have at least studied in the area, it appears that experts do, in fact, exist. Furthermore, since they perform a useful service, they must know what they are doing and why, leading one to the conclusion that the task is for the most part, well-defined. These experts which use their specialized knowledge to perform financial analysis, do not use common-sense, at least not in the definitional sense, i.e., knowledge which is independent of specialized knowledge and training. And finally, financial statement analysis does not require sensory data. All of the required information can easily be typed into a computer terminal. The format for this information may not be obvious, but the information will not need to be smelled, heard, sensed, or felt.

4.6.2 Stage 2 - Using an Expert System to Perform the Calculations

Stage two in the analysis of auxiliary enterprises' financial situations, i.e., actually performing the calculations, is also amenable to expert system development, although this stage could also be performed using more traditional programming techniques. Stage two requires a lot of number crunching, so if maximum efficiency is desired, a program

written in a language like FORTRAN should be used. Although this approach is the most efficient for large applications, it may not be for small ones. Since stage one requires an expert system, if stage two is designed using a more structured type of program, an interface will be required from stage one into stage two sending stage two both the necessary data and the instructions regarding what to do with that data. Developing interfaces of this nature is a very complex task and is currently receiving much coverage in the literature. If the financial analysis to be performed is very large, and encompasses vast amounts of data, then building an interface will be necessary. If the application is small however, the loss of efficiency caused by calculating ratios and trends in LISP or PROLOG rather than in FORTRAN or PASCAL will probably not offset the complexity involved in building the interface. The financial analysis of auxiliary enterprises, at least for those at VPI & SU, does not require vast amounts of data, as they are all rather small and do not have many of the items, such as equity capital, marketable securities, long-term investments, etc., which are common to commercial enterprises. Furthermore, they do not have thousands of competitors and are not parts of huge industries, either of which would require a substantial amount of data for comparison purposes. Therefore, it is recommended that stage two of an expert system built for the analysis of auxiliary enterprises' financial situations, be built directly into the system rather than writing this part of the system as a traditional program and building an interface to access it.

4.6.3 Stage 3 - Using an Expert System to Interpret the Analysis

Stage three in the analysis of an auxiliary enterprise's financial situation, i.e., interpreting the output of stage two, is definitely amenable to expert system development. For the

most part, the domain is fairly well-defined, narrow, and understood. The system's task at this stage will be to locate deviations from expectations, note them, and then try to determine the underlying cause. Locating and noting deviations will be simple enough to build into the system, although there will be some grey areas which require more knowledge of the system. For example, if the current ratio appears low but the quick ratio is quite high, there is probably no need to further investigate the current ratio. Uncovering the underlying causes of deviations will require a bit more expertise on the part of the system and will probably entail querying the user for more information. If the situation causing the deviation has not occurred in the past, the expert system will probably not be able to discover it. It could however, locate a few revenues or expenses which appear to be out of line and then query the user concerning them. Through the interaction with the user, the expert system should be able to reach a reasonable conclusion.

It is often cited that the task chosen for expert system development not require sensory data and that genuine experts exist. The interpretation of financial data fulfills both of these requirements. It certainly does not require any sensory data. And, genuine experts do exist. If analysts trained in the field were not better than the rest of the general public, then there would not be such a demand for them.

The amount of data which is the resulting product from stage two of financial analysis will be quite substantial. Wading through this data to determine where further investigation is warranted will be quite a large, and for the most part, boring task. Therefore, using an expert system to perform this task rather than its human counterpart will be much more efficient and probably also more accurate.

In conclusion, all three stages in the analysis of auxiliary enterprises' financial positions are amenable to expert system development. Furthermore, the overall task can be broken down into the three stages. This can be very useful in expert system development as it allows for rapid prototyping. A system which performs any one of the stages would by itself be useful. Therefore, the system can be built in three almost separate modules which correspond to the stages, and can be used by the user separately until the entire system is up and working together.

4.7 Information Requirements for an Expert System

An expert system designed to analyze the financial statements of auxiliary enterprises would require several types of information. The most important source of information would be the income statements and balance sheets for each individual auxiliary enterprise. Also helpful would be the financial statements of similar auxiliary enterprises at other institutions. Some of these will be easier to obtain than others. For example, most colleges and universities offer housing and food services to their students, so finding auxiliary enterprises of this type which are similar to those at VPI & SU would not be difficult. On the other hand, finding a Tailor Shop similar to that at VPI & SU is impossible.

For an expert system to perform a thorough analysis of an auxiliary enterprise's financial position, information beyond financial statements will also be required. Most of this information will be available from the university and will vary between auxiliary enterprises. For example, the University Chapel will be interested in the religious preferences

of the student body while the Tailor Shop will want to know the number of cadets enrolled in each class.

An expert system which performs the analysis of auxiliary enterprises' financial positions can be used by both management of the individual auxiliary enterprises and the person in the Office of Business Affairs who oversees all of their financial positions. It may also be useful to the Internal Audit Department. Individual managers can use the expert system in the analysis of their own auxiliary enterprises. They can monitor ratios to ascertain that they stay within acceptable ranges and track trends over time in anticipation of major changes, both positive and negative. The person who oversees all of the auxiliary enterprises' financial positions will perhaps have greater use of the expert system. Since he is not involved in their day to day operations, he is not likely to notice changes in operations which will affect their financial situations. An expert system will note changes in composition and unacceptable situations quickly to him, so that he may take action if required. He can also use the system to evaluate the auxiliary enterprises in the aggregate. Since this is what is seen on the university financial statements, it is critical that the auxiliary enterprises be examined from this perspective.

Chapter 5

A University Tailor Shop Auxiliary Enterprise

The purpose of this chapter is to describe the financial statements of a specific auxiliary enterprise at the university studied, and to establish the reasons behind that particular auxiliary enterprise being selected for further study. To do so, the differences between financial statements of auxiliary enterprises and those of corporate entities are presented. An in-depth discussion of the Tailor Shop's financial statements is provided along with a description of how these statements differ from those of other auxiliary enterprises. Different analytical techniques which can be useful in examining the financial position of the Tailor Shop are then presented.

5.1 Introduction

An expert system could, perhaps, be developed to analyze the financial status of all university auxiliary enterprises. However, since expert systems are typically built in a step-wise fashion, it was felt that a good starting point would be to build a system which analyzes only one auxiliary enterprise. This system could later be extended to include other auxiliary enterprises as well. The auxiliary enterprise selected for this research was the VPI & SU Tailor Shop. This decision was made in consultation with members of management in the Office of Business Affairs who are responsible for overseeing the finances of all auxiliary enterprises. They recommended the Tailor Shop because its recent financial situation has been a problem and has been requiring a lot of their time and efforts. Thus, they felt that an expert system to analyze the Tailor Shop's financial position could assist them in determining what actions might put the Tailor Shop in a better financial position, and also be a tool by which they could monitor the Tailor Shop's financial situation over time.

The unfavorable financial position of the Tailor Shop has been caused by their large inventory. Although revenues fairly consistently exceed expenses, their cash balance is negative, and has been for quite some time. This inventory would not be a problem if the cash reserves built up over the years were large enough to support the inventory, but they have not been. The result is that the Tailor Shop is constantly borrowing upon the reserves of other auxiliary enterprises. Although functioning in this manner has kept the shop operational, it is not self-supporting. Since each auxiliary enterprise is supposed to be self-supporting, the Office of Business Affairs and the Internal Audit Department have both been working with the management of the Tailor Shop to determine what

actions can be taken to put them into a positive cash position. They feel that an expert which could analyze the Tailor Shop's financial position along with answering what-if types of questions could be very beneficial in this endeavor.

5.2 The Tailor Shop's Financial Statements

The financial statements of the Tailor Shop, like those of any auxiliary enterprise, differ from those of the other auxiliary enterprises due to the inherent differences in the nature of their business. The accounting methods which they use do not differ, but the accounts used and the importance of these accounts do. The result of this is that an analysis of the Tailor Shop requires different measures of acceptable performance than an analysis of any other auxiliary enterprise. The following section presents a discussion of these differences and is followed by sections which describe the Tailor Shop's financial statements.

5.2.1 Differences Between Financial Statements of the Tailor Shop and of other Auxiliary Enterprises

One of the major differences found between the financial statements of the Tailor Shop and those of other auxiliary enterprises is in the inventory account, both in terms of importance of the account (in dollars) and in terms of the way in which they account for their inventory. The dollar value of the inventory at the Tailor Shop is very large for the size of their business. In fact, it is quite common for the value of their inventory to be

about the same as their annual gross revenue. If one were to think of that in terms of a retail establishment, it would indicate that they are turning over their inventory only once in a year, which is not a profitable way to run an organization. The reason that the Tailor Shop's inventory appears so high is partially because of the large amount held, and partially because of their accounting practices. Management of the Tailor Shop takes pride in having all of the cadets fully outfitted within the first two weeks of fall semester. In order to provide this service to cadets of so many different shapes and sizes, a large volume of uniforms must be kept in inventory. The accounting practices used on the inventory also contribute to the large dollar balance. Cadets lease, rather than buy their uniforms. Thus, the uniforms which the cadets actually possess throughout the academic year, are considered issued inventory of the Tailor Shop.

Another major difference between the Tailor Shop and other auxiliary enterprises, one which is not reflected on their financial statements but is reflected in their net income, is in the determination of rates. Most auxiliary enterprises determine the service level they want to provide, and then given the costs associated with that level, set their rates. For example, in the health service, the number of doctors, nurses and staff are determined in advance, along with the medications and medical information they wish to provide to the students. They then determine the cost of these services, and from this cost and the expected number of students, the fee which will be charged to each student is determined. Other auxiliary enterprises which use student fees (e.g.s, housing, food services, and Squires Student Center) all use this same basic procedure to determine their fees. Auxiliary enterprises which are dependent on revenue not obtained by student fees (e.g.s, Tennis Pavilion, Laundry, and Equine Center) set their rates based on their costs. Neither of these rate setting methods can be used by the Tailor Shop. They can set some of their own rates, for example those on services offered to the public and to other de-

partments within the university, however, these account for only a small portion of their revenue. The majority of their revenue comes from commutation allowances paid by the armed forces, which are determined by each of the branches individually in conjunction with the Department of Defense. The Tailor Shop has some flexibility in determining the quantity and quality of uniforms issued to cadets but they must stay within guidelines set by the Army, the Air-Force, the Navy and the Department of Defense. Furthermore, they are under pressure from military officials at VPI & SU, in particular General Lane, to offer more than is required by the armed services and the Department of Defense. The result of this is that the Tailor Shop has little control over either the revenues or the expenses associated with the corps of cadets.

The value of fixed assets of the Tailor Shop is fairly minimal when compared to that of other auxiliary enterprises. A complete listing of their equipment, along with cost, date of purchase, and current value as of June 30, 1990, can be seen in tables 1 and 2. Table 1 lists pieces of equipment which have not yet outlived their useful lives, while table 2 lists all equipment currently in use that has been paid off. The total value of all of this equipment is $8680.14, which is quite small for an organization with annual gross revenues in excess of $300,000. There are several reasons for this low level of fixed assets. First, tailoring is very labor intensive so salary and wages represent a much larger part of operating expenses than equipment. Second, the Tailor Shop has been in operation for a long time, and sewing machines often last for long periods of time, often beyond their expected useful lives. Thus, the Tailor Shop has several pieces of equipment, some dating back to 1945, which have been paid off but are fully operational (see table 2). Third, the equipment which they use in their operation is mainly sewing machines, which are not very expensive. Fourth, the Tailor Shop, like other auxiliary enterprises, has most of its accounting functions carried out at the Office of Business Affairs. The result

of this is that much of the equipment associated with these functions, such as calculators and computers, is not necessary for the operation of these enterprises. And fifth, the record keeping that is done within the Tailor Shop is fairly primitive. Therefore, the equipment associated with record keeping, at least until June 30, 1988, consisted of old filing cabinets and tickler files, rather than computers. It should be noted however that the Tailor Shop received a computer in July 1988.

5.2.2 Description of the Tailor Shop's Financial Statements

The financial statements for the Tailor Shop can be found in figures 6 through 9. Figures 6 and 7 present the income statements as of June 30, 1990 on an accrual basis and a cash basis, respectively. The balance sheets on an accrual basis and a cash basis are furnished in figures 8 and 9, respectively. For purposes of financial statement analysis, both of the income statements and the accrual based balance sheet will be used. Throughout this research, it has been stated that statements based on accrual methods of accounting give a better representation of an organization's financial position than those based on cash methods of accounting. Therefore, it was felt that an analysis that did not use accrual based statements would be inadequate. Unfortunately, the VPI & SU accounting system is a cash based one and most of those interested in the financial position of auxiliary enterprises are merely concerned with cash. Therefore, an analysis of auxiliary enterprises which does not incorporate cash based statements would be given no credence. Thus, any analysis performed of the Tailor Shop, or any other auxiliary enterprise, should utilize both cash based and accrual based statements. The cash based balance sheet however, will not be used as it does not provide any information which cannot be be easily obtained from the accrual based statement. The following

Table 1
Tailor Shop Equipment Valuation
June 30, 1990

Item	Cost	Purchase Date	Useful Life (Years)	Years Depreciated	Annual Depreciation	Accumulated Depreciation	Current Value
Brother High-Speed Overlock Machine	$1542.00	10-5-87	7	3	$220.29	$660.87	$881.13
Consew Sewing Machine	749.00	9-24-86	15	4	49.93	199.72	549.28
Consew Sewing Machine	899.00	9-24-86	15	4	59.93	239.72	659.28
3 Singer Sewing Machines Complete	1950.00	4-16-85	15	6	130.00	780.00	1170.00
Sewing Machine	379.00	11-1-88	15	2	25.27	50.54	328.46
Ideal Work Table Top	1600.00	9-1-81	20	9	80.00	720.00	880.00
Carrier Air Unit	5150.00	9-10-86	20	4	257.50	1030.00	4120.00
Calculator	115.00	11-1-89	5	1	23.00	23.00	92.00
						Total Equipment (as of 6-30-90)	$8680.14

Table 2
Tailor Shop Paid Off Equipment
June 30, 1990

Item	Cost	Purchase Date	Useful Life (Years)	Years Depreciated	Annual Depreciation	Accumulated Depreciation	Current Value
IBM XT Computer*	$2000.00	6-1-84	5	5	$400.00	$2000.00	$0.00
Reese Button Hole Machine	1189.00	6-15-50	15	15	79.27	1189.00	0.00
Reese Button Hole Machine	1624.00	6-15-60	15	15	108.27	1624.00	0.00
Union Special Sewing Machine	1100.00	6-15-64	15	15	73.33	1100.00	0.00
Union Special Jointing Machine	700.00	6-15-45	15	15	46.67	700.00	0.00

* approximate cost and purchase date

the year to pay for expected services rendered, as the expected services are often unknown in advance. For example, it is impossible for the Tailor Shop to know in advance how many cadets will gain or lose enough weight to require alterations; how many rank changes there will be; and, how many cadets will quit over the year, and when. Estimations could be made for these types of situations using historical data, but historical data of this nature is not available. Therefore, it is felt that analyses based on annual data would be much more accurate and useful than analyses based on monthly or quarterly data.

5.2.3 Income Statements

The accrual based income statement for the Tailor Shop, as of June 30, 1990 is shown in figure 6. Since VPI & SU does not use accrual accounting methods, this income statement was compiled explicitly for purposes of financial analysis. The revenues in this statement are broken down into two groups, i.e., those obtained from the corps of cadets and those obtained from other sources. It was felt that the corps of cadets should be broken out separately as it represents such a substantial portion of the Tailor Shop's business. Furthermore, operations associated with the military are the only ones that require inventory and so it was felt that the cost of goods issued should be subtracted only from the applicable revenue.

The group of accounts listed under Revenue from Other Operations encompasses all non-military operations, and can be divided into five accounts. These include; public, students/faculty/staff, inter-departmental work, music department, and state related activities. Revenue placed in the public account is obtained from charges for services

rendered to people of the local community. The student/faculty/staff account, as its name implies, is used for revenue obtained from students, faculty and staff members of VPI & SU. The inter-departmental account is for all revenue obtained from other departments within the university, with the exception of the music department. Examples of these other departments include; the athletic association, the police department and food services. A separate revenue account is maintained for the music department because work done for that department is quite substantial when compared to that for any other department. The state related account is used for revenue obtained from government agencies not related to the university, most notably, police departments. The revenue obtained from all of these sources is mainly for services rendered as nothing is bought for, or sold to, these customers. The only purchases made for servicing the users of these accounts are small supplies, such as thread and elastic.

With one exception, the expenses on the accrual based income statement come directly from the VPI & SU accounting system. The one exception is the depreciation expense. This figure is not available from the VPI & SU accounting system, as depreciation is not accounted for in cash based systems. Table 1 however lists all of the Tailor shop's equipment along with its annual depreciation (calculated on a straight-line basis), and this number was calculated from the list.

It should be noted that this accrual based income statement is not completely based upon accrual accounting methods. The difference between this one, and one based solely on accrual methods, however, is immaterial. Since the actual accounting system is cash based, payables and receivables are not booked until a cash transaction occurs. Therefore, it is possible that revenues that have been earned but not received, or costs that have been incurred but not paid, are not reflected on the statement. The reason

Corps of Cadets Revenue				
Army UCF Revenue	57,698.43			
Navy UCF Revenue	64,733.62			
Air Force UCF Revenue	68,145.58			
Cadet Only Revenue	31,449.28			
AF Field Training	5622.00			
Total Corps Revenue		227,648.91		
Cost of Goods Issued				
Beginning Inventory (issued and unissued)	251,967.00			
Add: Purchases	47,074.00			
Less: Ending Inventory	241,114.20			
Cost of Uniforms Issued		57,926.80		
Gross Profit on Cadet Uniforms (1)			169,722.11	
Revenue from other Operations				
Public		4,869.54		
Students, Faculty, Staff		51,459.45		
Inter-Departmental Work		4,111.53		
Music Department		14,885.50		
State Related		4,039.10		
Total Other Revenue			S79,365.12	
Total Gross Profit				S249,087.23
Operating Expenses				
Personal Services				
Employer Retirement Contrib	19,673.00			
FICA; Other	11,927.00			
FICA; Wage State Employees	637.00			
Group Insurance	1,604.00			
Medical/Hosp Insurance	13,339.00			
Salaries Classified, Other	157,260.00			
Wages General	8,407.00			
Wages Student	0.00			
Total Personal Services		212,847.00		

Figure 6
Tailor Shop Income Statement
Accrual Basis
June 30, 1990

Contractual Services			
Postal services	77.00		
Printing	60.00		
Telecomm. Services	1,253.00		
Plant Repair & Maintenance Ser	45.00		
Laundry & Linen Services	6,851.00		
Skilled Services	178.00		
Travel	0.00		
Auto Data Proc Hardw	0.00		
Computer Charges	0.00		
Total Contractual Services		8,464.00	
Supplies & Materials			
Office Supplies	109.00		
Stationery & Forms	51.00		
Auto Data Proc Supplies	0.00		
Custodial Repair & Maint.	78.00		
Mechanical Repair & Maint.	211.00		
Total Supplies & Materials		449.00	
Continuous Charges			
Property Insurance	596.00		
Agency Service Charges	23,128.00		
Electrical Service Charges	4,242.00		
Water & Sewer Service Charges	52.00		
Computer Peripheral	240.00		
Workmen's compensation	1,895.00		
Total Continuous Charges		30,153.00	
Depreciation Expense		845.92	
Total Operating Expenses			252,758.92
Net Income from Operations			(S3,671.69)

Footnotes: (1) This includes only the actual cost of the uniforms. It does not include expenses associated with tailoring and cleaning the uniforms, which are part of the services required by the armed forces and are expected to be taken from commuatation allowances.

Figure 6 (continued)
Tailor Shop Income Statement
Accrual Basis
June 30, 1990

Corps of Cadets Revenue				
Army UCF Revenue	57,698.43			
Navy UCF Revenue	64,733.62			
Air Force UCF Revenue	68,145.58			
Cadet Only Revenue	31,449.28			
AF Field Training	5,622.00			
Total Corps Revenue		227,648.91		
Cost of Goods - Uniform Purchases		47,074.00		
Gross Profit on Cadet Uniforms (1)			180,574.91	
Revenue from other Operations				
Public		4,869.54		
Student/Faculty/Staff		51,459.45		
Interdepartmental		4,111.53		
Music Department		14,885.50		
State Related		4,039.10		
Total Other Revenue			S79,365.12	
Total Gross Profit				S259,940.03
Operating Expenses				
Personal Services				
Employer Retirement Contrib	19,673.00			
FICA; Other	11,927.00			
FICA; Wage State Employees	637.00			
Group Insurance	1,604.00			
Medical/Hosp Insurance	13,339.00			
Salaries Classified, Other	157,260.00			
Wages General	8,407.00			
Wages Student	0.00			
Total Personal Services		212,847.00		

Figure 7
Tailor Shop Income Statement
Cash Basis
June 30, 1990

Contractual Services			
Postal services	77.00		
Printing	60.00		
Telecomm. Services	1,253.00		
Plant Repair & Maintenance Ser	45.00		
Laundry & Linen Services	6,851.00		
Skilled Services	178.00		
Travel	0.00		
Total Contractual Services		8,464.00	
Supplies & Materials			
Office Supplies	109.00		
Stationery & Forms	51.00		
Auto Data Proc Supplies	0.00		
Custodial Repair & Maint.	78.00		
Mechanical Repair & Maint.	211.00		
Total Supplies & Materials		449.00	
Continuous Charges			
Property Insurance	596.00		
Agency Service Charges	23,128.00		
Electrical Service Charges	4,242.00		
Water & Sewer Service Charges	52.00		
Computer Peripheral	240.00		
Workmen's compensation	1,895.00		
Total Continuous Charges		30,153.00	
Equipment Expense		115.00	
Total Operating Expenses			252,028.00
Net Income from Operations			$7,912.03

Footnotes: (1) This includes only the actual cost of the uniforms. It does not include expenses associated with tailoring and cleaning the uniforms, which are part of the services required by the armed forces and are expected to be taken from commuatation allowances.

Figure 7 (continued)
Tailor Shop Income Statement
Cash Basis
June 30, 1990

depreciated over its useful lifetime. Thus, the depreciation expense shown in figure 6 represents the annual expenses associated with eight different pieces of equipment which have been purchased over the past several years.

5.2.4 Balance Sheets

The accrual based balance sheet for the Tailor Shop is given in figure 8. This balance sheet is much simpler than one of a profit oriented organization for two reasons. First, being merely a subsidiary of a much larger entity, the Tailor Shop's operations and accounting methods are much simpler. For example, they have no need to hold marketable securities or long-term investments, nor do they have need for long-term borrowings or equity capital. This is because activities associated with these types of accounts are carried on at the university level. The resulting statements then reflect this simplicity. And second, as cited earlier, current receivables and payables are not posted to this statement. This is due to the complexity involved in obtaining them and the immaterially in the differences that would result if they could be obtained.

The major asset of the Tailor Shop is inventory. The other asset category is equipment. Since tailoring is such a labor intensive business, the equipment associated with this organization is low. On the liability and equity side of the balance sheet, only one liability, that is, cash basis loan from other auxiliaries, exists. This is the amount which the Tailor Shop has borrowed from other auxiliary enterprises to support its assets. The size of this figure reflects an unfavorable situation. If this figure were temporary, it would probably be acceptable, however, an evaluation of past balances reveals that this number has been very large for quite some time. The reserve account on the Tailor Shop's balance sheet

Assets		
Current assets		
Inventory	241,114.20	
Long-term assets		
Equipment	8,680.14	
Total assets		$249,794.34
Liabilities and Capital		
Current liabilities		
Cash basis loan from other auxiliaries	196,988.05	
Equity		
Reserves	52,806.29	
Total liabilities and equity		$249,794.34

Figure 8
Tailor Shop Balance Sheet
Accrual Basis
June 30, 1990

is analogous to an equity account on a corporate balance sheet, that is, it gives an indication of net worth for the organization.

In compiling a balance sheet for the Tailor Shop on an accrual basis, inventory is being valued at cost for new items and half-cost for used items, and equipment is being valued at cost less depreciation. In doing so, one very large assumption is being made. This assumption is that if the Tailor Shop were to cease to be a going concern, these assets could be sold at value. If this were the case, the other auxiliary enterprises could be paid what they are owed, and the balance in the reserve account would be what remained after liquidation. But an examination of this assumption does not give much credence to its validity. Industrial sewing equipment valued at $8680 could probably be sold for that, or at least not too much less. In the worst case, it could be scrapped, costing only $8680. The probability associated with selling the uniforms at their value is extremely low. It is highly unlikely that $241,114 worth of *distinctive* VPI & SU cadet uniforms (some used, some new), could be sold for $241,114, as it is unlikely that VMI or Texas A&M would change their uniforms so that they could buy VPI & SU's old ones. Therefore, when evaluating the Tailor Shop from an accrual basis, this underlying assumption must be kept in mind.

The cash based balance sheet for the Tailor Shop as of June 30, 1990, which is quite simple, is shown in figure 9. On a cash basis, all equipment and inventory is expensed at the time of purchase. In other words, it can be thought of as a sunk cost, which implies that the Tailor Shop has no assets. Unfortunately, to balance against no assets, they have a very large liability. The due to other auxiliary enterprises account shows a balance of $196,988. To balance this account then, they have a net worth, or reserve balance of negative $196,988.

Assets		
-None-		
Total assets		$0.00
Liabilities and Capital		
Current liabilities		
Cash basis loan from other auxiliaries	196,988.05	
Equity		
Reserves	(196,988.05)	
Total liabilities and equity		$0.00

Figure 9
Tailor Shop Balance Sheet
Cash Basis
June 30, 1990

Although it appears that the accrual based balance sheet and the cash based balance sheet are barely related, getting from one to the other is not difficult. The due to other auxiliary enterprises account on both is the same, and is the starting point for balancing either one. The difference results from the difference in asset valuation methods. On the cash based statement, assets are non-existent, while on the accrual based statement they are valued at current value. To obtain the reserve balance on the accrual based statement, the difference between total assets and the due to other auxiliary enterprises account is calculated. On the cash based statement, since assets do not exist, the reserve balance is simply the negative of the due to other auxiliary enterprises account.

5.3 Financial Statement Techniques That Can be Useful in the Evaluation of the Tailor Shop

A financial analysis of the Tailor Shop will require some measures that are typical of other organizations and other measures which are specific to their situation. Some measures which are very important to corporations and perhaps even to other auxiliary enterprises, will be totally inappropriate when applied to the Tailor Shop. Therefore, an analysis of the Tailor Shop's financial position must be customized to fit their needs using some of the techniques and ratios commonly found in the literature and also some measures specifically designed for their situation. Since a thorough analysis of some of these measures will not deal with figures that can be found in the financial statements, it will be necessary to gather other information besides the four financial statements discussed earlier. A thorough analysis of the Tailor Shop's financial situation will in-

clude; a comparison of budget to actual costs and revenues, ratio analysis, trend statements, and common size statements over time. Each of these topics will be presented individually in the sections which follow.

5.3.1 Evaluating Deviations from Budget

The Tailor Shop, like all auxiliary enterprises at VPI & SU and many not-for-profit organizations, prepares a budget in advance and is expected to operate within the guidelines of this budget. At VPI & SU, the budgeting process entails determining budgets for the seven years succeeding the current year, which actually means devising a budget for the latest year in the series, and updating the budget for the other six years. For each auxiliary enterprise, the budget includes expected revenues and expected costs by each expense category (e.g.s, personal services, contractual services, and supplies and materials). Therefore, at any given time, the Tailor Shop has available the current year's budget by item, the current year's actual revenues and costs, and the approved budget for the next seven years.

Monitoring the Tailor Shop's deviations from budget on an item by item basis is a good place for a financial analysis to begin. An analyst merely needs to determine what ranges of deviations are acceptable and then determine the underlying causes for those outside their respective ranges. Of course, determining the underlying cause and determining whether or not the situation requires attention is not always a simple task. Both revenues and expenses should be evaluated for deviations in both directions. If revenues appear abnormally high it should be determined why the Tailor Shop has received more revenue than expected and whether or not it is a problem. It is doubtful that a problem

exists, however, it is worthwhile to identify the unexpected source of this revenue. If revenue is less than that expected on the budget, there is probably cause for concern. Therefore, a deeper evaluation which examines the different sources contributing to revenue should be performed in order to determine which source has not materialized or was less than expected. Costs should also be compared to budget and deviations in either direction noted. It should be determined whether costs in any particular category exceed those expected in the budget. If any do, the underlying cause should be determined. Monitoring these deviations is very important for two reasons. First is the obvious reason, if costs are too high, a low (or perhaps negative) income may result. And second is the VPI & SU accounting system's reaction to costs which exceed budgeted amounts. If a bill is submitted for payment, and payment of that bill will result in the auxiliary enterprise exceeding its budget, the accounting system will not pay it. Such a situation can be embarrassing for management of the auxiliary enterprise, and also damage their relationships with suppliers. Expense categories which are abnormally low should also be examined as even though such a situation appears favorable, it may not be. In the Tailor Shop, if actual expenses are not as high as expected, it might be that they are not building their inventory as much as was planned, they have not purchased the equipment which they were expected to purchase, or that their labor force is down. With any of these types of situation, a deeper examination will be required as it is impossible to label the situation as either favorable or unfavorable without more non-financial information.

5.3.2 Ratio Analysis

Some of the ratios discussed in Chapter 3 are directly applicable to the financial statements of the Tailor Shop, some are applicable with minor adaptations, and some are totally inappropriate. Since accrual based statements provide a better representation of an organization's true financial position, all ratios will be calculated using these statements.

The current ratio (current assets / current liabilities), which measures an organization's ability to meet its short-term financial obligations is directly applicable to the Tailor Shop. This ratio will give an indication of their ability to pay their debt to other auxiliary enterprises. When interpreting this ratio though, it is important to remember the assumption underlying the compilation of these statements. That assumption was that the Tailor Shop's inventory can be sold for its current value if necessary, an assumption which would probably be impossible to validate.

Liquidity ratios other than the current ratio, which are often used in financial statement analysis of organizations, cannot be applied to the Tailor Shop, due to the simplicity of the Tailor Shop's financial statements. Other liquidity ratios often exclude inventory from current assets, and since inventory is the only current asset held by the Tailor Shop, calculation of such ratios would result in values of 0, which are useless for comparison purposes.

Most leverage/capital structure ratios do not apply to the Tailor Shop as the Tailor Shop has no real capital structure. Having no stockholders simplifies matters relating to capital considerably. One ratio that might apply in the future is the times interest earned

ratio (operating income / annual interest payments). This ratio was designed to evaluate an organization's ability to meet its interest payments. At this time, the Tailor Shop has no long-term debt and does not pay interest on its short-term debt, so the times interest earned ratio is inappropriate. However, if the Tailor Shop were to expand substantially, requiring new quarters, or if tailoring became highly mechanized (or robotized) requiring a large investment in equipment, the ratio would become appropriate.

Although profitability is not a major goal of the Tailor Shop, several of the profitability ratios could be useful in evaluating their performance, as these ratios actually measure efficiency. The return on assets ratio ((net income after tax + interest expense - tax benefit of interest expense) / total assets) is useful in the evaluation of any organization as it measures how efficiently the organization is utilizing its total assets. Therefore, it should also be useful to the Tailor Shop.

The gross profit ratio and net profit ratio could be used in an analysis of the Tailor Shop, although a little adaptation to both of them would make them more meaningful. The gross profit ratio (gross profit / net sales) was designed to measure the percentage of each sales dollar remaining after the cost of goods sold has been covered, to provide for other expenses and to contribute to net profit. Since the gross profit ratio is greatly affected by inventory rate, some analysts prefer to use the net profit ratio (net income before taxes / net sales) which is a more conservative measure. Both of these ratios were designed for organizations which sell merchandise, rather than services. Since the Tailor Shop provides both, it is felt that these ratios should only be applied to the military operations, since all other operations deal primarily with services. In order to make this adaptation, net sales should be replaced by commutation allowances in both ratios, and

net income before taxes should be adapted so as not to include revenues obtained, or costs incurred, from other operations.

Another profitability ratio which is applicable to the Tailor Shop is the expense to revenue ratio. This ratio measures how much of each revenue dollar is consumed before taxes. If this ratio is greater than one, it indicates that the organization is not generating enough revenue to meet its before tax expenses. This ratio can be calculated for the Tailor Shop as a whole, and also for each individual market segment (that is, public, students/faculty/staff, etc.).

Two turnover ratios discussed in Chapter 3 are also applicable to an analysis of the Tailor Shop's financial statements, although both of these require minor adaptations. The total asset turnover ratio (sales / average total assets) is a measure of the number of times annual sales cover total assets. Since this is measuring the turnover of merchandise, it should only be applied to operations associated with the Corps of Cadets. Therefore, sales should be replaced by commutation allowances earned, and average total assets should be adjusted to include only that portion of assets which are used in serving the Corps. Average total assets then should include all inventory and a portion of equipment which is determined by evaluating the proportion of time the equipment is used servicing the uniforms for the Corps.

The inventory turnover ratio could also be useful in evaluating the financial statements of the Tailor Shop. The inventory turnover ratio (sales / average inventory) is used to measure how fast an organization is turning over its inventory. In this ratio, the figure used for sales should be replaced by commutation allowances earned. This ratio, like the total asset turnover ratio, can be used only to evaluate the Tailor Shop's operations as-

sociated with serving the Corps of Cadets, since these are the only operations which have inventory.

5.3.3 Trend Statements

Trend statements can be a very valuable tool in the analysis of the Tailor Shop. They can be used on the income statements to locate trends in revenue sources, expenses categories, and net income. Trend statements can also be used on the balance sheets to track trends in inventory levels, equipment, amounts owed to other auxiliary enterprises, and reserves. These trend statements should be calculated for the accrual and cash based income statements and for the accrual based balance sheets, and should cover a few years. Initially, statements over a three year period are probably sufficient, but as time passes the earlier years should not be dropped unless some major change is made which makes them irrelevant.

Ideally, trend statements should also be prepared for the three previous years for auxiliary enterprises in the aggregate. If this were done, it would make it possible to compare the trends of the Tailor Shop to those of auxiliary enterprises as a whole. Unfortunately, collecting the data in the aggregate would be extremely time consuming as accrual based information does not exist for any auxiliary enterprises except the CEC.

5.3.4 Common Size Statements

Common-size statements could be useful for both individual auxiliary enterprises and auxiliary enterprises in the aggregate, as they would be a comparison tool for those of the Tailor Shop. Unfortunately, the only ones which could be compiled without major efforts are those based on the cash based income statements. Since a cash based income statement does not give a very good representation of an organization's true financial position, compiling common-size statements of this type would not be very beneficial.

Although trend statements for auxiliary enterprises in the aggregate and common-size statements for individual ones would be too difficult to compile at this time, this may not always be the case. If financial analyses of the type to be performed on the Tailor Shop were to be performed on all auxiliary enterprises, then the information for these statements would be readily available. Also, with the new accounting system in VPI & SU's accounting department, this data could be available if it were requested by the proper authorities. Unfortunately, if it were to be gathered on the accounting system, it would not be useful for several years as historical data is necessary for these types of analyses.

5.3.5 Information Requirements

In order to perform actual analyses of the types discussed above, more than the mere calculations are required. An analysis also requires an interpretation of the output. An interpretation will note what measures appear within reason and which should be noted as exceptions. The ones which are noted as exceptions will require further investi-

gations. Questions one might ask include: is there a reason for a particular deviation? if so, what is that reason? are there several offsetting situations which individually might make particular ratios look inadequate, but in the aggregate have no major effect? if so, is this or is it not a problem? Answers to these and other related questions require an analysis into the operations of the Tailor Shop, and will require information other than that which can be found on the financial statements. For example, suppose an analysis finds that commutation allowances for the current year are below that of previous years. In order to determine why this has occurred, data beyond the financial statements is required. It may be that commutation allowances are low because the size of the corps has decreased. This is a logical reason, but not the only one. It might be that the mix of the cadets in the different classes has caused this decrease. Commutation allowances allotted by all of the branches of the service are much higher for juniors than they are for freshmen and sophomores (e.g., in 1989-90 commutation allowances were $373 for freshmen and sophomores, and $1174 for juniors). Furthermore, freshmen are the ones which require the most in uniforms, as they must be newly fitted and they do not have any old uniform items. Therefore, if in a given year the number of freshmen and sophomores is high when compared to that of juniors and seniors, the average commutation allowance received per cadet will appear quite low and adversely affect income.

The amount of data required beyond that available in the financial statements will depend upon the depth of the analysis desired. For the Tailor Shop, data pertaining to the different operations will be quite important. The largest operation, and the one which will require gathering the largest amount of data, is that associated with servicing the corps of cadets. Some of the information which will be necessary in order to interpret an analysis includes: commutation allowances for each class; number of students in each class; and costs associated with performing each individual task required in outfitting

and maintaining a cadet in uniform. For non-military operations, there is also need for data collection, although the data collected will not be as voluminous. For example, for operations performed for the music department it would be helpful to have the number of Marching Virginia members, pep band members, and symphony band members. For each of these groups, a count of how many of them were new members would also be useful information, as new members are more likely to require alterations.

Some of the most useful information that can be collected for an analysis of the Tailor Shop is the costs incurred for each individual operation. This is extremely useful information for two reasons. First is the obvious one, which is to determine whether or not each operation is profitable and which operations contribute the most to profits. And second, the Tailor Shop must justify their expenses pertaining to the Corps of Cadets to the Army, the Air Force, and the Navy. To date, none of the services have questioned the Tailor Shop on their methods of marking up uniforms and charging for administrative functions, but this situation cannot continue indefinitely.

Information pertaining to costs associated with each operation of the Tailor Shop is not available prior to July 1988. Prior to that time, no attempt was made to allocate costs by operation. Due to the financial difficulties encountered by the Tailor Shop, the Internal Audit Department set up a cost system during July 1988. Under this new system, personnel and direct costs are allocated to one of several categories. These categories include: work done for the corps of cadets; sales to students, faculty and staff; sales to other government entities; interdepartmental sales; and sales to the general public. Costs and personnel charges which cannot be allocated to one of these categories are posted to a 'general costs' account.

Chapter 6

An Expert System Prototype for Financial Analysis of a University Tailor Shop

The purpose of this chapter is to discuss the prototype expert system developed to evaluate the financial position of the VPI & SU Tailor Shop. This will include: specifics regarding the hardware and software requirements, the limitations of the software package chosen, an overview of the entire system, a detailed description of each module of the system, and a description of what is required to update the system.

6.1 Approach to Building the Expert System Prototype

The following sections present the hardware and software selected for this research, along with the limitations of the software selected.

6.1.1 Hardware and Software

Since there are many expert system software packages available for microcomputers, and since the mainframe computer at VPI & SU does not support any expert system package, it was decided to use a PC-based expert system shell. After reviewing several shells, the one selected for this research was GoldWorks, by Gold Hill Computers. Hardware requirements for GoldWorks include a minimum of a 286 microcomputer with 6 megabytes of RAM. After a year of working with GoldWorks, it became apparent that the actual RAM requirements for anything but a very small system, far exceeded the 6 megabytes stated by the product vendor. It was discovered that 10 megabytes of RAM was insufficient for this research project. Therefore, it was decided that another software package would be used.

The second software package selected was VP-Expert, by Paperback Software. Although this package is not as sophisticated as GoldWorks, (i.e., it does not support frames, instances, sponsors, handlers, etc.), it requires less memory and was adequate for the research undertaken. VP-Expert is a rule based system which can interface with spreadsheet and database packages, and also has graphics capabilities. Hardware requirements for VP-Expert include at least an 8088 microcomputer with 512K of RAM and a color monitor with EGA graphics, or a monochrome monitor with a Hercules monochrome graphics adapter. It should be noted however, that these requirements are the absolute minimum. The system built has been found to run slowly on a 486 with 8 megabytes of RAM (an issue which will be discussed in more detail later).

6.1.2 Limitations of VP-Expert

A limitation of VP-Expert is that it is a rule based system. Although it was originally felt that this might be a limitation for our research, it was found not to be. Several limitations were found. These include; a maximum size limitation on files, an inability to properly read arrays from spreadsheets, and a lack of efficiency which resulted in an extremely slow system.

6.1.2.1 File Sizes

It was found that VP-Expert cannot manipulate files that are much over 100 kilobytes. When editing files larger than this, VP-Expert destroys a file rather than saving it.

6.1.2.2 Arrays

It was determined that VP-Expert cannot read from and write to spreadsheets using arrays. VP-Expert lengthens arrays rather than changing the values in them. Therefore, after VP-Expert has written to a spreadsheet, the only way to accurately retrieve data from that spreadsheet is to access individual cells, rather than arrays. This was not only inefficient in terms of actual programming, but also drastically slowed down the system.

6.1.2.3 Speed and Efficiency

The final prototype system built has over 100 files and requires a little more than 4 megabytes of disk space. This includes both VP-Expert and VP-Planner spreadsheet

files. In running the system, VP-Expert must constantly load files, switch knowledge bases, and read from and write to spreadsheets. All three of these activities require a substantial amount of time. And since the system is constantly performing all three of these activities, it is very slow. For example, it takes more than six hours to run through the entire system on a computer with a 386 processor.

6.2 System Overview

The prototype expert system designed has five major modules. The five modules were chosen and designed after lengthy discussions with the Assistant Director of Risk Management and formerly Financial Coordinator of Business & Auxiliary Operations (this individual, Mr. Bruce Downey, was the expert used in developing the system). These modules have been developed to incorporate the major factors which should contribute to the financial success/failure of the VPI & SU Tailor Shop. A module was also developed to answer what-if type questions for a user. The following sections present a brief discussion of the entire system, an in depth discussion of each module, and a description of the requirements for updating the system.

6.2.1 A Brief Description of the System

The expert system prototype was designed to aid a user in the analysis of the financial position of the VPI & SU Tailor Shop. It allows a user to select which modules to perform and also presents a choice of whether or not a hard copy is to be printed. Fig-

ures 10 through 13 present a layout of the files and the relationships among them. A description of each of the modules will be given in the following sections.

6.2.2 System Modules

The file trees displayed in figures 10 through 13 show how the files interrelate. In examining the tree, it can be seen that the first decision to be made by the user is whether or not to print the session. If one chooses to print the session, then control passes to pts (print tailor shop), otherwise control passes to npts (no print tailor shop). With the exception of graphics, the features available under either option are the same. The differences in the graphics will be discussed later under the appropriate section. Once the print/no-print option has been selected, the user moves on to selection of one of the following modules. These modules include: budget analysis, ratio analysis, trend statements, graphics, and what-if analysis. Each of these modules, along with a sample session will be presented in the following sections.

6.2.2.1 Budget Analysis

Budget analysis is an important part of the financial analysis of all auxiliary enterprises in the university. Annual budgets are prepared in advance for both revenues and expenses, and auxiliaries are expected to live within the guidelines set forth by these budgets. For the Tailor Shop, the budget consists of a single figure for revenue, but is broken down by category for expenses. Categories include; personnel services, contractual services, supplies and materials, continuous charges, and equipment purchases.

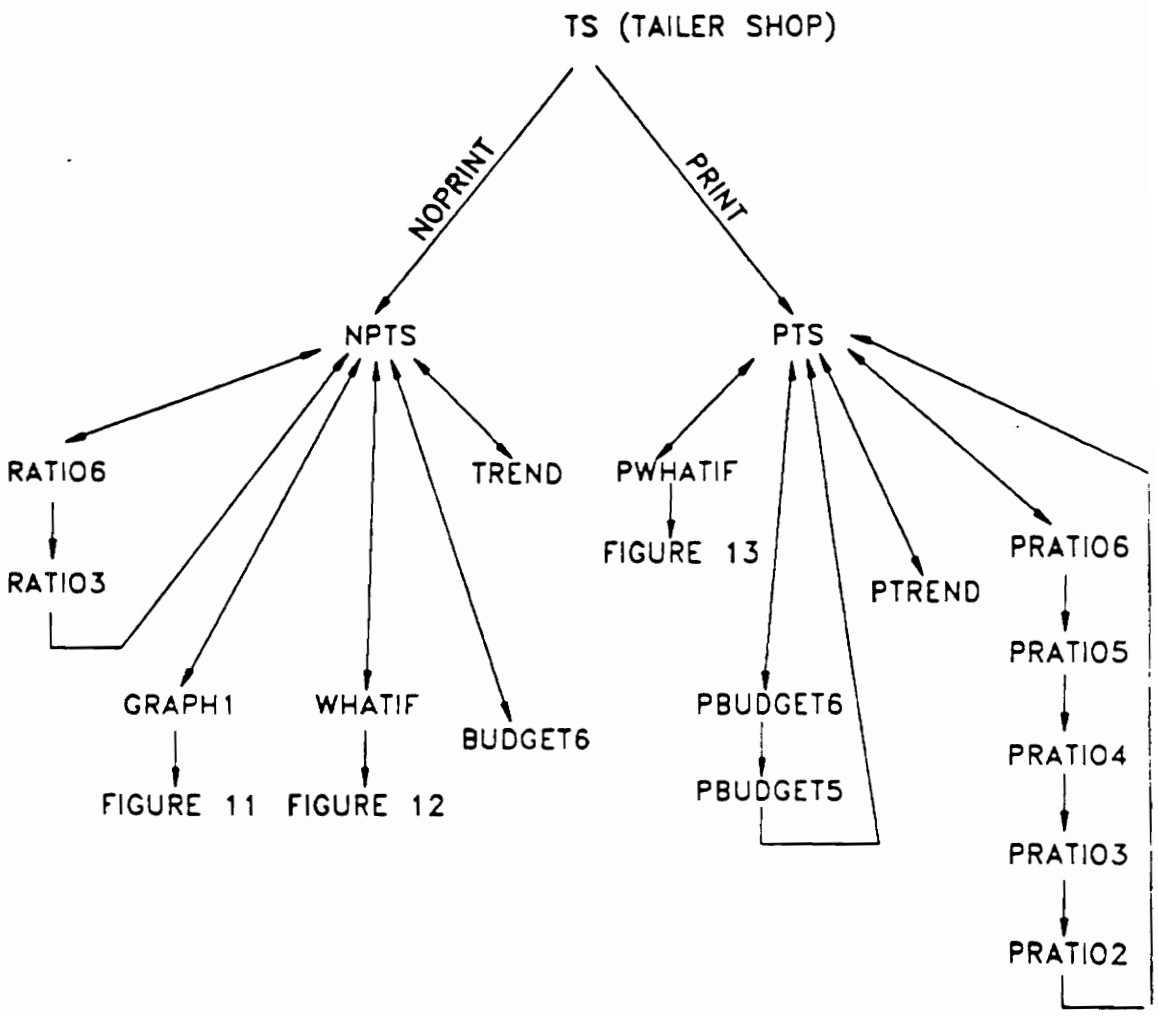


FIGURE 10
RELATIONSHIPS AMOUNG FILES

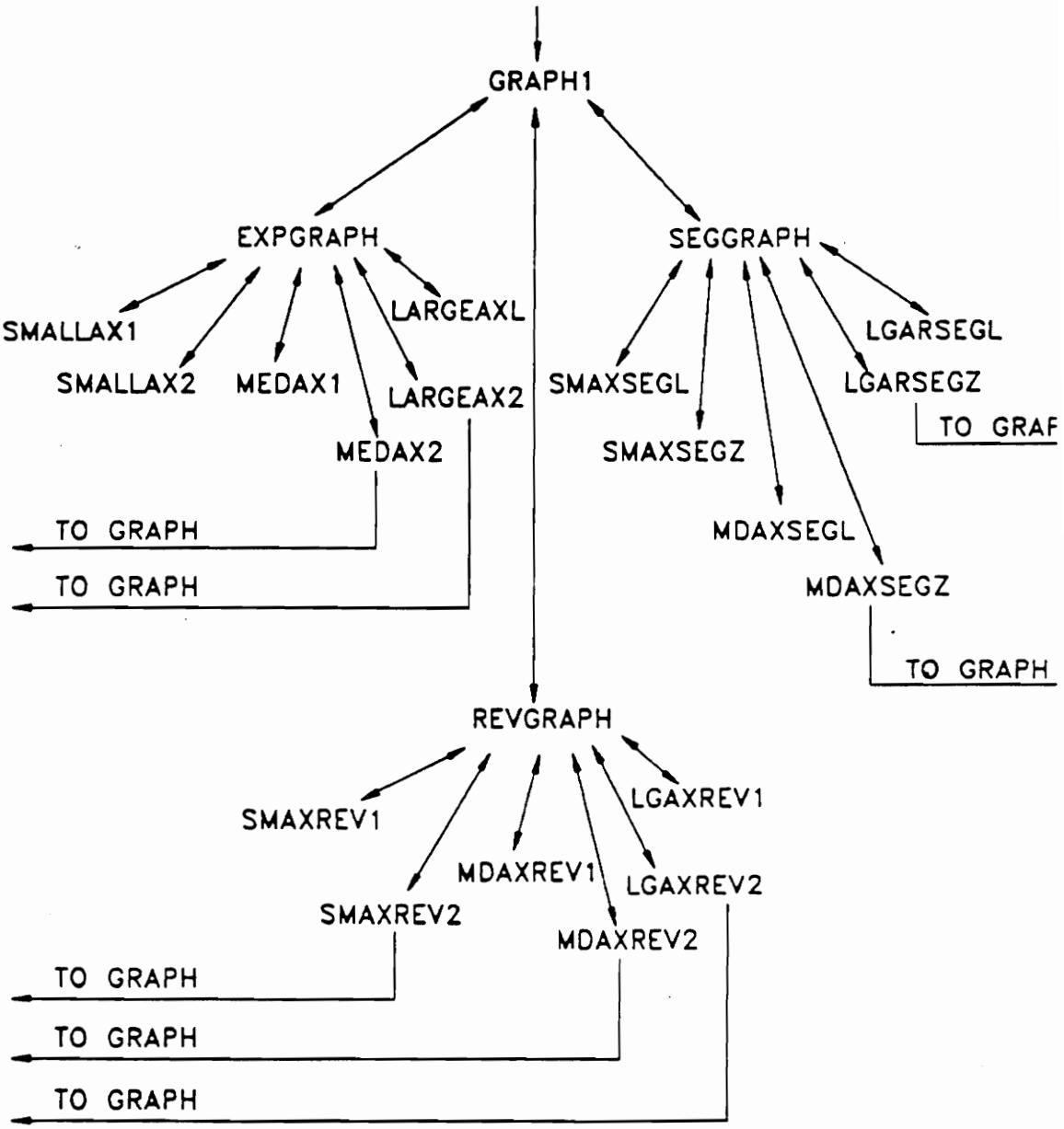


FIGURE 11
RELATIONSHIPS AMOUNG GRAPH FILES

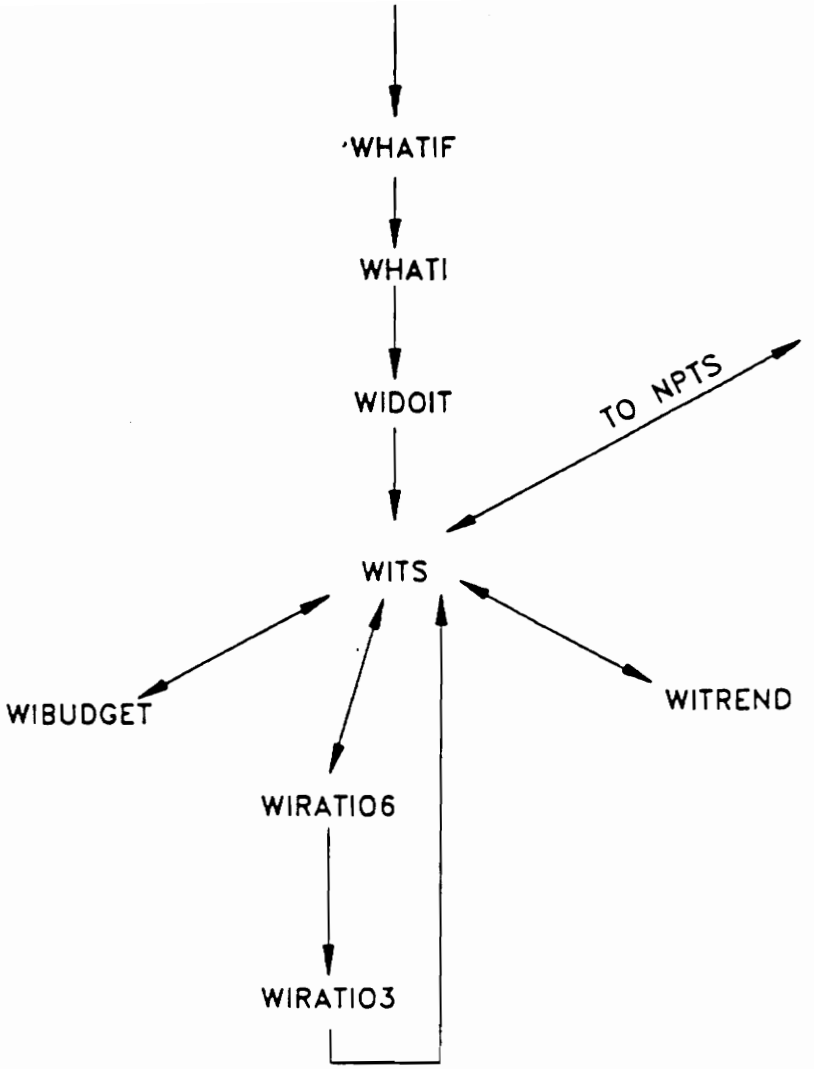


FIGURE 12

RELATIONSHIPS AMONG
WHAT-IF FILES

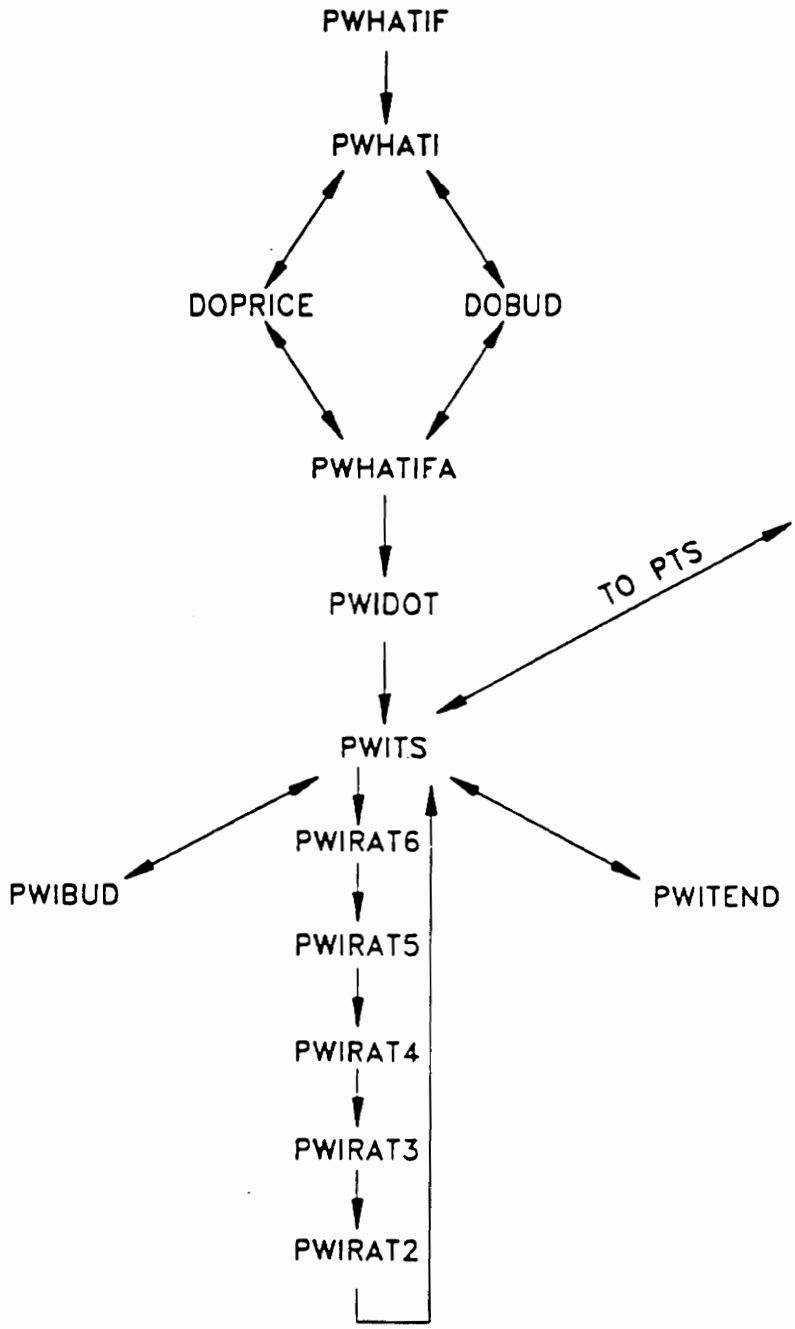


FIGURE 13

RELATIONSHIPS AMONG
PRINTING WHAT-IF FILES

Within individual categories, the budget is sometimes, although not always, broken down further.

Since the budget is given on an annual basis, both revenue and expense items must be broken down further to be useful, and this is done by the expert system. The system first breaks revenue into six different revenue categories and then breaks down each category into months. The first breakdown is done using the previous year's figures along with some information from the user. To do the first breakdown, the system compares the budget revenue figure of the present year with that of the previous one. If it is the same, the system assumes that the breakdown into categories will be the same and thus breaks it down accordingly. For example, if the corps provided 55% of the revenue in the previous year, and the budget has not changed, it is assumed that the corps will provide 55% of the revenue in the current year.

If the budget changes, however, allocations are made differently. First, the portion of the budget which is equal to the prior year's budget is allocated as if no difference exists. The difference however, is not allocated according to the same proportions. According to the expert source used, if the budget either increases or decreases, there must be a reason, and therefore the user should know which revenue category (or categories) are responsible for the difference. The system therefore gives the user the difference and prompts for a response regarding responsible market segments. This difference in the budget between years is then allocated to the appropriate market segments according to the user's response.

Calculating expected amounts for expense categories is more straightforward. It is expected that expenses will be incurred at about the same rate as in previous years. Thus, given an annual budget figure and the prior year's monthly and annual expenses, the

system determines the expected expenses by month according to the proportions of expenses incurred in the previous year.

When comparing the budget to actual figures in any given revenue or expense category, it would be unrealistic to expect budget and actual figures to be exactly the same. Therefore, the system puts bounds on the expected values calculated, and then determines whether or not the actual figures fall within these bounds. The bounds used to create these ranges are +/- 20% of the expected amount. However, a user can change these limits for any of the categories desired.

Once the system has determined the acceptable ranges for each expense and revenue category, it proceeds with the analysis. The analysis compares actual to budget to see if the actual figures appear to be in line with the budget. If they do, then the system will inform the user of this. If actual figures are out of range, the system attempts to determine why. Examples of this can be seen in several of the expense categories in the sample session which follows.

Sample Session with Budget Analysis

Given below is a sample session with the budget analysis module of the system. From the main menu, if the user selects budget analysis, the following is an example of what might be shown on the screen and also printed out if desired.

BUDGET ANALYSIS

Budget analysis is used to determine whether or not the organization's revenues and expenses have been within budget over time. For the Tailor Shop, a budget is determined in advance for the year. A monthly review of the budget versus actual data is conducted to determine whether or not the Tailor Shop is operating within its budget. An acceptance

range, which is currently + or - 20% of the expected amount for each revenue and expense category, is used to determine whether or not each item is within budget.

Would you like to change any of these ranges for the revenue categories?

no yes

yes

Would you like to change any of these ranges for the expense categories?

no yes

yes

Which revenue limits would you like to change?

military	public	stu fac staff
interdepartmental	music dept	state related

military

What percentage below expected should the lower limit be for military revenue? Please do not use decimals.

10

What percentage above expected should the upper limit be for military revenue? Please do not use decimals.

10

Which expense category limits would you like to change?

equipment	uniforms	personnel
contractual	supplies materials	continuous

personnel

What percentage below expected should the lower limit be for personnel expenses? Please do not use decimals.

10

What percentage above expected should the upper limit be for personnel expenses? Please do not use decimals.

10

The annual budget for the Tailor Shop is determined for revenue in total, and by category for expenses (e.g. personnel, continuous, etc). In order to determine whether or not revenue is within budget, the budget is first divided into market segments. Thus, any increase or decrease in the expected revenues must be allocated to one or more of these revenue segments. If such an increase or decrease does occur, your will be asked to determine which segments are responsible for the change.

The amount budgeted for revenue this year has decreased from the previous year by $9000. Which market segments are responsible for contributing less this year to total revenue? Please make certain that your input adds up to $9000.

military	public	stu fac staff
interdepartmental	music dept	state related

music dept
interdepartmental
military

How much is military revenue expected to decrease?

3000

How much is interdepartmental revenue expected to decrease?

3000

How much is music department revenue expected to decrease?

3000

The following analysis will determine whether or not each revenue and expense category is over budget, under budget, or within budget (i.e., over, under, or within the previously prescribed ranges). In this analysis, if an item is over or under budget, this will be indicated along with the percentage by which it is over or under budget. The actual and budget values will not be displayed. Given the annual budget, one must break the budget down into 12 monthly intervals. This is done by using the previous year's actual figures to determine how much of the current year's budget should have been used thus far in any given month. For categories which provide a fairly steady flow of income or expense (e.g. salaries), any exception is important. For other categories however, the flow of funds may be discontinuous. For example, most of the revenue from the corps is booked to the Tailor Shop late in the year, while revenue from the music department is typically paid twice, once in the fall and once in the spring. Repairs and maintenance will be erratic. For categories such as these, an early or late payment will appear as an exception.

At this time, calculation of all expected values is in progress. Please be patient as this takes time. You will be instructed when to continue.

The calculations are now complete. Press any key to examine the revenue part of the analysis.

The revenue collected from the corps so far this year is 16.50% less than expected.

The revenue collected from the public so far this year is 40.86% less than expected.

The revenue collected from state related activities so far this year is 31.05% less than expected.

The following revenue categories are within budget:

music
interdepartmental
stu fac staff

The revenue section of budgeting analysis has finished. Press any key to examine the expenses section.

Total personnel expenses are over budget. This is due to the fact that the following individual expense item(s) is (are) over budget:

salaries
fringe benefits

Total contractual expenses are within budget. However, the following are under budget,
repair and maintenance
and the following are over budget,
telecommunications

Total continuous expenses are under budget. This is due to the fact that the following individual expense item(s) is (are) under budget:

water and sewer

Total supplies and materials are over budget. This is due to the fact that the following individual expense item(s) is (are) over budget:

other supplies & materials
repairs

Expenses for uniforms so far this year are under budget by 24.69%.

Expenses for equipment so far this year are under budget by 69.65%. In fact, there is $885 left in the budget for equipment.

6.2.2.2 Ratio Analysis

The ratio analysis module of the system was designed to calculate and interpret several ratios of interest to the Tailor Shop. The ratios used were chosen by the expert as he felt that these were meaningful measures of the Tailor Shop's performance. These include; current ratio, return on assets ratio, gross profit on cadet uniforms ratio, expense to revenue ratio, expense to revenue ratio by market segment, total asset turnover ratio, and inventory turnover ratio. These ratios will not be described here as the system itself explains them, as can be seen in the following session.

Sample Session with Ratio Analysis

Given below is a sample session with the ratio analysis module of the system. From the main menu, if the user selects ratio analysis, the following is an example of what might be shown on the screen and also printed out if desired.

The most recent data is for the year ending June 1990.
Is this the most current year end?

yes no

yes

CURRENT RATIOS

1988	1989	1990
1.298	1.229	0.965

The current ratio is a measure of the organization's ability to meet its short-term financial obligations as they fall due. A ratio of 1.25 or better is considered 'acceptable' for the Tailor Shop.

As can be seen above, the current situation is not good. The

ratio is below its acceptable level for the most recent year, and also, has been declining for the past several years. This means that other auxiliary enterprises are financing an increasing proportion of the Tailor Shop's operating expenses.

RETURN ON ASSETS

The Return on Assets ratio (ROA) is designed to measure how much income is produced for each dollar of total assets held. In a profit oriented organization, a high ROA is desirable. Since the primary responsibility of the Tailor Shop is to provide a service, rather than produce a profit, it should not necessarily strive for a high ROA. Rather, it should target a specific ROA. If net income is to be used only to replace old equipment, than an ROA of around .004 is desirable. On the other hand, if net income is also used to repay the amount borrowed from other auxiliaries (say over a 10 year period), then an ROA of around .08 is desirable. In any case, the ROA should not be negative as a negative ROA indicates a net loss on the operations.

RETURN ON ASSETS

1988	1989	1990
-0.06	-0.05	-0.26

As can be seen above, the present situation is quite bad. Not only is the ROA negative, but it has decreased over the past year. A glance at the income statements will give a good indication of why this is happening. Revenue from the corps (which typically constitutes more than 75% of total revenue) has decreased by 8.3%. Meanwhile, costs incurred for salaries and fringe benefits (which generally make up around 60% of total costs) have increased by 25.3%.

GROSS PROFIT RATIO ON CADET UNIFORMS

The Gross Profit Ratio was designed to measure the percentage of each sales dollar remaining after the cost of goods sold (cost of uniforms issued) has been covered. In other words, this ratio indicates how much of each sales dollar is available to cover operating expenses. If operating expenses are not being met, prices can be raised, or expenses lowered, and an increased gross profit ratio will result. For the Tailor Shop, this is a good figure to watch to determine what is happening with commutation allowances, inventory, and 'bags' issued to cadets.

In the Tailor Shop's situation, a change in the gross profit could indicate:

- a change in commutation allowances,
- a change in the 'mix' of cadets (i.e., freshmen vs. sophomores vs. juniors vs. seniors),
- a change in the cost of uniforms,
- a change in the number of uniform items per 'bag' or in their quality, or
- an undervaluation or overvaluation in inventory.

With the above in mind, our 'expert' will perform its analysis. However, determining changes in the cost of individual uniform items or in their quality is beyond the scope of this system. Therefore, if one of these has changed significantly, it should be taken into consideration while viewing the following analysis.

Press any key to see the Gross Profit Ratio analysis

GROSS PROFIT RATIO ON CADET UNIFORMS

1988	1989	1990
0.551	0.683	0.719

As can be seen above, the gross profit ratio is on a definite upward trend. A determination of the cause reveals that a couple of different factors are causing this situation. Average commutation allowances have increased over the past year by 5.37%. Furthermore, there has been a misvaluation in inventory (either ending inventory has been overvalued or beginning inventory has been undervalued.)

Press any key to continue

EXPENSE TO REVENUE RATIO

The expense to revenue ratio was designed to measure how much of each revenue dollar is consumed by expenses. The primary responsibility of the Tailor Shop is to provide a service, rather than to produce a profit. However, given the level of service provided and the prices charged, it should strive for a low expense to revenue ratio. If net income is to be used only to replace old equipment, then an expense to revenue ratio of around .995 is desirable. On the other hand, if net income is also to be used to repay the amount borrowed from other auxiliaries (say over a 10 year period), then a ratio of around .93 is desirable. In any case, the expense to revenue ratio should be less than 1, since a ratio greater than 1 indicates that expenses exceed revenues.

Press any key to see the Expense to Revenue analysis

EXPENSE TO REVENUE RATIOS

1988	1989	1990
1.058	1.046	1.236

As can be seen above, the present situation is quite bad. Not only is the expense to revenue ratio greater than 1, but it has increased over the past year. A glance at the income statements will give a good indication of why this is happening. Revenue from the corps (which typically constitutes more than 75% of total revenue) has decreased by 8.3%. Meanwhile, costs incurred for salaries and fringe benefits (which generally make up around 60% of total costs) have increased by 25.3%.

EXPENSE TO REVENUE RATIO
BY MARKET SEGMENT

Expense to revenue ratios are also calculated for each market segment of the Tailor Shop. These are very useful as they show which market segments are able to cover their individual expenses. It should be noted however, that overhead expenses are not included in any of these figures. Thus, if all segments showed a ratio of 1.0, the Tailor Shop would not be able to cover all of its expenses, due to overhead expenses not included in the computations. Overhead expenses for the Tailor Shop generally constitute between 20% and 30% of total expenses, which is currently between $30,000 and $60,000.

Press any key to see the Expense to Revenue ratios

EXPENSE TO REVENUE RATIOS
BY MARKET SEGMENT

MARKET SEGMENT	1988	1989	1990
Corps	0.53	0.58	0.65 *
Public	1.81	1.34	1.82
Student/Faculty/Staff	1.69	1.25	1.14
Interdepartmental	4.36	1.18	0.78
Music Department	0.66	0.60	0.66
State Related	1.89	1.40	1.18

* upward trend - not good

TOTAL ASSET TURNOVER RATIOS

1988	1989	1990
1.14	1.126	1.117

In general, a high ratio of dollar sales versus total value of assets is considered good, and a low ratio of sales to asset value is considered bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms signed out to cadets) is a major portion of its assets. Since it is expected that the cost of these uniforms will approximate the revenue obtained from them, any asset turnover ratio greater than 1.0 is considered to be quite good.

As can be seen above, the total asset turnover ratio is quite good. However, it has decreased over the past year. Management might want to determine whether this is just random fluctuation or the beginning of a trend.

INVENTORY TURNOVER RATIOS

The inventory turnover ratio is designed to measure how fast an organization turns over its inventory. Ideally, this number is quite high, since it is best to turn over goods as quickly as possible. Doing so decreases the possibility of lowering the value of the goods due to obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory however, cannot be turned over more than once a year, because uniforms issued to cadets are considered part of total inventory. In the case of the Tailor Shop, this ratio is calculated by dividing income produced from the corps by the average dollar value of inventory (which consists almost solely of cadet uniforms). If this ratio is very low, say less than .50, it indicates that the Tailor Shop is holding a large amount of unissued inventory in the shop. Given these circumstances, any ratio which is greater than 0.75 is considered to be 'acceptable.'

Press any key to see the inventory turnover analysis

INVENTORY TURNOVER RATIOS

1988	1989	1990
0.941	0.877	0.836

As can be seen above, the inventory turnover ratio is quite good. However, it appears to be decreasing over time. Management might want to determine whether this is just random fluctuation or an actual trend.

6.2.2.3 Trend Statements

The trend statement module of the system was designed to display annual trends over a three year period. Although no evaluation is done by the system, trend statements can be useful as a tool to show increases and decreases of costs, revenues, reserves, etc., in relative terms. The trend statements provided by the system include; accrual based income statements, cash based income statements, balance sheets, and market segment revenues and expenses. These will be explained further by the system itself in the sample session which follows.

Sample Session with Trend Statements

TREND STATEMENTS

Trend statements are the financial statements of several years, expressed as percentages of one of those years. For purposes of this analysis, the base year chosen is the first year in the series. For each year, the dollar value of each item is divided by the dollar value of the corresponding item in the base year. This results in a value which is in terms of the percentage of the base year. From these statements, trends over time can be seen. For the statements which follow, any trend of more than 5% increase per year in expenses or 5% decrease per year in revenues is displayed in red. Likewise, any trend of more than 5% increase per year in revenue or 5% decrease per year in cost is displayed yellow.

Select the number corresponding to the trend

statements which you would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

1 accrual based income statements

TREND STATEMENTS FOR CONDENSED
ACCRUAL BASED INCOME STATEMENTS

Revenue	1988	1989	1990
Corps	1.00	0.89	0.90
Public	1.00	1.31	0.77
Student/Faculty/Staff	1.00	1.31	1.52
Interdepartmental	1.00	3.57	4.13
Music Department	1.00	1.07	1.23
State Related	1.00	1.31	0.90
Total Revenue	1.00	0.96	0.99
Expenses			
Cost of Uniforms Issued	1.00	0.63	0.51
Personnel	1.00	1.08	1.13
Contractual	1.00	1.16	1.17
Supplies & Materials	1.00	2.13	1.10
Continuous	1.00	1.60	1.70
Depreciation	1.00	1.02	0.70
Total Expenses	1.00	0.76	0.20
Net Income from Operations	1.00	0.76	0.20 **

** note that net income is negative, thus a decrease is good

Select the number corresponding to the trend
statements which you would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

2 cash based income statements

TREND STATEMENTS FOR CONDENSED
CASH BASED INCOME STATEMENTS

Revenue	1988	1989	1990
Corps	1.00	0.89	0.90
Public	1.00	1.31	0.77
Student/Faculty/Staff	1.00	1.31	1.52
Interdepartmental	1.00	3.57	4.13
Music Department	1.00	1.07	1.23
State Related	1.00	1.31	0.90
Total Revenue	1.00	0.96	0.99
Expenses			
Uniform Purchases	1.00	0.61	0.46
Personnel	1.00	1.08	1.13
Contractual	1.00	1.16	1.17
Supplies & Materials	1.00	2.13	1.10
Continuous	1.00	1.60	1.70
Equipment	1.00	0.24	0.07
Total Expenses	1.00	0.24	0.07
Net Income from Operations	1.00	0.65	-1.34 **

** note - the base year was negative

Select the number corresponding to the trend statements which you would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

3 balance sheets

TREND STATEMENTS FOR BALANCE SHEETS

	1988	1989	1990
Current Assets			
Inventory	1.00	0.96	0.92
Long Term Assets			
Equipment	1.00	0.91	0.84
Total Assets	1.00	0.96	0.92
Liabilities & Capital			
Cash Basis Loan from other Auxiliaries	1.00	1.01	1.24
Equity -- Reserves	1.00	0.80	0.00
Total Liabilities & Capital	1.00	0.96	0.92

Select the number corresponding to the trend statements which you would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

4 market segment revenues and expenses

TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES

Revenues	1988	1989	1990
Corps	1.00	0.89	0.90
Public	1.00	1.31	0.77
Student/Faculty/Staff	1.00	1.31	1.52
Interdepartmental	1.00	3.57	4.13
Music Department	1.00	1.07	1.23
State Related	1.00	1.31	0.90
Expenses			
Corps	1.00	0.97	0.97
Public	1.00	0.97	0.78
Students/Faculty/Staff	1.00	0.97	1.03
Interdepartmental	1.00	0.97	0.74
Music Department	1.00	0.97	1.02
State Related	1.00	0.97	0.56

TREND STATEMENTS FOR
MARKET SEGMENT REVENUES MINUS EXPENSES

	1988	1989	1990
Corps	1.00	0.80	0.82
Public	1.00	0.55	0.78 *
Students/Faculty/Staff	1.00	0.48	0.32 *
Interdepartmental	1.00	0.19	-0.26
Music Department	1.00	1.28	1.65
State Related	1.00	0.58	0.18 *

* note - expenses exceeded revenue in the base year

6.2.2.4 Graphics

The graphics module of the system was designed to graphically depict some of the important financial relationships of the Tailor Shop. In particular, individual monthly expense item categories are graphed against the applicable budget, individual monthly

revenue market segment figures are graphed against the applicable budget, and finally, monthly revenue for each market segment is graphed against its corresponding expenses.

A few difficulties were encountered when designing this module which affect its performance, and it is important that a user be informed of these. First is the manner in which the Y values were determined for X Y coordinates. VP-Expert does not allow variables to be used for coordinates in graphs. For X coordinates, this did not present a problem as the X coordinates represent different months and could be determined in advance. Y coordinates however, are used to represent actual and expected revenues and expenses. These could not be determined in advance. Likewise, axis size could not be determined in advance, as it is dependent upon the size of the largest Y value. To compensate for these shortcomings, approximations were made. With respect to the size of the axis, three different size axes were developed for the system to use. The Y axis for the smallest ranges from 0 to 10,000, while the Y axis for the largest ranges from 0 to 250,000. These axes are subdivided into 10 sections. After an actual or expected value is found, it is compared to these ranges to determine in which range it should be. Once the range is found, it is then assigned the Y coordinate value which falls in the center of the range. This explains why some of the graphs exhibit sharp angles rather than smooth curves.

Another problem encountered when designing the graphics module is actually a function of the first problem. Since variables could not be used, the actual code required to provide three different sets of axes, and twelve possible Y values for each of the 12 X values, was voluminous. And, since the size limitation of VP-Expert files is in the vicinity of 100,000 bytes, the graphics module was broken out into 22 actual knowledge bases. The relationships among these knowledge bases are presented in figure 11. The

system must therefore pass a file of data back and forth between these knowledge bases, which is inefficient and slow.

Another limitation of the graphics module, is that it is not possible to send the graphic output to the printer. Thus, to use the graphics option, a user must view it on the screen. It should be noted that in the section which follows, the output was not produced directly from the system, but rather was replicated.

Example Session with Graphics

Displaying graphics entails both loading and calculating large amounts of data. This of course, requires a substantial amount of time. Please be patient. You will be instructed when to continue.

The budget for revenue has decreased this year by $9000.
Which market segments are responsible for contributing less this year to total revenue?

military	public	stu fac staff
interdepartmental	music dept	state related

military

How much is military revenue expected to decrease?

9000

More processing is necessary. You will be instructed when to continue.

Select the number corresponding to the series of graphs which you would like to see.

1 budget versus actual expenses
2 budget versus actual revenues
3 actual revenues versus actual costs by market segment
4 exit to main menu

1 budget versus actual expenses

BUDGET VERSUS ACTUAL EXPENSE GRAPHS

The following series of line graphs each display 2 lines. The first line represents the accumulated amount of each expense for each month, given the budget. This is shown for the entire year. The second line represents the actual amount of accumulated expense to date. There is a graph for each of the following:

Personal expenses,
Contractual expenses,
Supplies & materials,
Continuous expenses,
Uniform purchases, and
Total expenses

Press any key to continue

The graphs which would be displayed on the screen can be viewed in figures 14 through 19.

BUDGET VERSUS ACTUAL REVENUE GRAPHS

The following series of line graphs each display 2 lines. The first line represents the accumulated amount of each revenue for each month, given the budget. This is shown for the entire year. The second line represents the actual amount of accumulated revenue to date. There is a graph for each of the following revenue categories:

Corps of Cadets,
Public,
Students/Faculty/Staff,
Interdepartmental,
Music Department,
State Related, and
Total Revenue

Press any key to continue

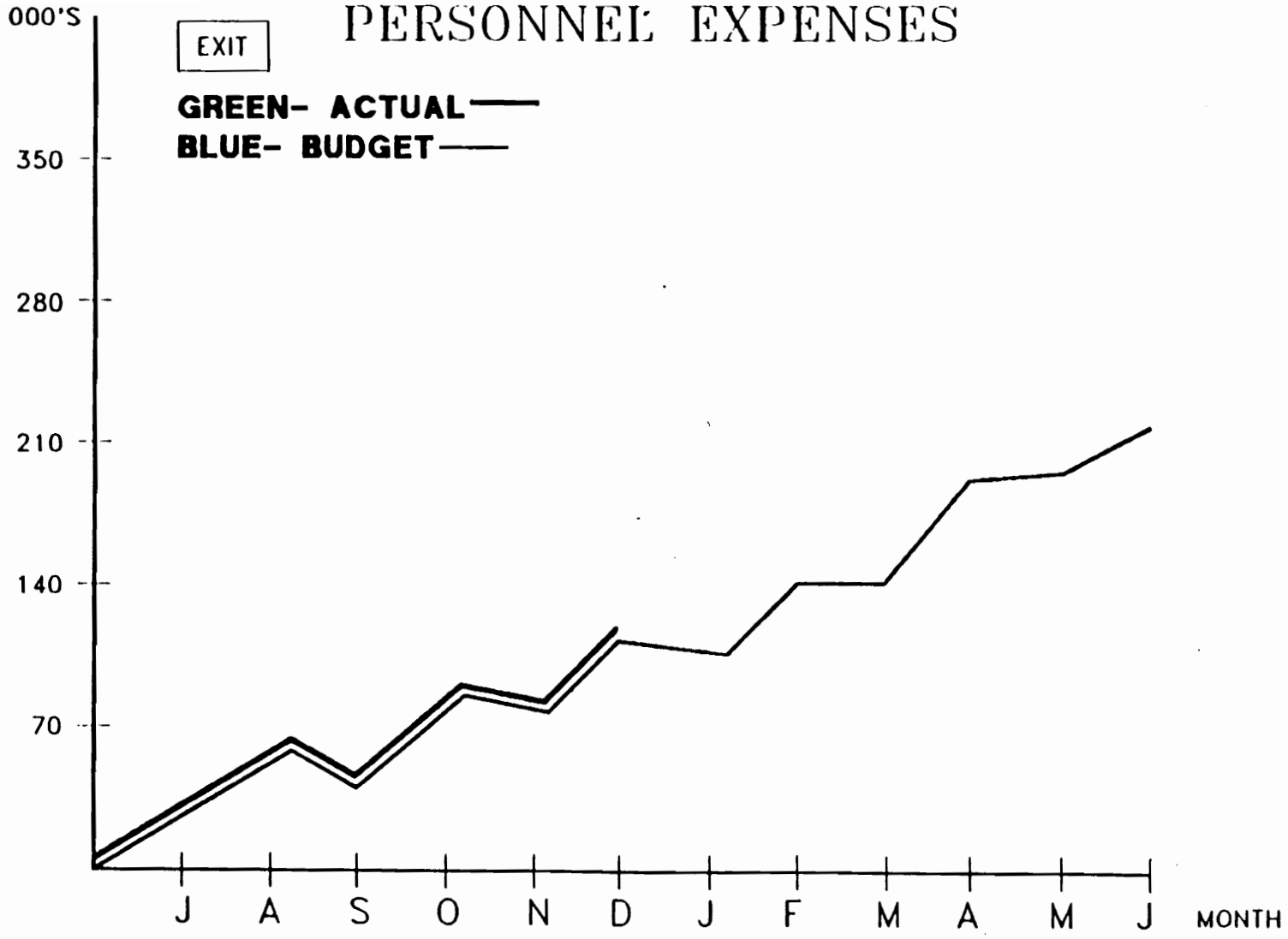

PERSONNEL EXPENSES
EXIT
GREEN- ACTUAL
BLUE- BUDGET
000'S
350
280
210
140
70
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 14

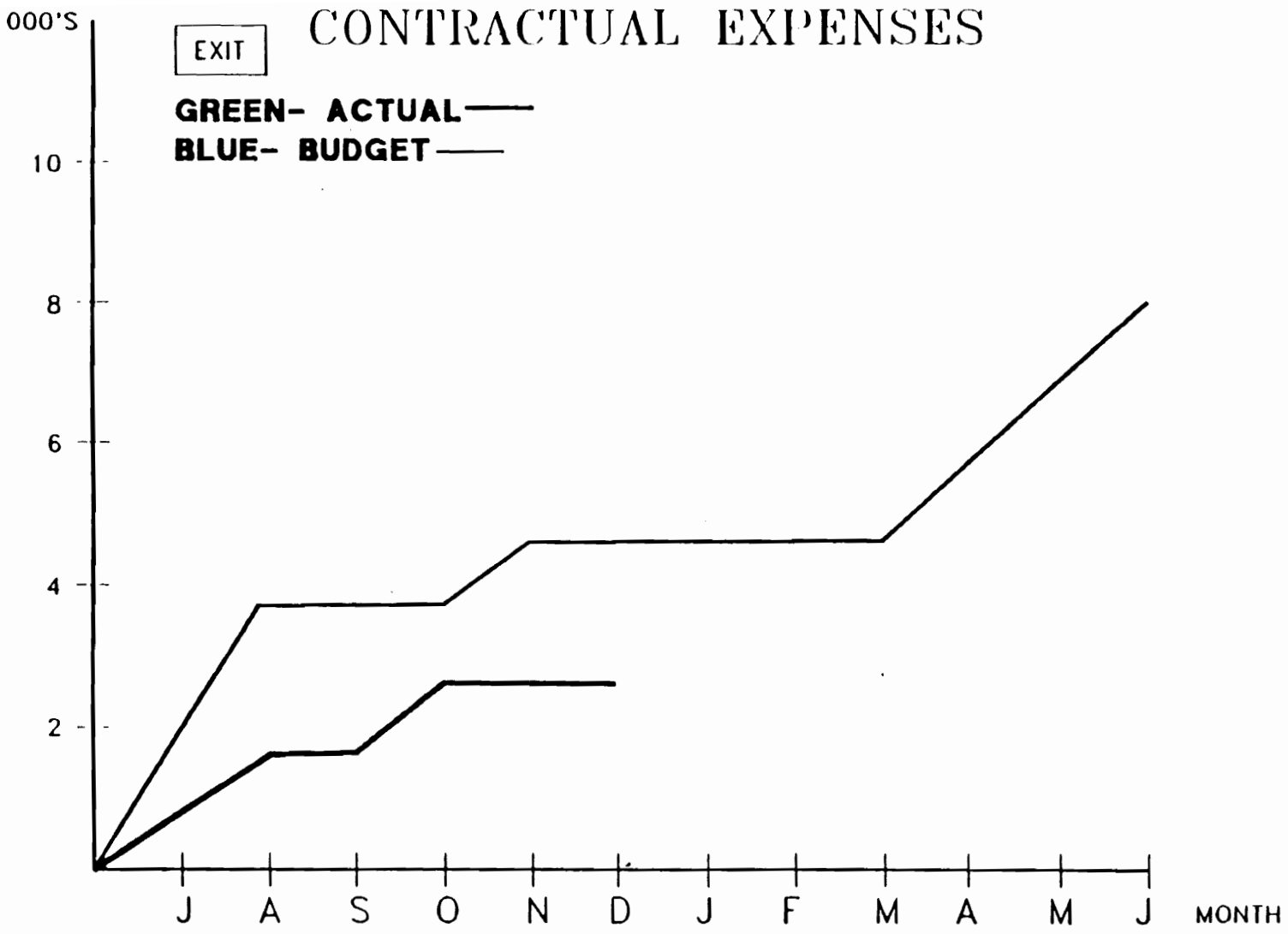

CONTRACTUAL EXPENSES
EXIT
GREEN- ACTUAL
BLUE- BUDGET
000'S
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 15

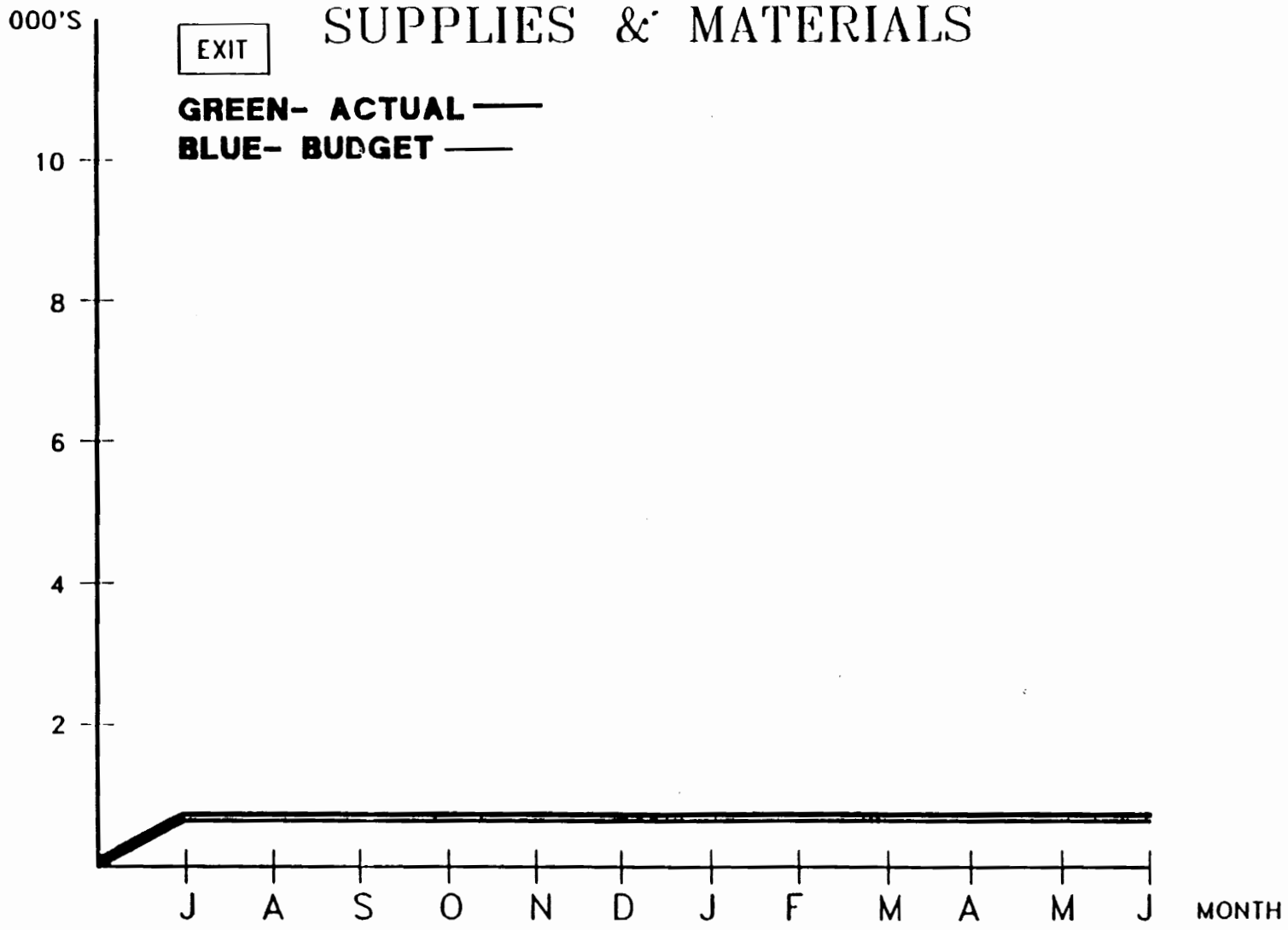

SUPPLIES & MATERIALS
EXIT
GREEN- ACTUAL
BLUE- BUDGET
000'S
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 16

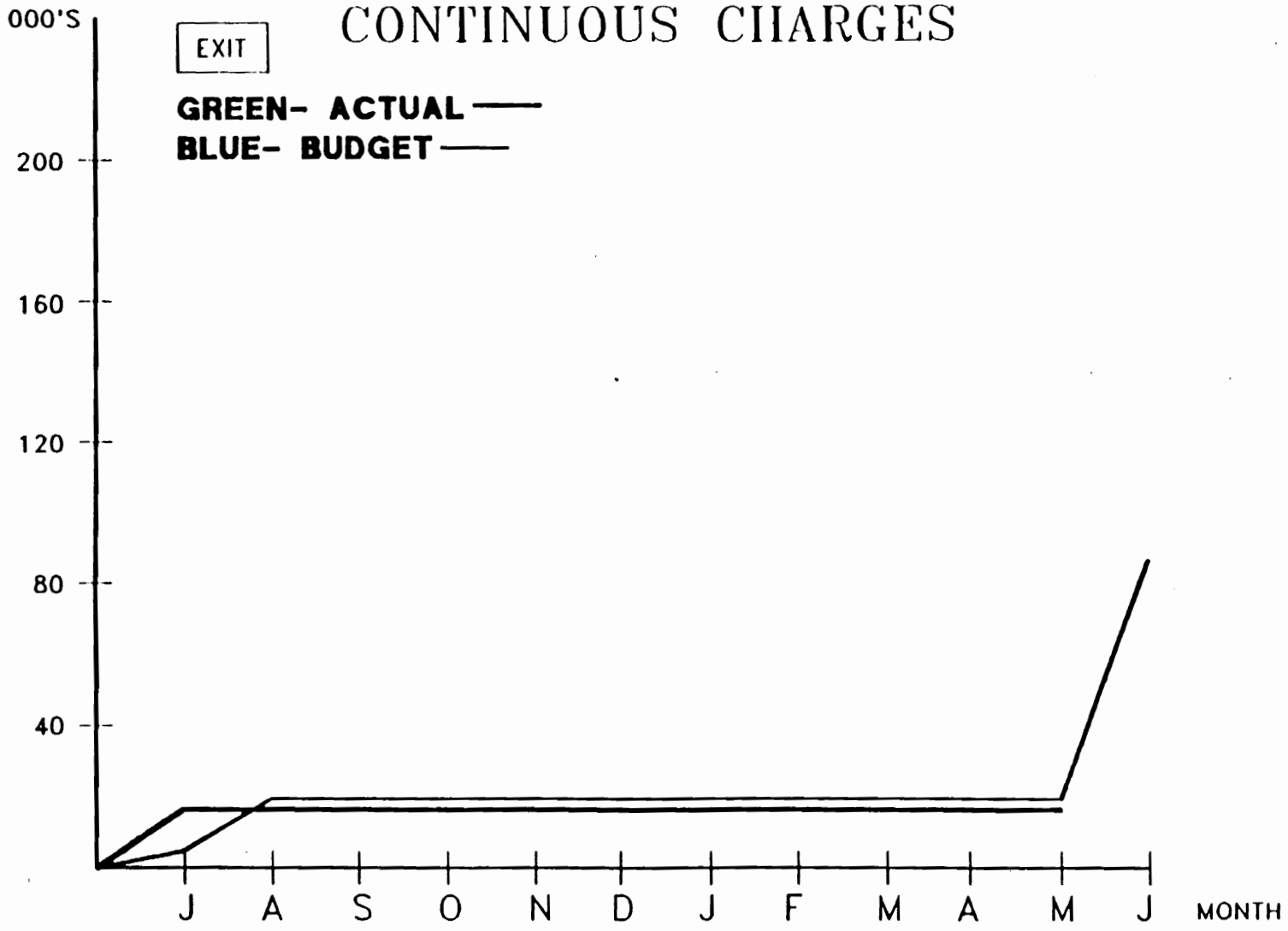

CONTINUOUS CHARGES
EXIT
GREEN- ACTUAL
BLUE- BUDGET
000'S
200
160
120
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 17

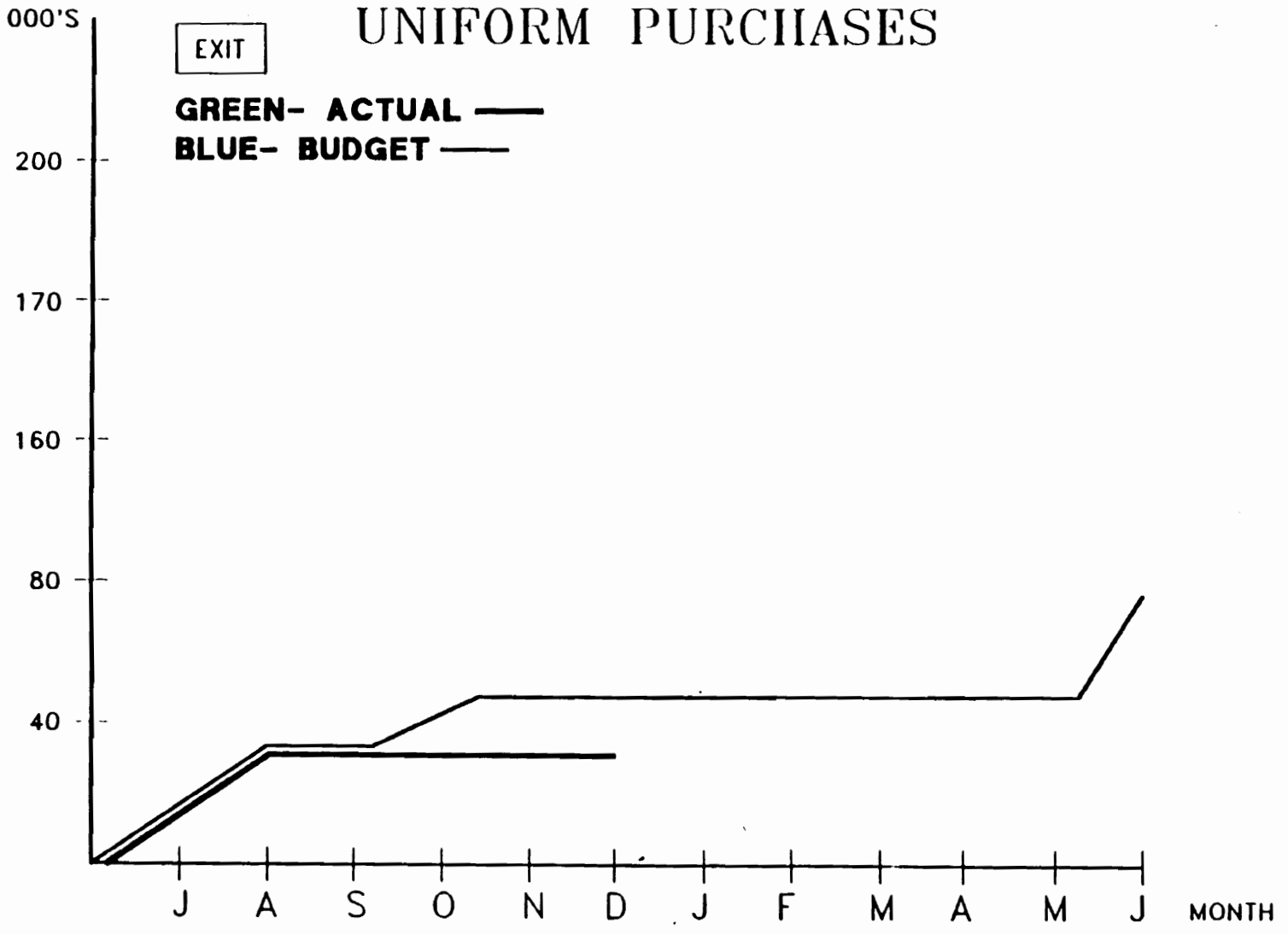

UNIFORM PURCHASES
EXIT
GREEN- ACTUAL
BLUE- BUDGET
000'S
200
170
160
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 18

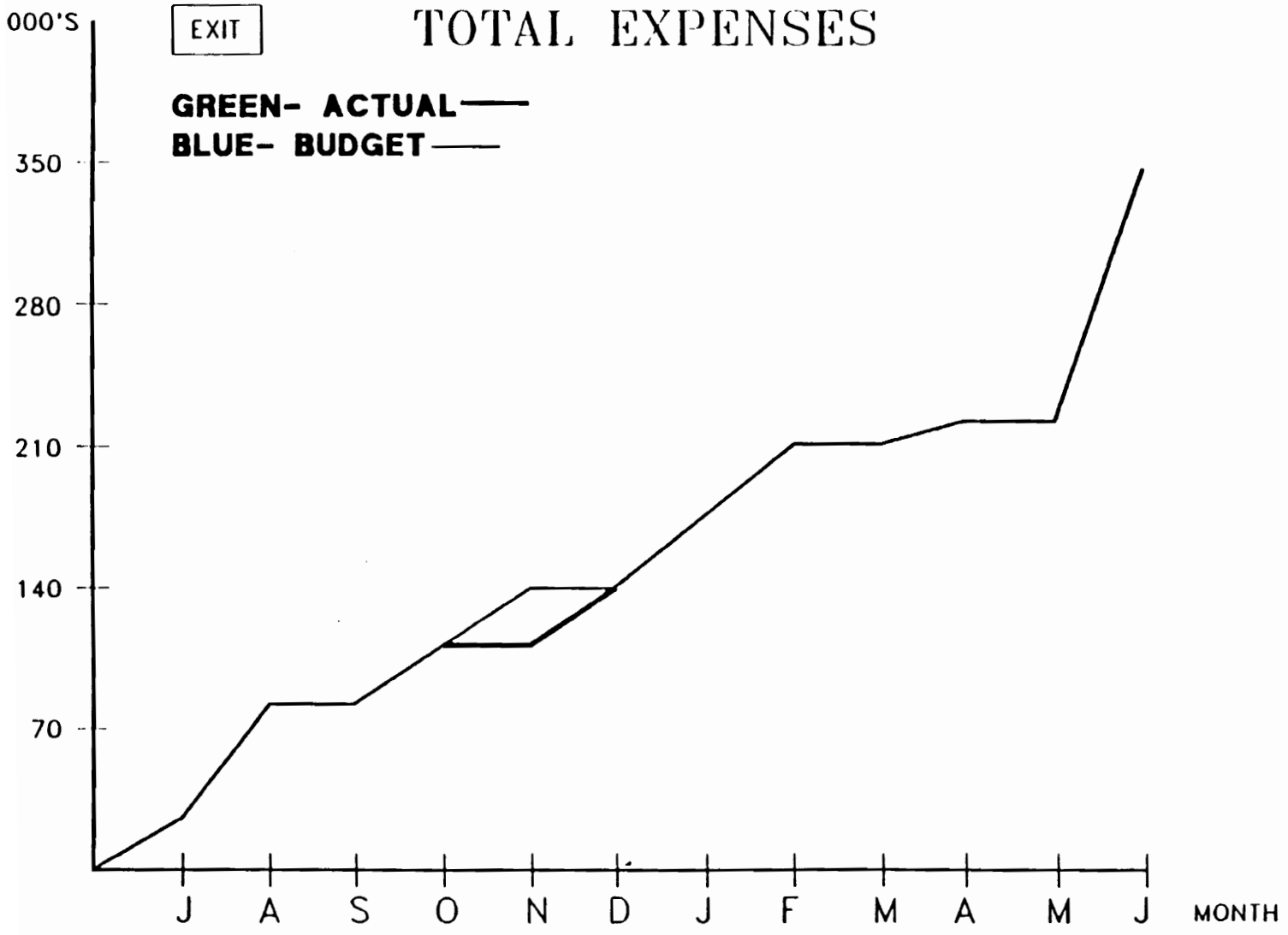

EXIT
TOTAL EXPENSES
GREEN- ACTUAL
BLUE- BUDGET
000'S
350
280
210
140
70
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 19

The graphs which would be displayed on the screen can be viewed in figures 20 through 26.

REVENUE AND EXPENSE MARKET SEGMENT GRAPHS

The following series of line graphs each display 2 lines. The first line represents the accumulated amount of revenue for the applicable market segment. The second line represents the accumulated amount of DIRECT costs for that market segment. Note that with the exception of the final graph, which displays total revenues against total costs, no others include overhead costs. The series of graphs which you are about to view include graphs for each of the following market segments:

Corps of Cadets,
Public,
Students/Faculty/Staff,
Interdepartmental,
Music Department,
State Related, and
Total Revenue & Expenses

Press any key to continue

The graphs which would be displayed on the screen can be viewed in figures 27 through 33.

6.2.2.5 What-If Analysis

The What-If module of the system was designed to address questions that our expert felt should be frequently asked, but are currently not frequently asked, due to time limitations. The eight questions addressed by the system can be divided into two categories. The first four pertain to the functions performed for the corps of cadets, while the last

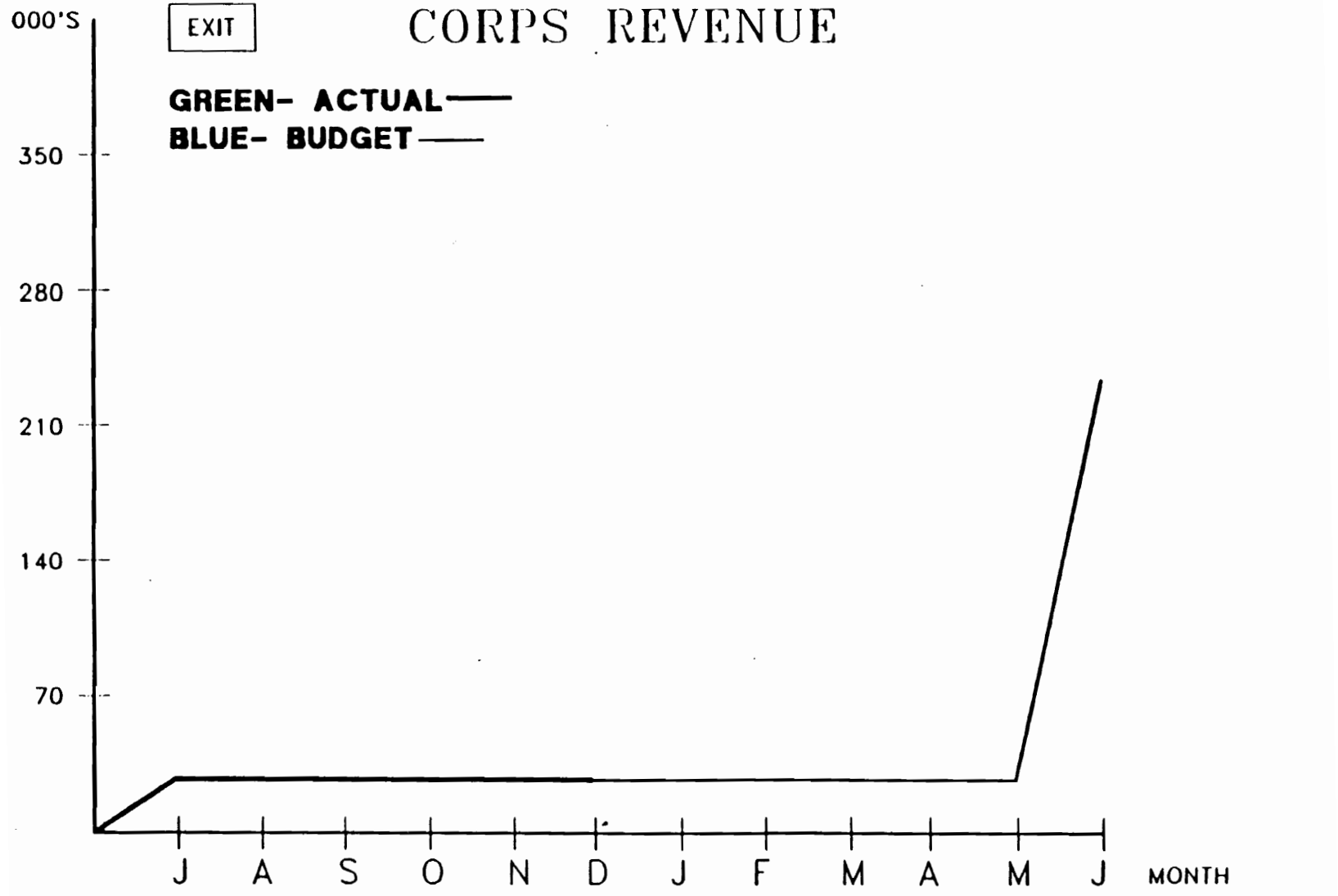

000'S
EXIT
CORPS REVENUE
GREEN- ACTUAL
BLUE- BUDGET
350
280
210
140
70
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 20

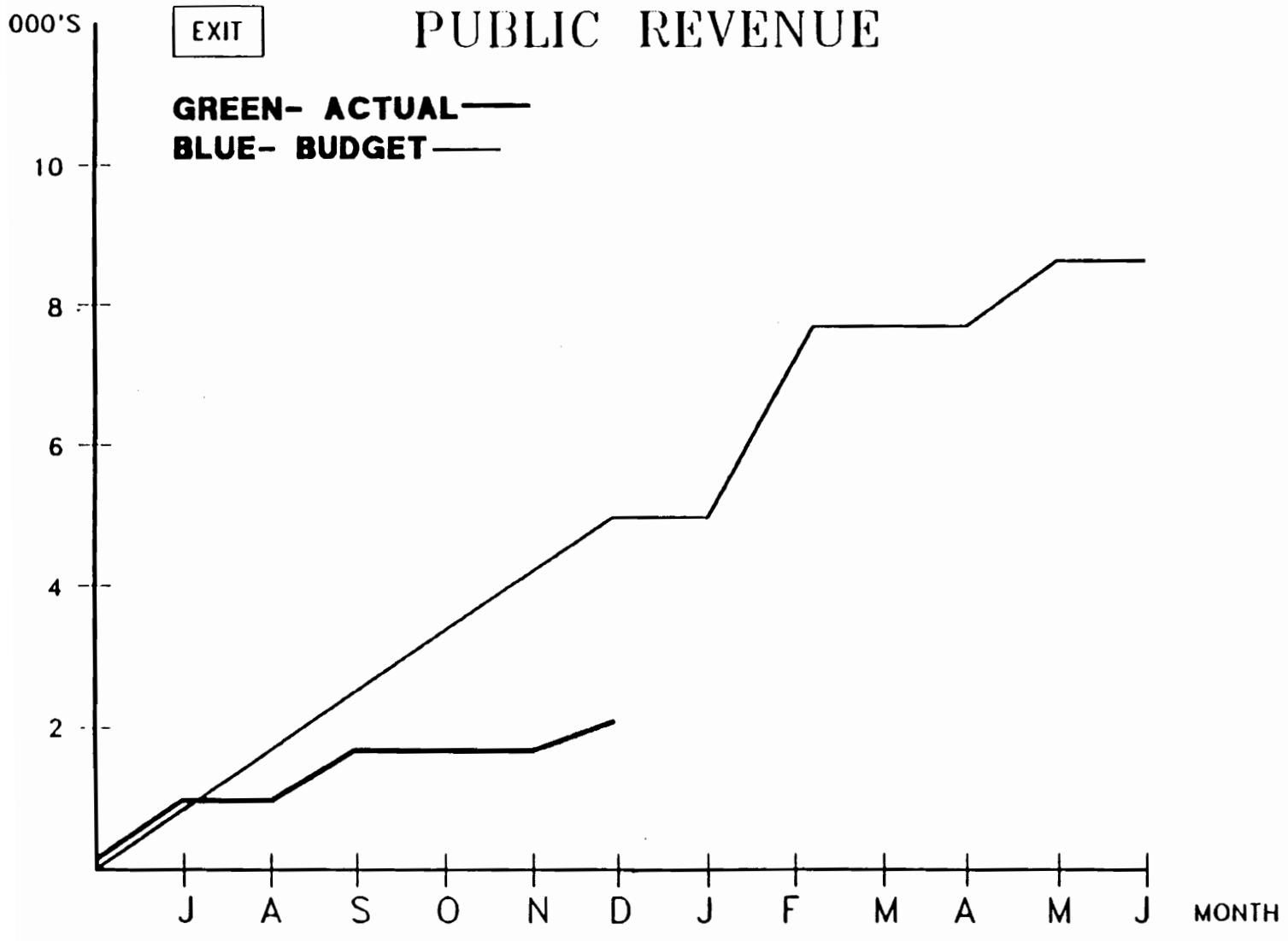

000'S
EXIT
PUBLIC REVENUE
GREEN- ACTUAL——
BLUE- BUDGET——
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 21

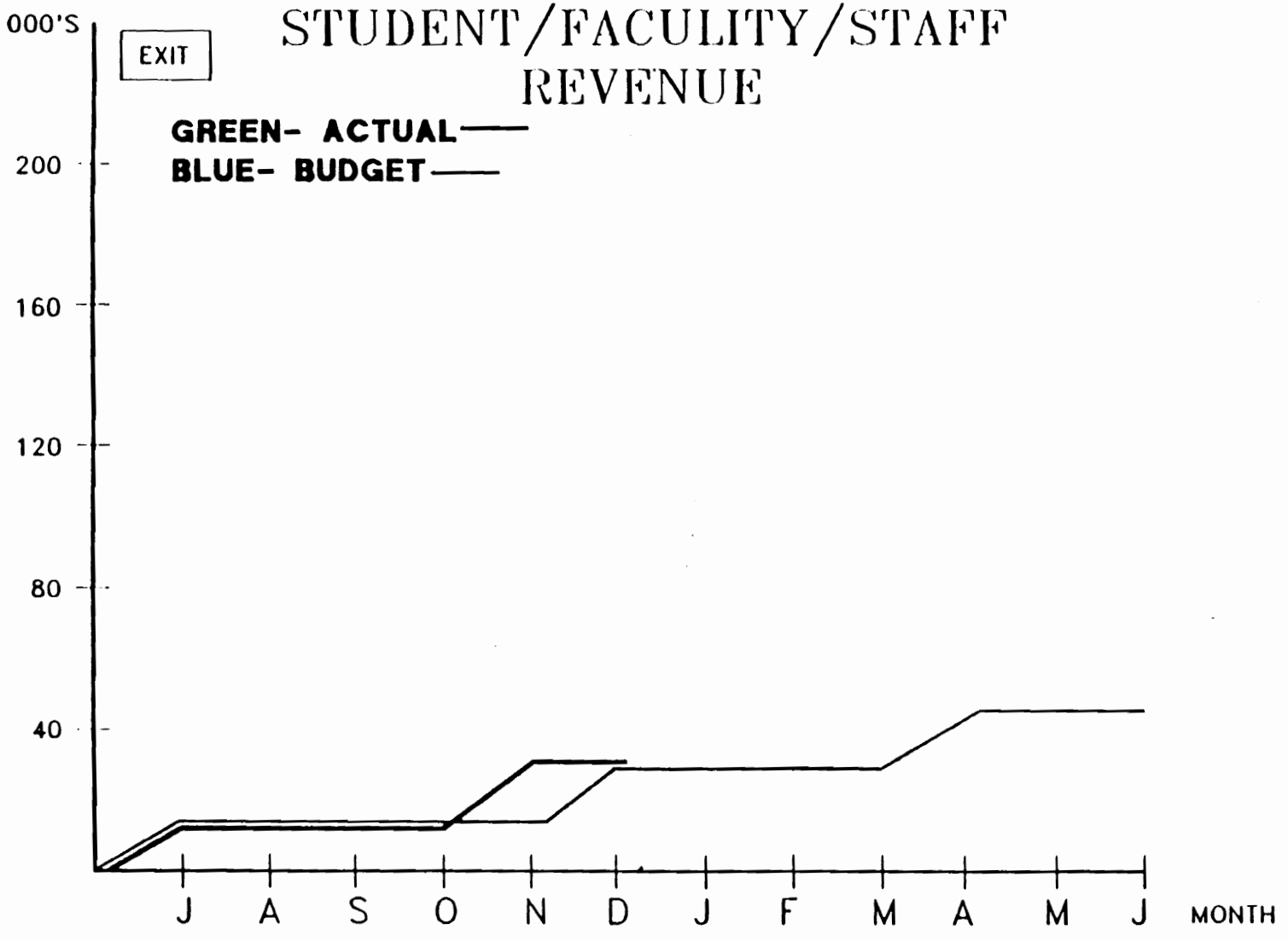

STUDENT/FACULITY/STAFF
REVENUE
000'S
EXIT
GREEN- ACTUAL
BLUE- BUDGET
200
160
120
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 22

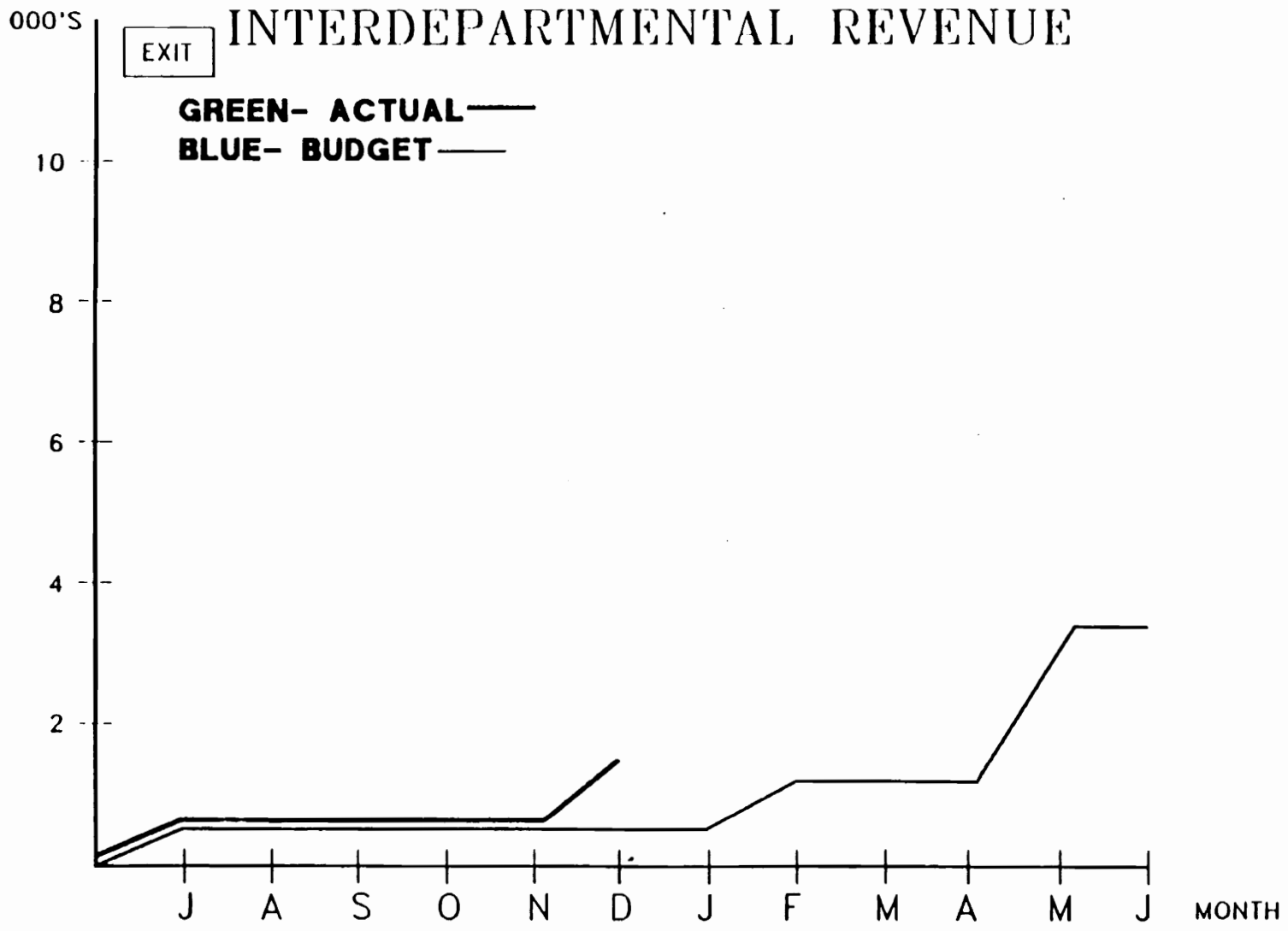

INTERDEPARTMENTAL REVENUE
EXIT
GREEN- ACTUAL
BLUE- BUDGET
000'S
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 23

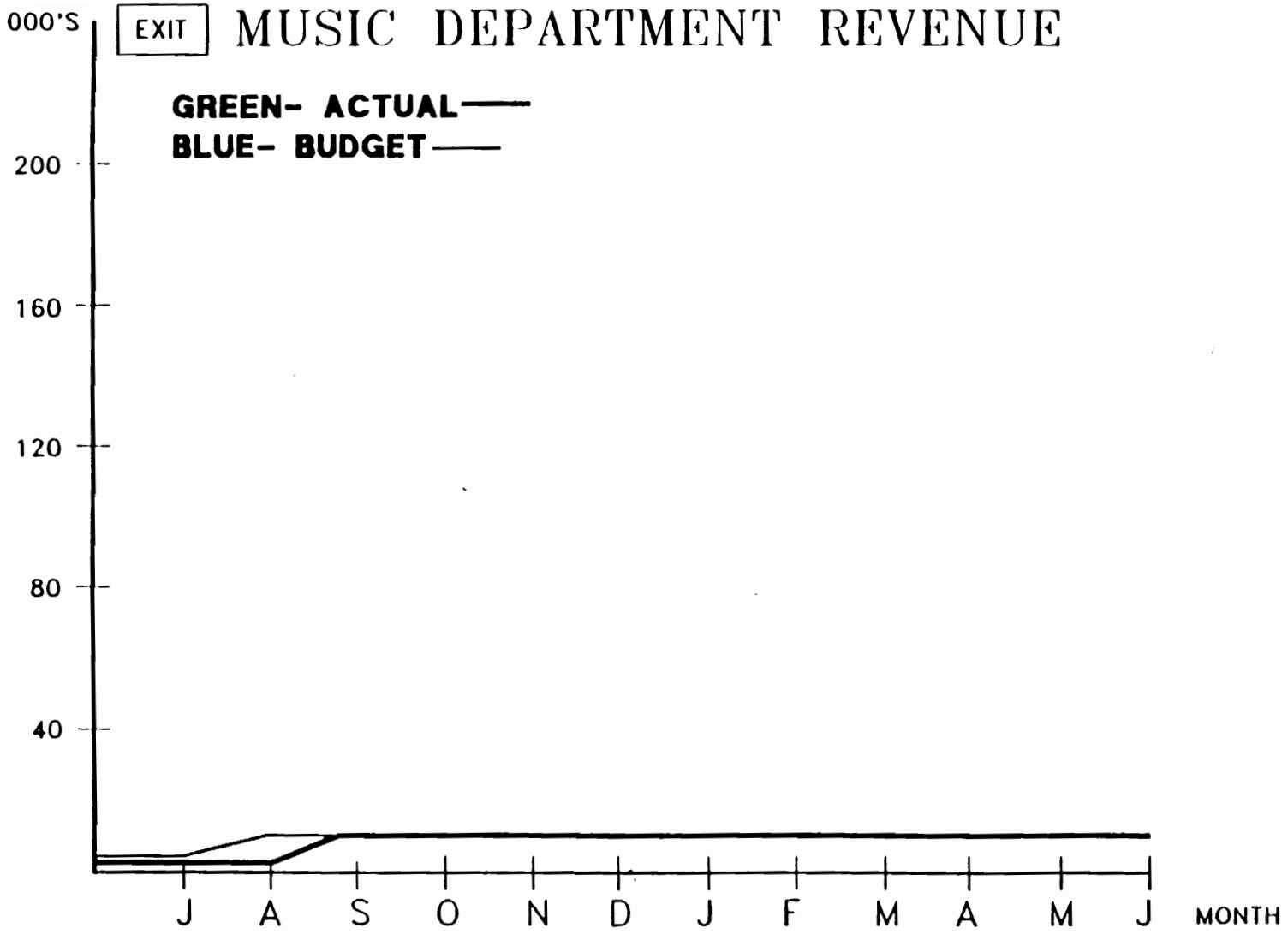

000'S
EXIT
MUSIC DEPARTMENT REVENUE
GREEN- ACTUAL
BLUE- BUDGET
200
160
120
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 24

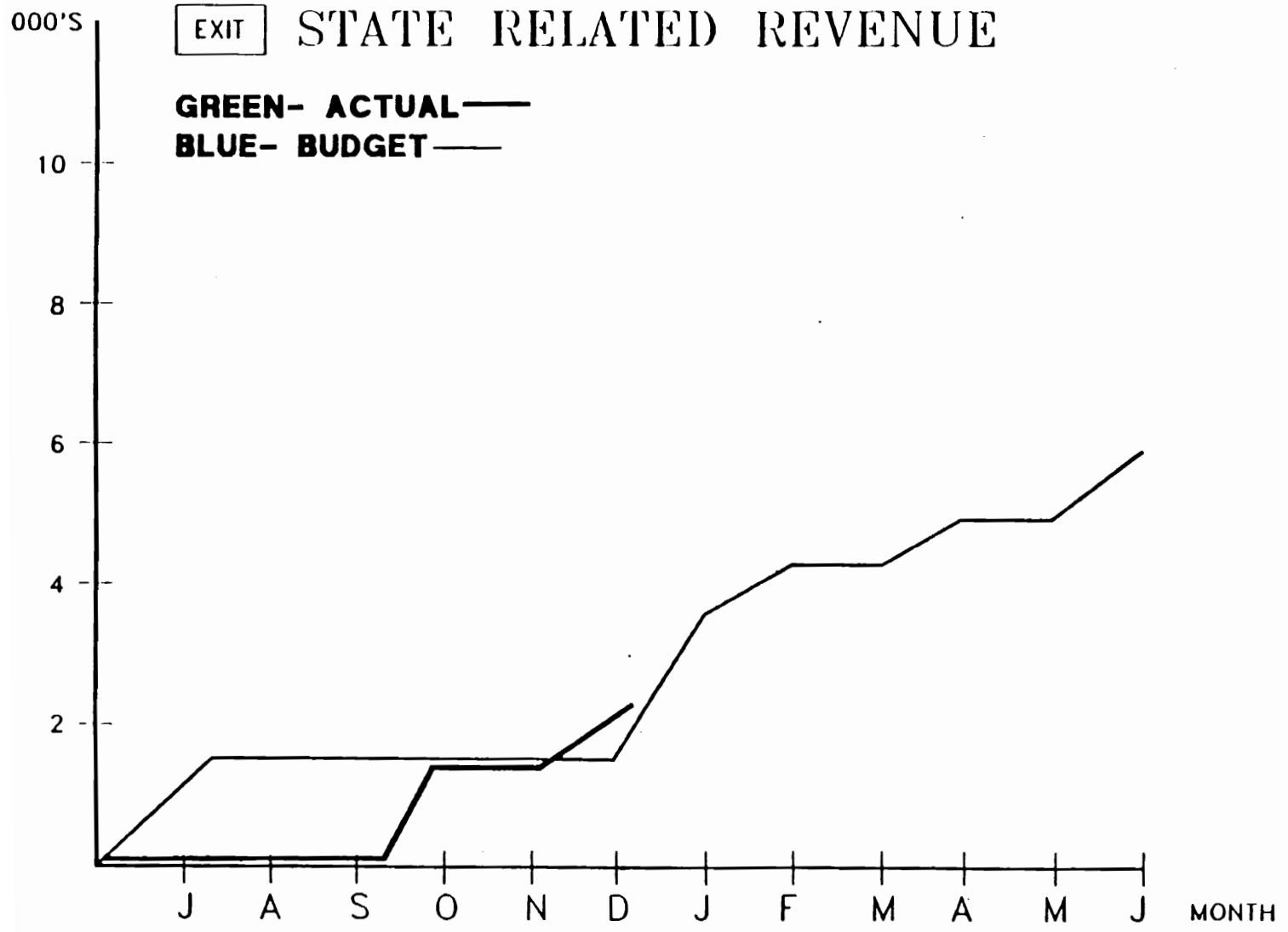

EXIT
STATE RELATED REVENUE
GREEN- ACTUAL
BLUE- BUDGET
000'S
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 25

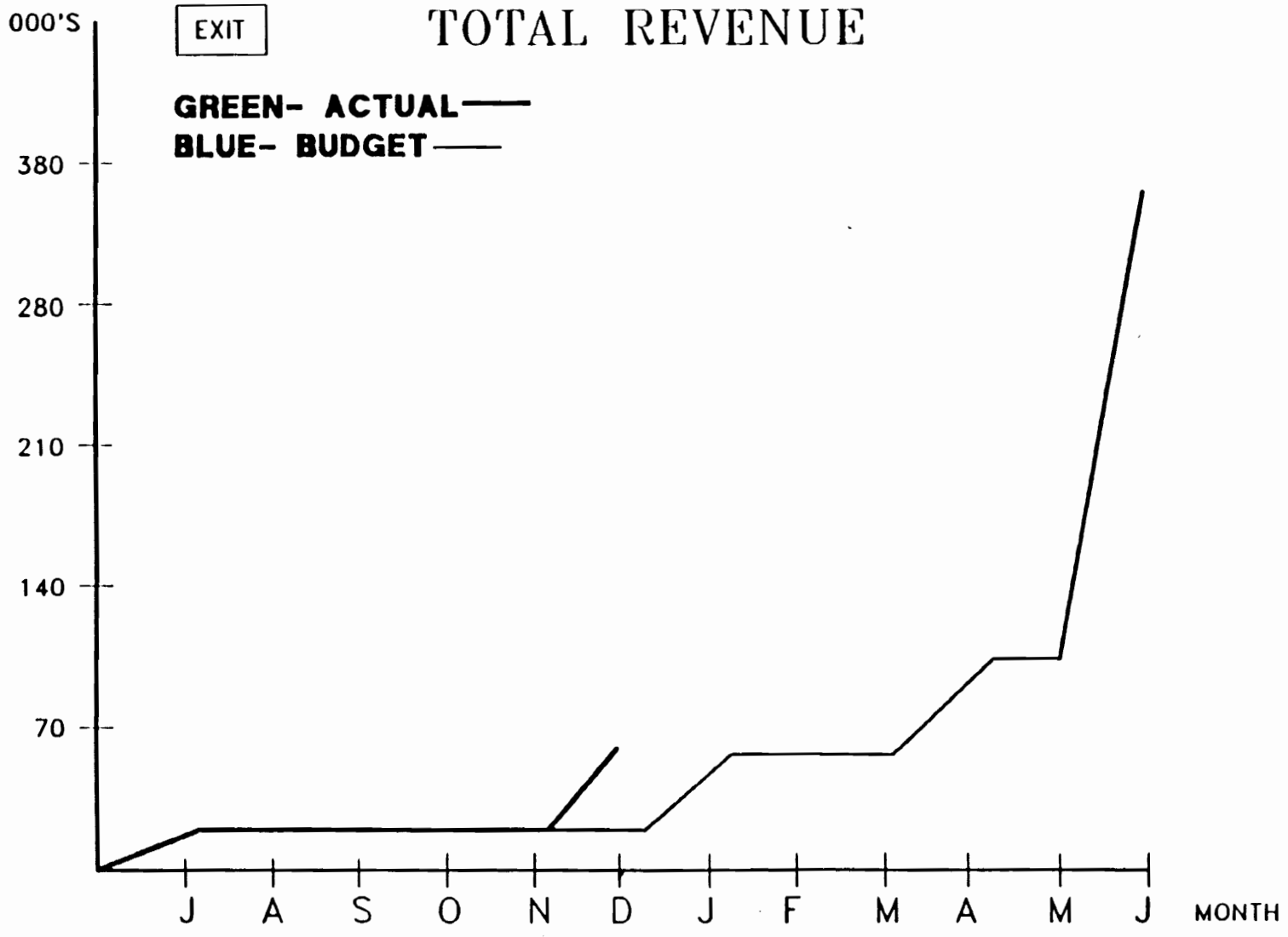

EXIT
TOTAL REVENUE
000'S
GREEN- ACTUAL
BLUE- BUDGET
380
280
210
140
70
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 26

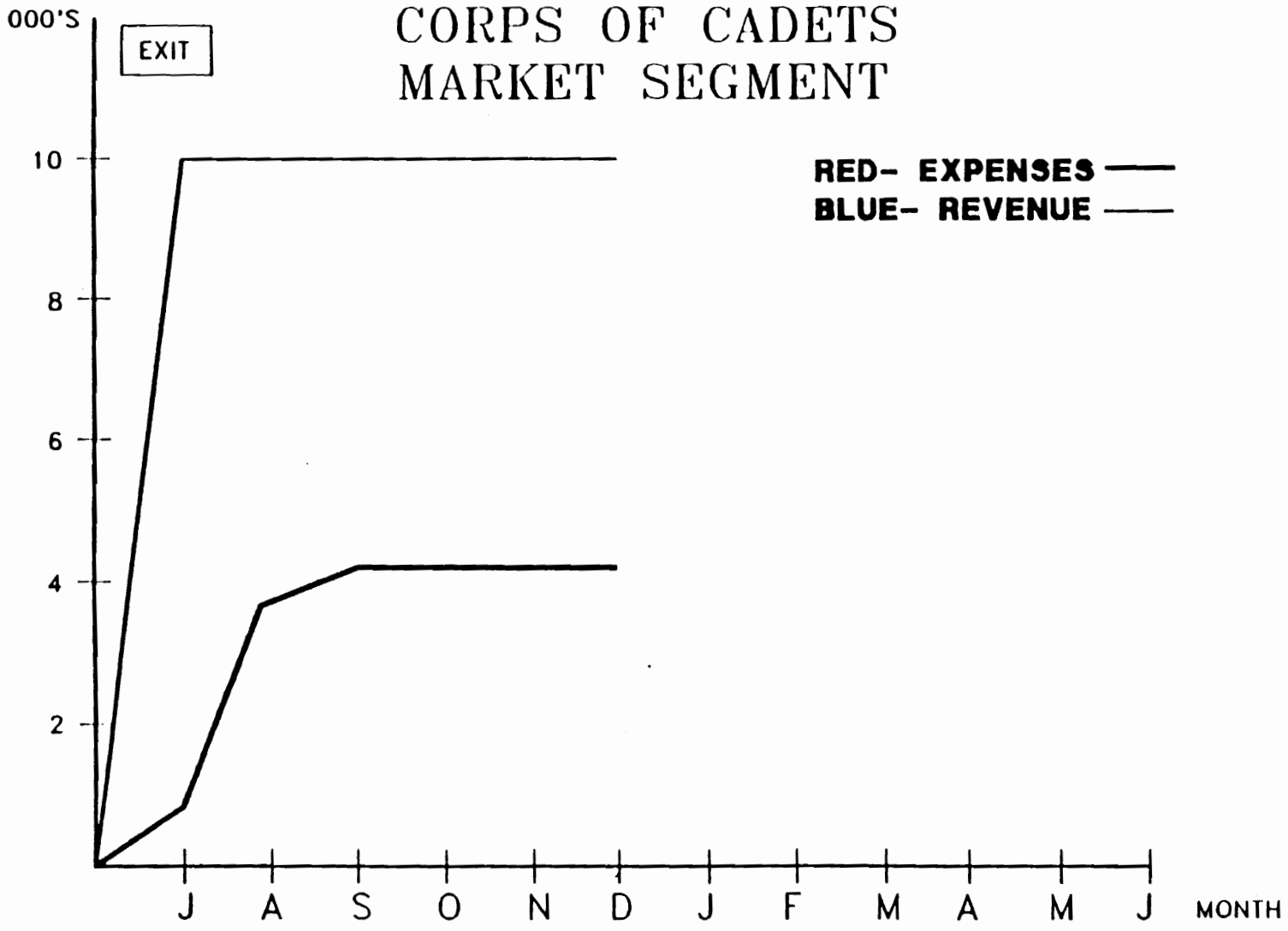

CORPS OF CADETS
MARKET SEGMENT
000'S
EXIT
10
8
6
4
2
RED- EXPENSES
BLUE- REVENUE
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 27

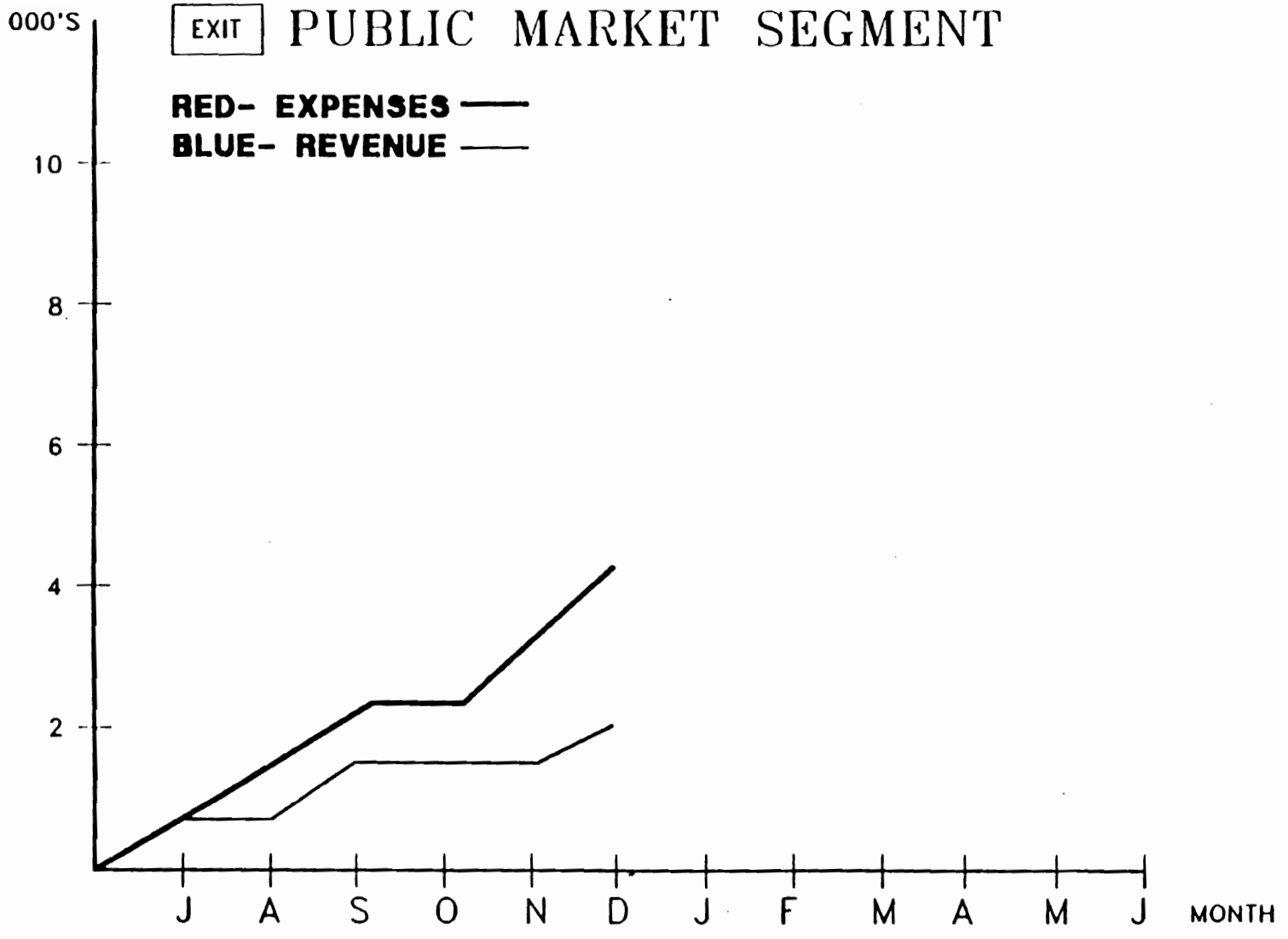

EXIT
PUBLIC MARKET SEGMENT
000'S
RED- EXPENSES
BLUE- REVENUE
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 28

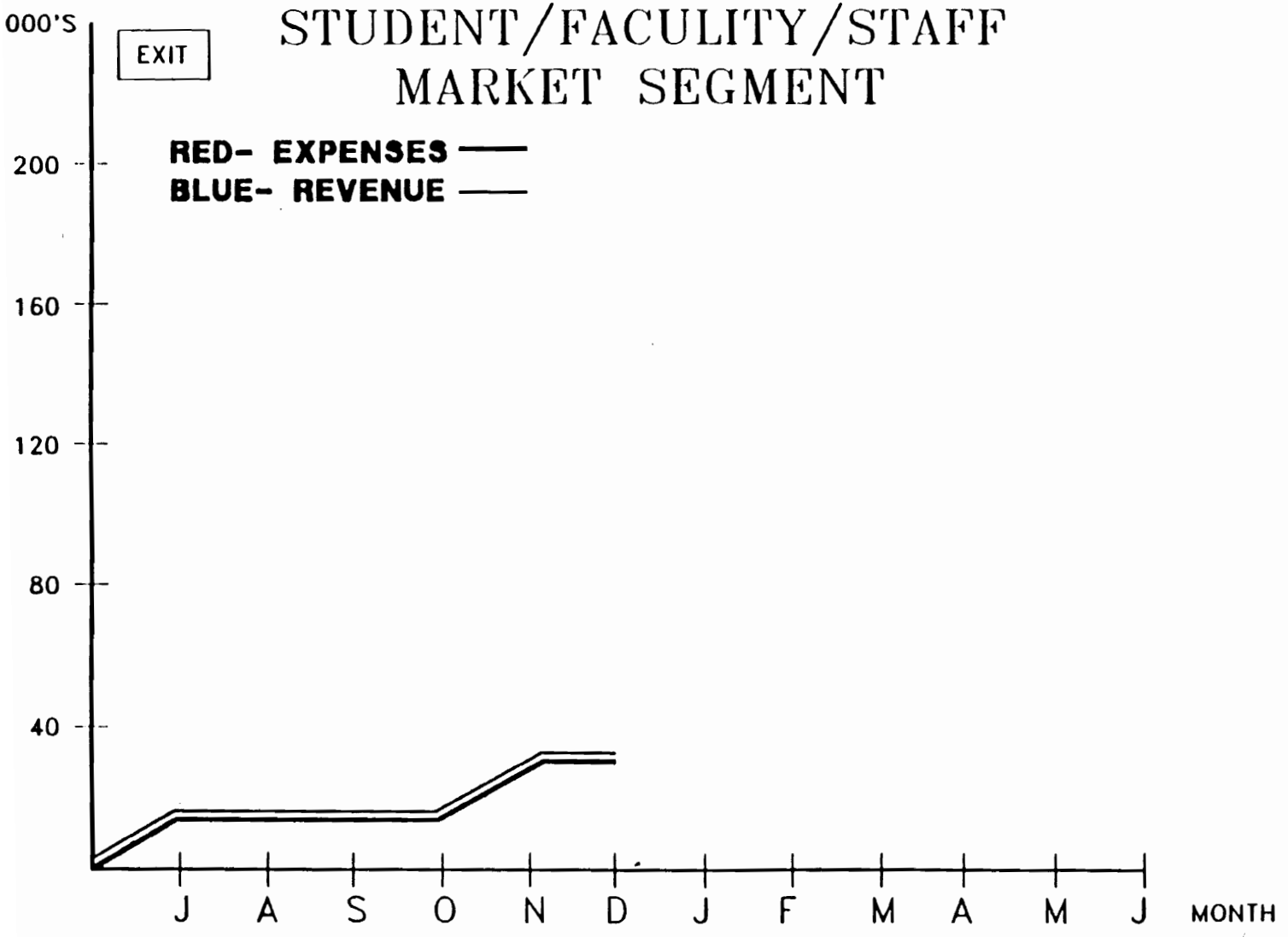

STUDENT/FACULITY/STAFF
MARKET SEGMENT
EXIT
000'S
RED- EXPENSES
BLUE- REVENUE
200
160
120
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 29

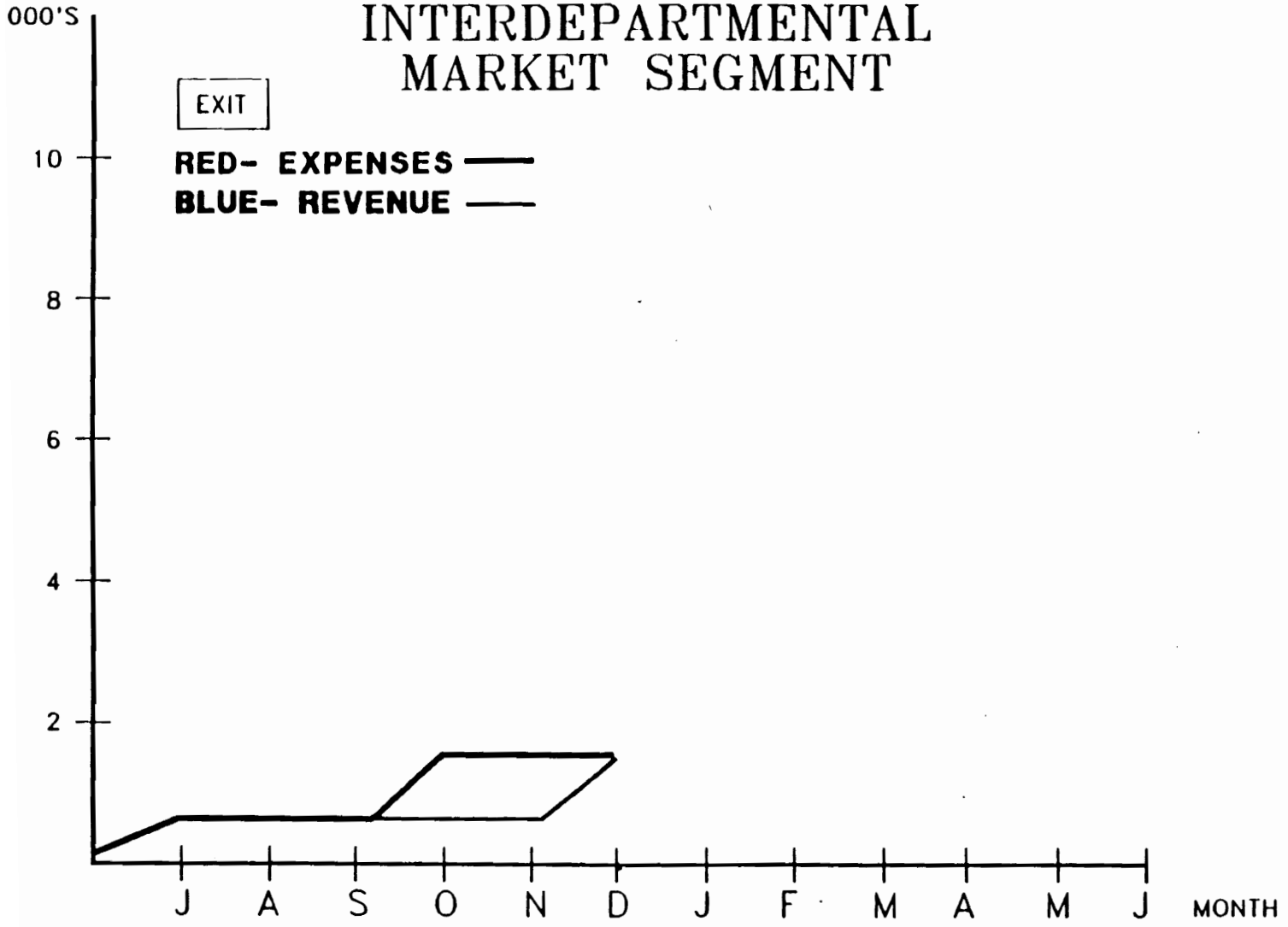

INTERDEPARTMENTAL
MARKET SEGMENT
EXIT
RED- EXPENSES
BLUE- REVENUE
000'S
10
8
6
4
2
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 30

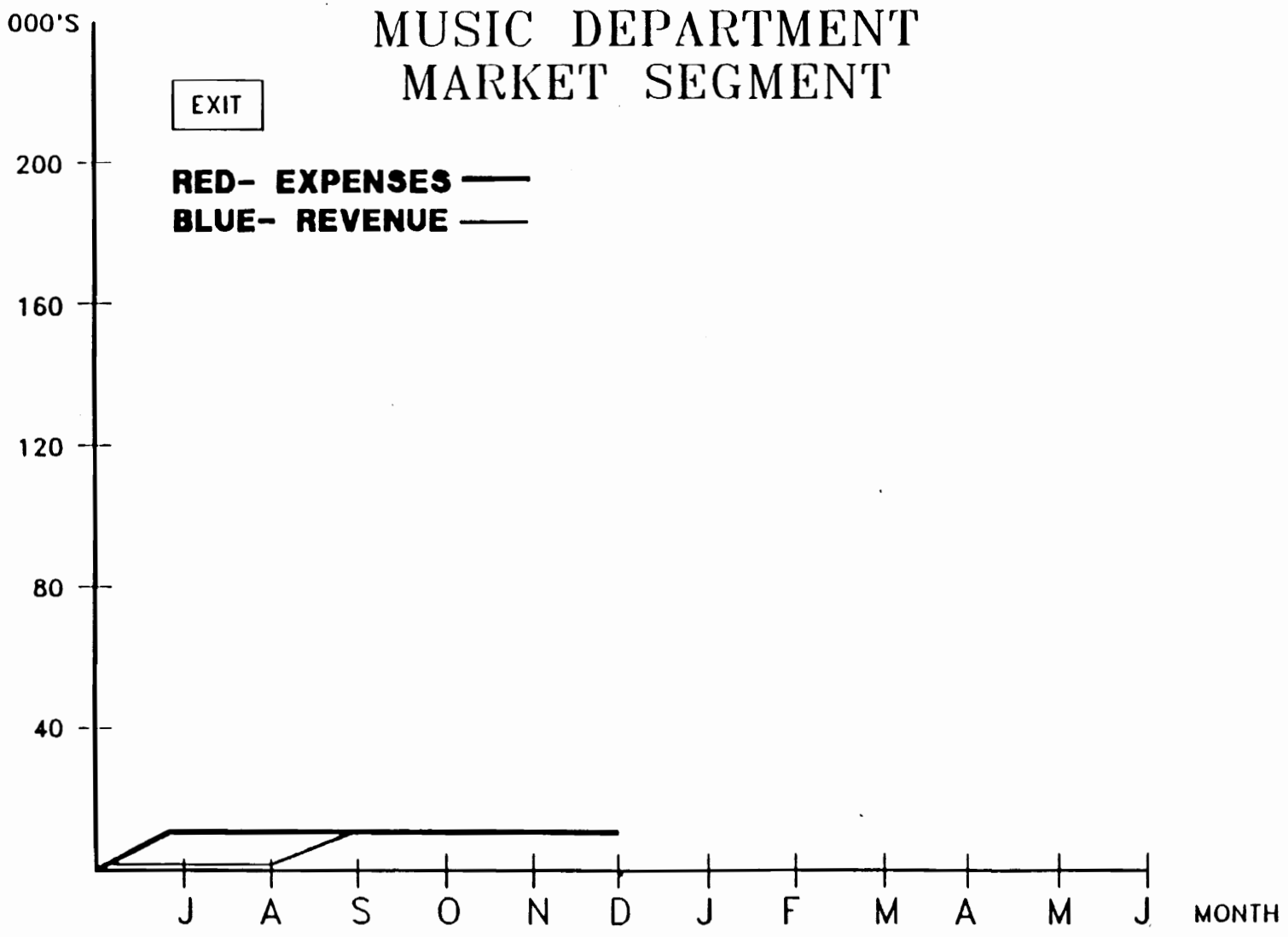

MUSIC DEPARTMENT
MARKET SEGMENT
EXIT
RED- EXPENSES
BLUE- REVENUE
000'S
200
160
120
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 31

STATE RELATED MARKET SEGMENT

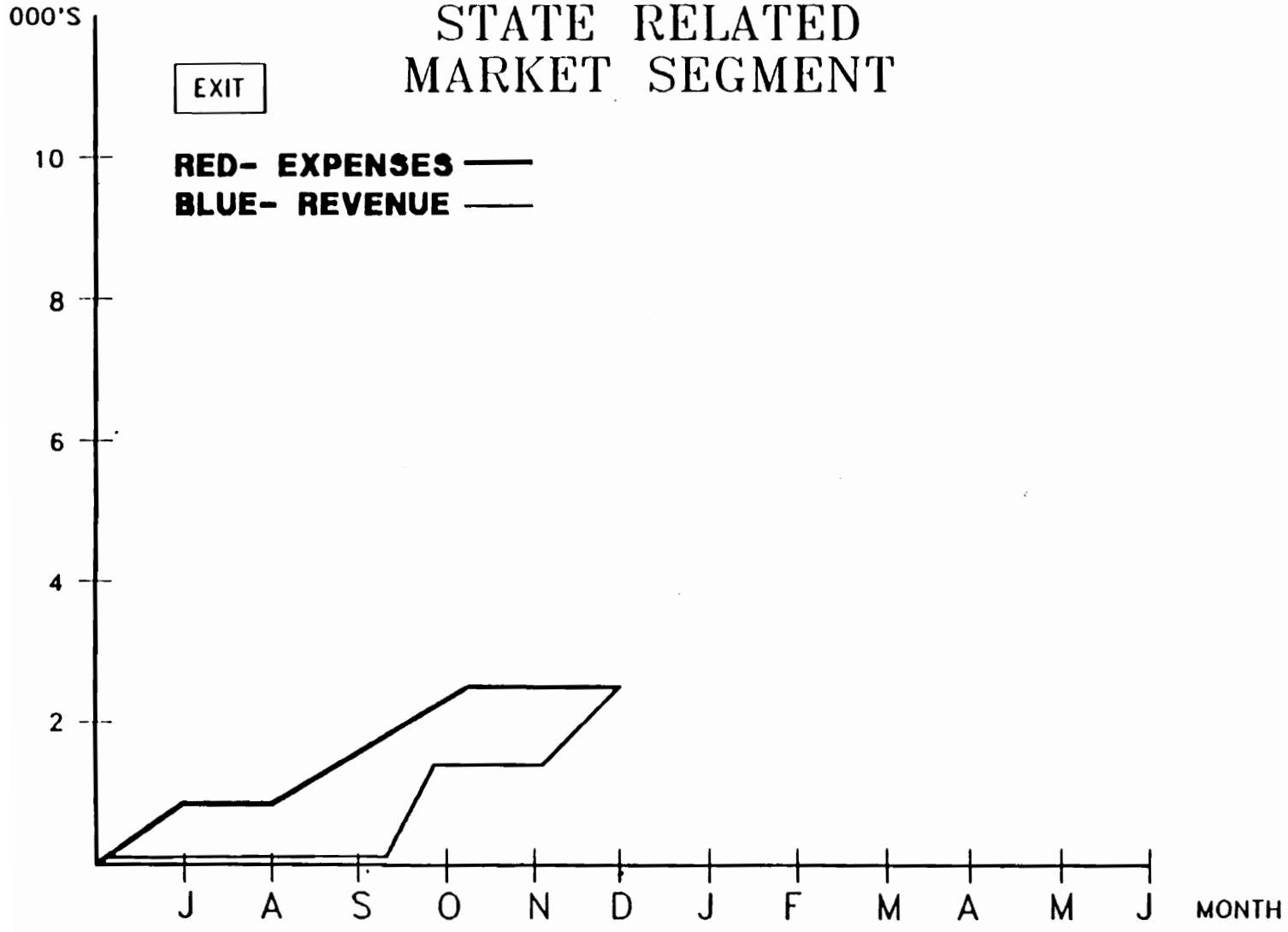


FIGURE 32

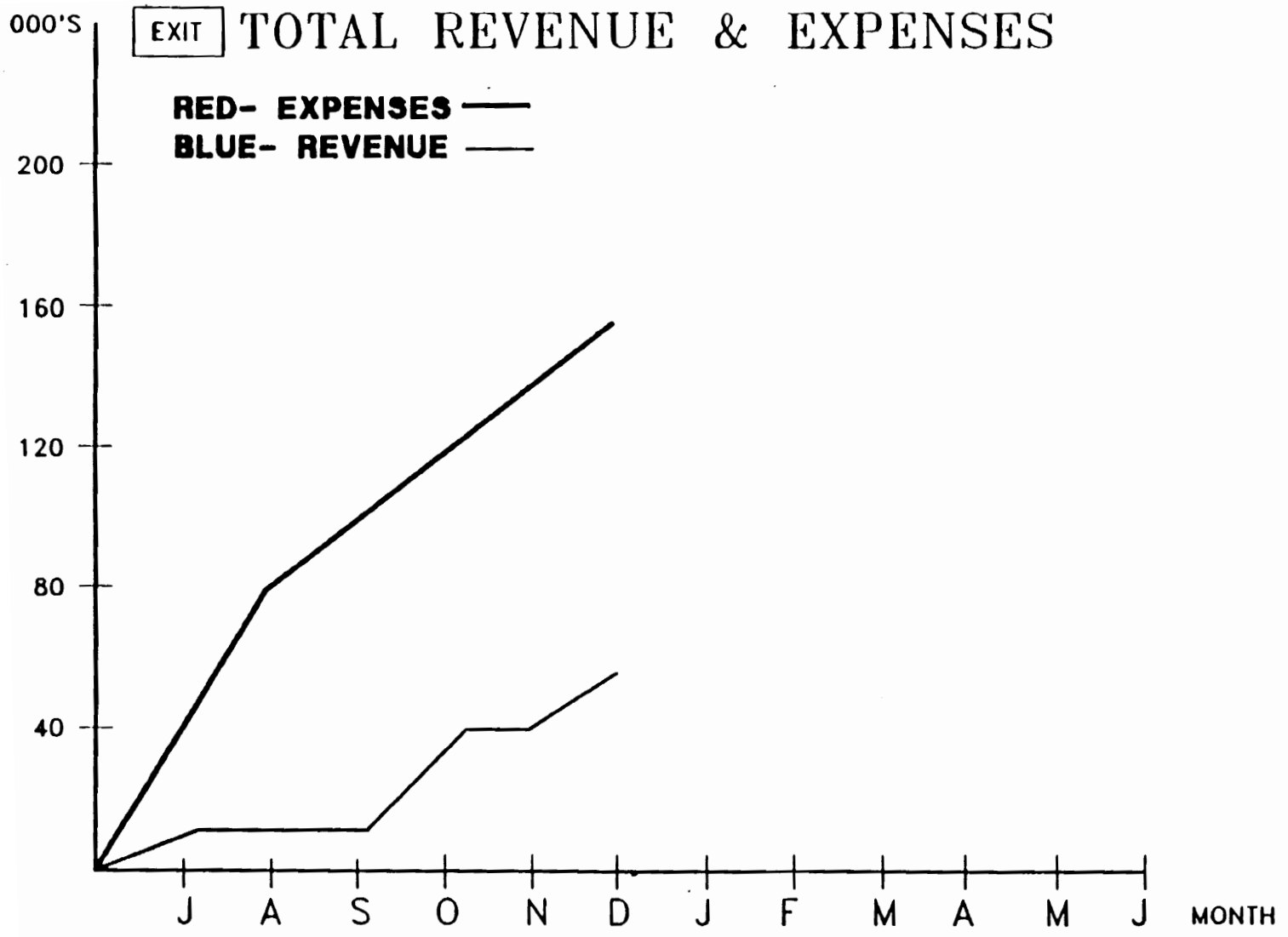

EXIT
TOTAL REVENUE & EXPENSES
000'S
RED- EXPENSES
BLUE- REVENUE
200
160
120
80
40
J
A
S
O
N
D
J
F
M
A
M
J
MONTH

FIGURE 33

four pertain to all other operations, budgets and expenses. The eight questions can be seen in the sample consultation which will be presented shortly.

When using the what-if module, a user can select a single question, or any combination of questions. However, if one chooses to select more than one question, the questions must be selected individually, as the system will prompt for more data. After making any changes desired, a user then selects "perform the analysis" which instructs the system to update all applicable spreadsheet files. After the update has been completed, the system offers the user a choice of options. These include; budget analysis, ratio analysis, and trend statements.

Sample Session with What-If Analysis

Given below is a sample session with the what-if module of the system. From the main menu, if the user selects what-if analysis, the following is an example of what might be shown on the screen and also printed out if desired.

WHAT-IF ANALYSIS

In order to see the effects of changes, this section of the expert system allows changes to be made to many of the parameters of importance in the Tailor Shop. For example, it is possible to change the composition of the corps, increase or decrease specific costs and revenues, or eliminate an entire market segment. On the following screen several options will be presented. Although many changes can be made at once, please select the change options one at a time as each option will ask for specifics. After making all of the changes desired, select option 9 to perform the analysis. The system will then proceed to a menu where you can choose any of the analyses desired. Note however that this is not the main menu, and therefore, when you want to exit what-if analysis, choose 'return to main menu' from the menu.

*** NOTICE ***

Processing is now in progress, please wait until you are told to continue.

Press any key to continue

What-If Questions

1 What if the composition of the corps were to change?
2 What if the size of the corps were to change?
3 What if commutation allowances were to change?
4 What if the price of a 'bag' of uniform items were to change?
5 What if non-corps prices were to change?
6 What if costs were to change?
7 What if the budget were to change?
8 What if one or more entire market segments were dropped?

9 Perform the analysis
10 Return to main menu

1	2	3
4	5	6
7	8	9
10		

1 What if the composition of the corps were to change?

There are currently 221 freshmen. Would you like to increase, decrease, or leave this number the same?

increase decrease same

increase

By how many?

75

There are currently 118 sophomores. Would you like to increase, decrease, or leave this number the same?

increase decrease same

same

There are currently 106 juniors. Would you like to increase, decrease, or leave this number the same?

increase decrease same

increase

By how many?

75

There are currently 116 seniors. Would you like to increase, decrease, or leave this number the same?

increase decrease same

same

What-If Questions

1 What if the composition of the corps were to change?
2 What if the size of the corps were to change?
3 What if commutation allowances were to change?
4 What if the price of a 'bag' of uniform items were to change?
5 What if non-corps prices were to change?
6 What if costs were to change?
7 What if the budget were to change?
8 What if one or more entire market segments were dropped?

9 Perform the analysis
10 Return to main menu

1	2	3
4	5	6
7	8	9
10		

9 Perform the analysis

The processing in progress now is quite extensive. Seven new worksheets are being created. This takes quite some time, so please be patient. You will be instructed when to continue.

What would you like to do? Answer /Q when finished.

budget analysis	ratio analysis	what if analysis
trend statements	return to main menu	

budget analysis

BUDGET ANALYSIS

Budget analysis is used to determine whether or not the organization's revenues and expenses have been within budget over time. For the Tailor Shop, a budget is determined in advance for the year. A monthly review of the budget versus actual data is conducted to determine whether or not the Tailor Shop is operating within its budget. An acceptance range, which is currently + or - 20% of the expected amount for each revenue and expense category, is used to determine whether or not each item is within budget.

Would you like to change any of these ranges for the revenue categories?

no yes

no

Would you like to change any of these ranges for the expense categories?

no yes

The annual budget for the Tailor Shop is determined for revenue in total, and by category for expenses (e.g. personal, continuous, etc.). In order to determine whether or not revenue is within budget, the budget is first divided into market segments. Thus, any increase or decrease in the expected revenues must be allocated to one or more of these revenue segments. If such an increase or decrease does occur, you will be asked to determine which segments are responsible for the change.

The amount budgeted for revenue this year has decreased from the previous year by $9000. Which market segments are responsible for contributing less this year to total revenue? Please make certain that your input adds up to $9000.

military	public	stu fac staff
interdepartmental	music dept	state related

military

How much is military revenue expected to decrease?

9000

The following analysis will determine whether or not each revenue and expense category is over budget, under budget, or within budget (i.e., over, under, or within the previously prescribed ranges). In this analysis, if an item is over or under budget, this will be indicated along with the percentage by which it is over or under budget. The actual and budget values will not be displayed. Given the annual budget, one must break the budget down into 12 monthly intervals. This is done by using the previous year's actual figures to determine how much of the current year's budget should have been used thus far in any given month. For categories which provide a fairly steady flow of income or expense (e.g. salaries), any exception is important. For other categories however, the flow of funds may be discontinuous. For example, most of the revenue from the corps is booked to the Tailor Shop late in the year, while revenue from the music department is typically paid twice, once in the fall and once in the spring. Repairs and maintenance will be erratic. For categories such as these, an early or late payment will appear as an exception.

At this time, calculation of all expected values is in progress. Please be patient as this takes time. You will be instructed when to continue.

The calculations are now complete. Press any key to examine the revenue part of the analysis.

The revenue collected from the public so far this year is 40.86% less than expected.

The revenue collected from state related activities so far this year is 31.05% less than expected.

The following revenue categories are within budget:
music
interdepartmental
stu fac staff
the corps

The revenue section of budgeting analysis is now finished. Press any key to examine the expense section.

Personal expenses are all within budget.

Total contractual expenses are within budget. However, the following are under budget,
repair and maintenance
and the following are over budget,
telecommunications.

Total continuous expenses are under budget. This is due to the fact that the following individual expense item(s) is (are) under budget:
water and sewer

Total supplies and materials are over budget. this is due to the fact that the following individual expense item(s) is (are) over budget:
other supplies & materials
repairs

Expenses for uniforms so far this year are under budget by 24.69%.

Expenses for equipment so far this year are under budget by 69.65%. In fact, there is $885 left in the budget for equipment.

What would you like to do? Answer /Q when finished.

budget analysis ratio analysis trend statements
return to main menu

ratio analysis

Please be patient. The data required to perform ratio analysis is quite extensive and requires a lot of time to retrieve. When the system is finished retrieving the data and performing the calculations, it will proceed directly with the analysis.

CURRENT RATIOS

1988	1989	1990
1.298	1.229	1.224

The current ratio is a measure of the organization's ability to meet its short term financial obligations as they fall due. A ratio of 1.25 or better is considered 'acceptable' for the Tailor Shop.

As can be seen above, the current situation is not good. The ratio is below its acceptable level for the most recent year, and also, has been declining for the past several years. This means that other auxiliary enterprises are financing an increasing proportion of the Tailor Shop's operating expenses.

RETURN ON ASSETS

The Return on Assets ratio (ROA) is designed to measure how much income is produced for each dollar of total assets held. In a profit oriented organization, a high ROA is desirable. Since the primary responsibility of the Tailor Shop is to provide a service, rather than

produce a profit, it does not necessarily strive for a high ROA. Rather, it should target a specific ROA. If net income is to be used only to replace old equipment, than an ROA of around .004 is desirable. On the other hand, if net income is also used to repay the amount borrowed from other auxiliaries (say over a 10 year period), then an ROA of around .08 is desirable. In any case, the ROA should not be negative as a negative ROA indicates a net loss on the operations.

Press any key to see the ROA analysis

RETURN ON ASSETS

1988	1989	1990
-0.06	-0.05	-0.07

As can be seen above, the present situation is quite bad. Not only is the ROA negative, but it has decreased over the past year. A glance at the income statements will give a good indication of why this is happening. Revenue from the corps (which typically constitutes more than 75% of total revenue) has decreased by 6.0%. Meanwhile, costs incurred for salaries and fringe benefits (which generally make up around 60% of total costs) have increased by 4.4%.

GROSS PROFIT RATIO ON CADET UNIFORMS

The Gross Profit Ratio was designed to measure the percentage of each sales dollar remaining after the cost of goods sold (cost of uniforms issued) has been covered. In other words, this ratio indicates how much of each sales dollar is available to cover operating expenses. If operating expenses are not being met, prices can be raised, or expenses lowered, and an increased gross profit ratio will result. For the Tailor Shop, this is a good figure to watch to determine what is happening with commutation allowances, inventory, and 'bags' issued to cadets.

In the Tailor Shop's situation, a change in the gross profit could indicate:

- a change in commutation allowances,
- a change in the 'mix' of cadets (i.e., freshmen vs. sophomores vs. juniors vs. seniors),
- a change in the cost of uniforms,
- a change in the number of uniform items per 'bag' or in their quality, or
- an undervaluation or overvaluation in inventory.

With the above in mind, our 'expert' will perform its analysis. However, determining changes in the cost of individual uniform items or in their

quality is beyond the scope of this system. Therefore, if one of these has changed significantly, it should be taken into consideration while viewing the following analysis.

Press any key to see the Gross Profit Ratio analysis

GROSS PROFIT RATIO ON CADET UNIFORMS

1988	1989	1990
0.551	0.683	0.726

As can be seen above, the gross profit ratio is on a definite upward trend. A determination of the cause reveals that a couple of different factors are causing this situation. Average commutation allowances have increased over the past year by 5.37%. Furthermore, there has been a misvaluation in inventory (either ending inventory has been overvalued or beginning inventory has been undervalued.)

Press any key to continue

EXPENSE TO REVENUE RATIO

The expense to revenue ratio was designed to measure how much of each revenue dollar is consumed by expenses. The primary responsibility of the Tailor Shop is to provide a service, rather than to produce a profit. However, given the level of service provided and the prices charged, it should strive for a low expense to revenue ratio. If net income is to be used only to replace old equipment, then an expense to revenue ratio of around .995 is desirable. On the other hand, if net income is also to be used to repay the amount borrowed from other auxiliaries (say over a 10 year period), then a ratio of around .93 is desirable. In any case, the expense to revenue ratio should be less than 1, since a ratio greater than 1 indicates that expenses exceed revenues.

Press any key to see the Expense to Revenue analysis

EXPENSE TO REVENUE RATIOS

1988	1989	1990
1.058	1.046	1.067

As can be seen above, the present situation is quite bad. Not only is the expense to revenue ratio greater than 1, but has increased over the past year. A glance at the income statements will give a good indication of why this is happening. Revenue from the corps (which typically constitutes more than 75% of total revenue) has decreased by 6.0%. Meanwhile, costs incurred for salaries and fringe benefits (which generally make up around 60% of total costs) have increased by 4.4%.

EXPENSE TO REVENUE RATIOS
BY MARKET SEGMENT

Expense to revenue ratios are also calculated for each market segment of the Tailor Shop. These are very useful as they show which market segments are able to cover their individual expenses. It should be noted however, that overhead expenses are not included in any of these figures. Thus, if all segments showed a ratio of 1.0, the Tailor Shop would not be able to cover all of its expenses, due to overhead expenses not included in the computations. Overhead expenses for the Tailor Shop generally constitute between 20% and 30% of total expenses, which is currently between $30,000 and $60,000.

Press any key to see the Expense to Revenue ratios

EXPENSE TO REVENUE RATIOS
BY MARKET SEGMENT

MARKET SEGMENT	1988	1989	1990
Corps	0.53	0.58	0.58
Public	1.81	1.34	1.82
Student/Faculty/Staff	1.69	1.25	1.14
Interdepartmental	4.36	1.18	0.78
Music Department	0.66	0.60	0.55
State Related	1.89	1.40	1.18

TOTAL ASSET TURNOVER RATIOS

1988 1989 1990

1.114	1.126	1.138

In general, a high ratio of dollar sales versus total value of assets is considered good, and a low ratio of sales to asset value is considered bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms signed out to cadets) is a major portion of its assets. Since it is expected that the cost of these uniforms will approximate the revenue obtained from them, any asset turnover ratio greater than 1.0 is considered to be quite good.

As can be seen above, the total asset turnover ratio is quite good, and it is improving over time.

INVENTORY TURNOVER RATIOS

The inventory turnover ratio is designed to measure how fast an organization turns over its inventory. Ideally, this number is quite high, since it is best to turn over goods as quickly as possible. Doing so decreases the possibility of lowering the value of the goods due to obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory however, cannot be turned over more than once a year, because uniforms issued to cadets are considered part of total inventory. In the case of the Tailor Shop, this ratio is calculated by dividing income produced from the corps by the average dollar value of inventory (which consists almost solely of cadet uniforms). If this ratio is very low, say less than .50, it indicates that the Tailor Shop is holding a large amount of unissued inventory in the shop. Given these circumstances, any ratio which is greater than 0.75 is considered to be 'acceptable.'

Press any key to see the inventory turnover analysis

INVENTORY TURNOVER RATIOS

1988	1989	1990
0.941	0.877	0.858

As can be seen above, the inventory turnover ratio is quite good. However, it appears to be decreasing over time. Management might want to determine whether this is just random fluctuation or an actual trend.

What would you like to do? Answer /Q when finished.

budget analysis ratio analysis trend statements
return to main menu

trend statements

TREND STATEMENTS

Trend statements are the financial statements of several years, expressed as percentages of one of those years. For purposes of this analysis, the base year chosen is the first year in the series. For each year, the dollar value of each item is divided by the dollar value of the corresponding item in the base year. This results in a value which is in terms of the percentage of the base year. From these statements, trends over time can be seen. For the statements which follow, any trend of more than 5% increase per year in expenses or 5% decrease per year in revenues is displayed in red. Likewise, any trend of more than 5% increase per year in revenue or 5% decrease per year in cost is displayed in yellow. The system is currently gathering data for these statements. You will be instructed when to continue.

Select the number corresponding to the trend statements which would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

1 accrual based income statements

TREND STATEMENTS FOR CONDENSED

ACCRUAL BASED INCOME STATEMENTS

Revenue	1988	1989	1990
Corps	1.00	0.89	0.84
Public	1.00	1.31	0.77
Student/Faculty/Staff	1.00	1.31	1.52
Interdepartmental	1.00	3.57	4.13
Music Department	1.00	1.07	1.23
State Related	1.00	1.31	0.90
Total Revenue	1.00	0.96	0.94
Expenses			
Cost of Uniforms Issued	1.00	0.63	0.51
Personnel	1.00	1.08	1.13
Contractual	1.00	1.16	1.17
Supplies & Materials	1.00	2.13	1.10
Continuous	1.00	1.60	1.70
Depreciation	1.00	1.02	0.70
Total Expenses	1.00	0.95	0.94
Net Income from Operations	1.00	0.76	1.08 **

** note that the base year was negative

Select the number corresponding to the trend statements which would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

2 cash based income statements

TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS

Revenue	1988	1989	1990
Corps	1.00	0.89	0.84
Public	1.00	1.31	0.77
Student/Faculty/Staff	1.00	1.31	1.52
Interdepartmental	1.00	3.57	4.13
Music Department	1.00	1.07	1.23
State Related	1.00	1.31	0.90
Total Revenue	1.00	0.96	0.94
Expenses			
Uniform Purchases	1.00	0.61	0.46
Personnel	1.00	1.08	1.13
Contractual	1.00	1.16	1.17
Supplies & Materials	1.00	2.13	1.10
Continuous	1.00	1.60	1.70
Equipment	1.00	0.24	0.07
Total Expenses	1.00	0.96	0.94
Net Income from Operations	1.00	0.65	1.37

Select the number corresponding to the trend statements which would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

3 balance sheets

TREND STATEMENTS FOR BALANCE SHEETS

	1988	1989	1990

Current Assets			
Inventory	1.00	0.96	0.92
Long Term Assets			
Equipment	1.00	0.91	0.84
Total Assets	1.00	0.96	0.92
Liabilities & Capital			
Cash Basis Loan from other Auxiliaries	1.00	1.01	0.97
Equity -- Reserves	1.00	0.80	0.75
Total Liabilities & Capital	1.00	0.96	0.92

Select the number corresponding to the trend statements which would like to see.

1 accrual based income statements

2 cash based income statements

3 balance sheets

4 market segment revenues and expenses

5 exit to main menu

4 market segment revenues and expenses

TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES

	1988	1989	1990
Revenues			
Corps	1.00	0.89	0.84
Public	1.00	1.31	0.77
Student/Faculty/Staff	1.00	1.31	1.52
Interdepartmental	1.00	3.57	4.13
Music Department	1.00	1.07	1.23
State Related	1.00	1.31	0.90
Expenses			
Corps	1.00	0.97	0.97
Public	1.00	0.97	0.78

Student/Faculty/Staff	1.00	0.97	1.03
Interdepartmental	1.00	0.97	0.74
Music Department	1.00	0.97	1.02
State Related	1.00	0.97	0.56

TREND STATEMENTS FOR
MARKET SEGMENT REVENUES MINUS EXPENSES

	1988	1989	1990
Corps	1.00	0.80	0.68
Public	1.00	0.55	0.78 **
Student/Faculty/Staff	1.00	0.48	0.32 **
Interdepartmental	1.00	0.19	-0.26 **
Music Department	1.00	1.28	1.65
State Related	1.00	0.58	0.18 **

** note - revenue minus expenses was negative in the base year

6.2.3 Updating the System

For the expert system to keep current, a user must input data monthly. When the system was first designed, templates were used in which the user could directly input data. The interface used for this was written in VP-Expert, but the data was then placed into VP-Planner spreadsheets by VP-Expert. Although such an approach required no knowledge regarding how to use any particular software, it was extremely inefficient and could cause accuracy problems when VP-Expert accessed the data during a consultation.

In terms of efficiency, entering data through VP-Expert is slow, due to the fact that VP-Expert must constantly write to different spreadsheets in VP-Planner. Furthermore,

it is inaccurate, and this can only be corrected by changing the manner in which VP-Expert accesses VP-Planner which drastically slows down the system. A discussion was presented earlier describing the way in which VP-Expert accesses VP-Planner. It was noted that if a file has not been saved under VP-Planner, then the data accessed through arrays will be the original data. Therefore, the only way to ensure the integrity of the data, is to access individual cells. Thus, if all data is input into VP-Planner by way of VP-Expert, all calls made to VP-Planner for data must be done individually, i.e., cell by cell, rather than transferring data in arrays. Accessing data in this fashion is inefficient for two reasons. First, it is very slow. And second, each call made to VP-Planner requires an additional statement, and therefore such a method increases the size of each knowledge base.

Because of these inefficiencies, it was decided that most data should be entered directly into VP-Planner. The following section will describe how this is to be accomplished.

Entering Data into VP-Planner

Several VP-Planner files are accessed during the course of a session with the system. The ones which require a user's assistance in updating a session include: the monthly income statement (entitled playis), the yearly cash based income statement (entitled playcbis), the yearly accrual based income statement (entitled playabis), the yearly accrual based balance sheet (entitled playabbs), the budget (entitled playbud), and a file which contains data pertaining to the corps of cadets (entitled playca). Examples of data contained in the playca file include; commutation allowance by class, and number of corps members in each class.

On a monthly basis, the monthly income statement (i.e., playis) needs to be updated. This is a cash based monthly income statement. The data required to update this file can be obtained from the VPI & SU accounting system and the Tailor Shop's Peach Tree system. Column A of this VP-Planner file presents the user with titles for each account. New data must be entered into column B. Thus, a user must must insert a new column in the B column and then fill in the applicable data. Also, a single quote must be entered into all empty cells. If this is not done, VP-Expert will pick up the wrong data during consultations, as it skips over empty cells when accessing data using arrays.

On an annual basis, the cash based income statement, the accrual based income statement, the budget, the accrual based balance sheet, and the file containing data pertaining to the corps, must also be updated. The cash based income statement (i.e, playcbis) is merely the cash based income statement presented annually. The data placed in this worksheet is exactly the same as that placed in the monthly income statement worksheet for June. The new data should be entered into column B, just as is done above.

The playca file contains size of the corps and commutations allowances by class. Commutation allowances are not subdivided into male/female categories as it was felt that the difference to results would be negligible but the resulting inefficiency of the system, would not. Therefore, the user can calculate a reasonable weighted average. New data entered into playca should be entered into column B in the appropriate cells, and formulas in cells C13 through C16 should be copied into cells B13 through B16.

The budget file (i.e., playbud) contains the budget for the current year. As with the other files, the A column contains account titles and the current data must be entered into column B.

The playabis and playabbs contain the data for the accrual based income statements and the accrual based balance sheets respectively. Although the system depends on accrual based statements, the data for such statements is not readily available. Therefore, the system was designed to calculate the data for these statements and to put it in the appropriate spreadsheets. To do this however, requires assistance from the user. Since these files are updated through a consultation with the ratio analysis module of the system, the user must run this module. At the beginning of this module, a user is presented with the following statement and question; "The most recent data is for the year ending June (previous year). Is this the most current year?" If the user selects "no", then the system automatically calculates the necessary accrual based statements. During its calculations, the system will need information regarding inventory and equipment purchases throughout the year. Therefore, this data should be readily available prior to updating the system, as the system will prompt the user for the data. In order to ensure that the correct data is accessed in later consultations, after the system has completed ratio analysis, the user should enter the two files from VP-Planner (i.e., playabis and playabbs) and then save them. This will eliminate any of the problems caused by accessing data in arrays.

Chapter 7

Results and Conclusions

The purpose of this chapter is to summarize the findings of the research conducted and to discuss the resulting conclusions. Also included is a summary of the research results and conclusions regarding system limitations and possible system enhancements.

7.1 Summary of Research Results

The following section summarizes the amenability of expert system technology to financial position analysis, especially for university auxiliary enterprises. This is followed by a discussion of expert system shells and hardware requirements, and concluded with a discussion regarding actual development of a system.

7.1.1 Amenability of Expert System Technology to Financial Position Analysis

The approach taken in this research was to evaluate different aspects of tasks which make them amenable to expert system development, and thereby determine whether or not financial position analysis possessed the proper characteristics for use of expert systems.

The several most important aspects of tasks which make them amenable to expert system development were found to include: (1) the domain is narrow, (2) the application is well defined and understood, (3) the input does not require sensory data, and (4) genuine experts exist and are able to articulate their methods. It should be further stated that expert systems have been found to work well for problems which require sorting through large amounts of data, and for problems where it is difficult or impossible to define precise, exhaustive relationships.

In order to determine whether or not financial position analysis was a task well suited for expert system development, a thorough evaluation of the process was undertaken. It was found that the analysis of an organization's financial situation can be viewed as a three stage process. The first stage is the determination of what tasks need to be performed. This entails determining which financial ratios and other financial information are applicable to a given organization, and which industry or competitors the organization should be compared with. The second stage of this process is the compilation of data required to make use of the techniques selected in stage one, along with the actual calculations. The third stage includes analysis and evaluation of the output obtained in stage two.

After a thorough examination of each stage, it was found that the analysis of an organization's financial situation is quite amenable to expert system development. It is a decomposable task, and therefore development can progress in stages. The first and third stages, (determining what analyses to use and interpreting the output) are directly applicable to expert system development, while the second stage (the actual calculations) can be done more efficiently using traditional programming methods. The most efficient method by which to accomplish this is to build an interface. However, developing interfaces of this nature is a very complex task and is currently receiving much coverage in the literature. Given the complexity of building and using an interface, along with the fact that the data required for the financial analysis of the Tailor Shop is much less than that of a commercial enterprise, it was determined that for the research undertaken, it would be best to perform the calculations within the system itself.

7.1.2 Expert System Shells and Hardware Requirements

After using two very different expert system shells, it was concluded that the hardware specifications stated by vendors are often considerably less than actual requirements for a project of the size undertaken in this research. Therefore, it is recommended that prior to undertaking a project of the size reported here, a thorough investigation of different expert system shells be performed.

An evaluation of shells should include an examination of several different aspects of the package. One should first determine the necessary requirements for the system. In particular, it should be determined whether or not capabilities beyond rules and a back-

ward chaining inference engine are required. This is important because the packages with more sophisticated capabilities require more in terms of hardware and memory.

One of the most important factors to consider in evaluating different shells is efficiency. It should be determined whether or not the inference engine is written so as to most efficiently use the amount of available RAM. Another factor to consider is how easily the shell interfaces with other software packages. In order to maximize efficiency, an expert system which requires very much data should store the data in either a database or a spreadsheet. If graphics capabilities are desired, the shell should either support them or interface with a graphics package. Another factor to consider is whether or not variables can be used in the system. During the course of this research, it was found that GoldWorks has this capability while VP-Expert does not. In the final system developed using VP-Expert, it was determined that the size of many of the knowledge bases could have been much smaller, and thus more efficient and faster, if X and Y coordinates could have been stated using variables. Also, any of the knowledge bases which retrieve monthly data from a spreadsheet would have been more efficient if the rows and cells of the spreadsheet could have been stated as variables.

7.1.3 Expert System Development

It was found that the stepwise iterative approach discussed in the literature is a worthwhile approach to developing an expert system. Developing a system of this nature by more traditional methods (e.g. flowcharting) would have made the project too complex and therefore, would never have been completed.

Gathering the heuristic and factual data for this research was not consistent with published research findings. In the literature, it is frequently stated that factual data is easy to gather while extracting the heuristic knowledge from the expert is difficult. During the course of this research, the opposite was found to be true. Gathering the financial data was difficult, because it was not in the form required. However, our expert could adequately articulate his methods, making heuristic knowledge extraction less difficult than expected.

It was found that the long descriptive variable names allowed by most expert system shells and symbolic languages should not be used. Although they are descriptive, and thus make it easier to understand a program, they require too much space in memory.

Examples of expert systems described in the literature, frequently have may short rules. It was found in this research that it is more efficient to have a fewer number of longer rules. This is because a system programmed in this manner requires fewer variables, and thus, less memory.

7.2 Conclusions

The following sections present conclusions regarding the limitations of the system that was developed, along with possible system enhancements.

7.2.1 System Limitations

The system's limitations include; its speed, its inability to print graphs, its memory requirements, and its inflexibility in terms of adding new accounts to financial statements. Each of these will be discussed in the following sections.

7.2.1.1 Speed of the System

The major limitation of the expert system developed for this research is its slow speed. To run through the entire system on a microcomputer with a 386 processor requires more than 6 hours. For a system which produces approximately fifty pages of output (as shown in Chapter 6), this is too long. This limitation will have a large impact on user acceptance of the system.

7.2.1.2 Graphics Capabilities

Although the system developed provides users with graphics on the screen, these graphics cannot be sent to the printer. This is a limitation of the VP-Expert package.

7.2.1.3 Memory Requirements

The memory requirements of the system limit its capabilities. Expanding the current system would result in program crashes due to insufficient memory. This was found to be the case when developing a graphics module within the what if module.

7.2.1.4 Adding New Accounts to Financial Statements

The current system stores all its financial data in VP-Planner spreadsheets. If accounts are added, both the spreadsheets and the rules which access these spreadsheets must be changed. This would not have been the case if data could have been stored in lists within VP-Expert. However, this was not possible due to the memory/efficiency problems discussed earlier.

7.2.2 System Enhancements

Several enhancements to the system could be developed which would increase its usefulness. These include: programming it in a high level language, increasing its graphics capabilities, and generalizing it, so that it can be easily extended for other organizations. Each of these enhancements will be discussed in the sections which follow.

7.2.2.1 Program the System in a High Level Language

Programming the system in a third generation language could greatly increase its efficiency, and thus, its speed. Languages often used for expert systems include: LISP, PROLOG, C, and sometimes PASCAL. Our recommendation is to program the final expert system in C or PASCAL, as these are both very efficient languages. It would also be much more portable if written in a language like C. It should be noted that starting this project using such a language would have proved to be too difficult. However, now that the structure has been developed using VP-Expert, transferring it into a language would not be an insurmountable task.

7.2.2.2 Increasing Graphics Capabilities

Increasing the system's graphics capabilities may increase its usefulness to users, and would be possible if the system were written in a more efficient language. The current graphs could be extended to include more than one year of data. Graphs such as those currently available could be incorporated into the what if module. And finally, graphs of the current trend statements might prove to be worthwhile to a user.

7.2.2.3 Extension of the Current System

The current system could be built more generically so that it could easily be extended to analyze the financial position of other auxiliary enterprises in the university. However, it should be noted that this may be unrealistic at this time. This is because, given the current state of technology, expert systems are typically developed for problem areas that fall within narrow domains.

7.2.3 Concluding Remarks

The purpose of this research has been to determine the amenability of expert system technology to financial position analysis, especially for college and university auxiliary enterprises. It has been concluded that building such a system is appropriate and can provide significant benefits to a user. However, financial position analysis requires a very substantial amount of data and numerical calculations, both of which require large amounts of memory and computations. Therefore, designing an expert system to effi-

ciently perform this task requires the use of a package or a language that efficiently utilizes computer memory and CPU.

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Appendix A

Example Application: BASIC Program and GoldWorks Expert System

```
100 READ NUMFE, NUMVE    'READ THE NUMBER OF FIXED AND VARIABLE EXPENSES
110 READ BUDGET          'READ THE AMOUNT THAT IS IN THE BUDGET TO START
115 READ SEASON$
120 OPEN "O", #2, "VEARRAY"    'OPEN #2 TO PUT VE INFO INTO
130       'CALCULATE EXPECTTED VALUE (AMT) OF VE'S AND PLACE INFO IN #2

140 FOR I = 1 TO NUMVE
150     READ ENAME$, MIN, MAX, PROP, NEED
151       IF SEASON$ = "spring" THEN GOSUB 3000
152       IF SEASON$ = "summer" THEN GOSUB 3300
153       IF SEASON$ = "fall" THEN GOSUB 3410
154       IF SEASON$ = "winter" THEN GOSUB 3520
170     WRITE#2, ENAME$,AMT,PROP,NEED
180 NEXT I

190 CLOSE #2    'ALL DATA HAS BEEN PLACED IN THE FILE SO CLOSE IT
200 OPEN "I", #2, "VEARRAY"  'REOPEN #2 IN USABLE FORM FOR THE PROGRAM
210         'OPEN FILES 3 THROUGH 6.  THESE ARE USED TO MAINTAIN INFO
220         'ON CRITICAL EXPENSES, SEMI-CRITICAL EXPENSES, CONVENIENT
230         'EXPENSES, AND LUXURY EXPENSES RESPECTIVELY
240 OPEN "O", #3, "CRIT"
250 OPEN "O", #4, "SEMI"
260 OPEN "O", #5, "CONV"
270 OPEN "O", #6, "LUX"

280       'EXAMINE ALL VE'S TO DETERMINE WHETHER OR NOT THEIR NEED OF
290       'PAYMENT HAS BEEN ASSIGNED.  IF IT HAS, FILE IT IN THE
300       'APPLICABLE FILE (3,4,5, OR 6).  IF IT HAS NOT, ASK THE
310       'USER FOR IT AND THEN FILE IT IN THE APPLICABLE FILE.

320 PRINT "IT MUST BE DETERMINED HOW YOU VALUE THE PAYMENT OF CERTAIN"
330 PRINT "EXPENSES.  WHEN ASKED, PLEASE ANSWER 1 FOR CRITICAL,"
340 PRINT "2 FOR SEMI-CRITICAL, 3 FOR CONVENIENT, OR 4 "
350 PRINT "FOR LUXURY."

360 FOR I = 1 TO NUMVE
370    INPUT#2, ENAME$,AMT,PROP,NEED
380    IF NEED <> 0 THEN GOTO 410
390    PRINT "WHEN DETERMINING THE PAYMENT OF", ENAME$
400    INPUT "HOW CRITICAL DO YOU CONSIDER IT"; NEED
410    IF NEED = 1 THEN GOTO 470
420    IF NEED = 2 THEN GOTO 500
430    IF NEED = 3 THEN GOTO 530
440    WRITE#6, ENAME$,AMT,PROP,NEED  'NEED MUST BE LUXURY SO PUT
445                                   'IN FILE #6
```

```
450     NUMLUX=NUMLUX+1    'COUNT THE NUMBER OF LUXURY ITEMS
460     GOTO 550
470     WRITE#3, ENAME$, AMT, PROP, NEED
480     NUMCRIT = NUMCRIT + 1     'COUNT THE NUMBER OF CRITICAL ITEMS
490     GOTO 550
500     WRITE#4, ENAME$, AMT, PROP, NEED
510     NUMSEMI = NUMSEMI + 1     'COUNT THE NUMBER OF SEMI-CRITICAL ITEMS
520     GOTO 550
530     WRITE#5, ENAME$, AMT, PROP, NEED
540     NUMCONV = NUMCONV + 1     'COUNT THE NUMBER OF CONVENIENT ITEMS
550 NEXT I

560 CLOSE #2
570   'READ THE RECORDS FOR FE'S.  DETERMINE THERE NEED AND PLACE IN
580   'APPLICABLE FILES

590 FOR J = 1 TO NUMFE
600     READ ENAME$, AMT, PROP, NEED
610     IF NEED <> 0 THEN GOTO 640
620     PRINT "WHEN DETERMINING THE PAYMENT OF", ENAME$
630     INPUT "HOW CRITICAL DO YOU CONSIDER IT"; NEED
640     IF NEED = 1 THEN GOTO 700
650     IF NEED = 2 THEN GOTO 730
660     IF NEED = 3 THEN GOTO 760
670     WRITE#6, ENAME$,AMT,PROP,NEED 'NEED MUST BE A LUXURY SO PUT IN #6
680     NUMLUX = NUMLUX + 1  'COUNT THE NUMBER OF LUXURY ITEMS
690     GOTO 780
700     WRITE#3, ENAME$, AMT, PROP, NEED
710     NUMCRIT = NUMCRIT + 1
720     GOTO 780
730     WRITE#4, ENAME$, AMT, PROP, NEED
740     NUMSEMI = NUMSEMI + 1
750     GOTO 780
760     WRITE#5, ENAME$, AMT, PROP, NEED
770     NUMCONV = NUMCONV + 1
780 NEXT J

790 CLOSE #3
800 CLOSE #4
810 CLOSE #5
820 CLOSE #6
830 OPEN "I", #3, "CRIT" 'OPEN CRIT ARRAY TO DETERMINE WHETHER OR NOT
840                      'THE EXPENSES GET PAID
850 OPEN "O", #11, "GCCRIT"  'TEMPORARILY STORE INFO ON CRIT EXPENSES
860                          'THAT CANNOT BE PAID IN FULL
870 OPEN "O", #7, "PAID"   'OPEN THE PAID ARRAY TO STORE ALL PAID EXPS
880 OPEN "O", #8, "PARTPAID"  'OPEN THE PARTIALLY PAID ARRAY TO STORE
890                           'ALL EXPENSES WHICH ARE PARTIALLY PAID
900 OPEN "O", #9, "NOPAID"  'OPEN THE NO PAID ARRAY FOR EXPENSES
910                         'WHICH CANNOT BE PAID
```

```
930     'GO THROUGH ALL THE CRITICAL EXPENSES AND DETERMINE WHICH ONES
940     'CAN BE PAID IN FULL

950 FOR I = 1 TO NUMCRIT
960     INPUT#3, ENAME$, AMT, PROP, NEED
970        'IF THERE IS ENOUGH IN BUDGET TO PAY EXPENSE, PAY AND DEDUCT
980        'FROM BUDGET
990     IF AMT > BUDGET THEN GOTO 1050
1000    BUDGET = BUDGET - AMT
1010    WRITE#7, ENAME$, AMT, PROP, NEED
1020    NUMPAID = NUMPAID+1    'COUNT THE NUMBER OF EXPENSES PAID IN FULL
1030    GOTO 1070
1040       'IF NOT ENOUGH IN BUDGET TO PAY EXPENSE, TEMPORARILY PUT IN 11
1050    WRITE#11, ENAME$, AMT, PROP, NEED
1060    SIZEUC = SIZEUC + 1    'INCREASE THE NUMBER OF UNPAID CRIT EXPENSES
1070 NEXT I

1080 CLOSE #11
1090 CLOSE #3
1100 OPEN "I", #11, "GCCRIT"

1110     'GO THROUGH CRIT EXPENSES WHICH CANNOT BE PAID IN FULL AND
1120     'DETERMINE IF ANY OF THEM CAN BE AT LEAST PAID PARTIALLY

1130 FOR I = 1 TO SIZEUC
1140    INPUT#11, ENAME$, AMT, PROP, NEED
1150    IF (AMT*PROP) <= BUDGET THEN GOTO 1220
1160        'CANNOT PAY EVAN A PROPORTION OF THIS CRITICAL EXPENSE,
1170        'SO PUT IT INTO THE NOT PAID ARRAY
1180    WRITE#9, ENAME$, AMT, PROP, NEED
1190    NUMNOPAID = NUMNOPAID + 1
1200    GOTO 1250
1210         'PAY A PROPORTION OF THE EXPENSE
1220    BUDGET = BUDGET - (AMT*PROP)
1230    WRITE#8, ENAME$, AMT, PROP, NEED
1240    NUMPARTPAID = NUMPARTPAID + 1
1250 NEXT I

1260 CLOSE #11
1270 OPEN "I", #4, "SEMI" 'OPEN SEMI ARRAY TO DETERMINE WHETHER OR NOT
1280                      'THE EXPENSES GET PAID
1290 OPEN "O", #12, "GCSEMI"  'TEMPORARILY STORE INFO ON SEMI EXPENSES
1300                          'THAT CANNOT BE PAID IN FULL
1320    'GO THROUGH ALL THE SEMI-CRITICAL EXPENSES AND DETERMINE WHICH
1330    'ONES CAN BE PAID IN FULL

1340 FOR I = 1 TO NUMSEMI
1350    INPUT#4, ENAME$, AMT, PROP, NEED
1360       'IF THERE IS ENOUGH IN BUDGET TO PAY EXPENSE, PAY AND DEDUCT
1379       'FROM BUDGET
1380    IF AMT > BUDGET THEN GOTO 1440
1390    BUDGET = BUDGET - AMT
1400    WRITE#7, ENAME$, AMT, PROP, NEED
1410    NUMPAID = NUMPAID+1    'COUNT THE NUMBER OF EXPENSES PAID IN FULL
```

```
1420  GOTO 1460
1430      'IF NOT ENOUGH IN BUDGET TO PAY EXPENSE, TEMPORARILY PUT IN 12
1440   WRITE#12, ENAME$, AMT, PROP, NEED
1450   SIZEUS = SIZEUS + 1    'INCREASE THE NUMBER OF UNPAID SEMI EXPENSES
1460 NEXT I

1470 CLOSE #12
1480 CLOSE #4
1490 OPEN "I", #12, "GCSEMI"

1500     'GO THROUGH SEMI EXPENSES WHICH CANNOT BE PAID IN FULL AND
1510     'DETERMINE IF ANY OF THEM CAN AT LEAST BE PAID PARTIALLY

1520 FOR I = 1 TO SIZEUS
1530    INPUT#12, ENAME$, AMT, PROP, NEED
1540    IF (AMT*PROP) <= BUDGET THEN GOTO 1610
1550        'CANNOT PAY EVEN A PROPORTION OF THIS SEMI-CRITICAL EXPENSE,
1560        'SO PUT IT INTO THE NOT PAID ARRAY
1570    WRITE#9, ENAME$, AMT, PROP, NEED
1580    NUMNOPAID = NUMNOPAID + 1
1590    GOTO 1640
1600         'PAY A PROPORTION OF THE EXPENSE
1610    BUDGET = BUDGET - (AMT*PROP)
1620    WRITE#8, ENAME$, AMT, PROP, NEED
1630    NUMPARTPAID = NUMPARTPAID + 1
1640 NEXT I

1650 CLOSE #12
1660 OPEN "I", #5, "CONV" 'OPEN CONV ARRAY TO DETERMINE WHETHER OR NOT
1670                      'THE EXPENSES GET PAID
1680 OPEN "O", #13, "GCCONV"  'TEMPORARILY STORE INFO ON CONV EXPENSES
1690                          'THAT CANNOT BE PAID IN FULL

1710    'GO THROUGH ALL THE CONVENIENT EXPENSES AND DETERMINE WHICH
1720    'ONES CAN BE PAID IN FULL

1730 FOR I = 1 TO NUMCONV
1740    INPUT#5, ENAME$, AMT, PROP, NEED
1750       'IF THERE IS ENOUGH IN BUDGET TO PAY EXPENSE, PAY AND DEDUCT
1760       'FROM BUDGET
1770   IF AMT > BUDGET THEN GOTO 1830
1780   BUDGET = BUDGET - AMT
1790   WRITE#7, ENAME$, AMT, PROP, NEED
1800   NUMPAID = NUMPAID+1   'COUNT THE NUMBER OF EXPENSES PAID IN FULL
1810   GOTO 1850
1820      'IF NOT ENOUGH IN BUDGET TO PAY EXPENSE, TEMPORARILY PUT IN 13
1830   WRITE#13, ENAME$, AMT, PROP, NEED
1840   SIZEUCN = SIZEUCN + 1   'INCREASE NUMBER OF UNPAID CONV EXPENSES
1850 NEXT I
```

```
1860 CLOSE #13
1870 CLOSE #5
1880 OPEN "I", #13, "GCCONV"

1890     'GO THROUGH CONV EXPENSES WHICH CANNOT BE PAID IN FULL AND
1900     'DETERMINE IF ANY OF THEM CAN AT LEAST BE PAID PARTIALLY

1910 FOR I = 1 TO SIZEUCN
1920    INPUT#13, ENAME$, AMT, PROP, NEED
1930    IF (AMT*PROP) <= BUDGET THEN GOTO 2000
1940        'CANNOT PAY EVEN A PROPORTION OF THIS CONVENIENT EXPENSE,
1950        'SO PUT IT INTO THE NOT PAID ARRAY
1960    WRITE#9, ENAME$, AMT, PROP, NEED
1970    NUMNOPAID = NUMNOPAID + 1
1980    GOTO 2030
1990         'PAY A PROPORTION OF THE EXPENSE
2000    BUDGET = BUDGET - (AMT*PROP)
2010    WRITE#8, ENAME$, AMT, PROP, NEED
2020    NUMPARTPAID = NUMPARTPAID + 1
2030 NEXT I

2040 CLOSE #13
2050 OPEN "I", #6, "LUX" 'OPEN LUX ARRAY TO DETERMINE WHETHER OR NOT
2060                     'THE EXPENSES GET PAID
2070 OPEN "O", #14, "GCLUX"  'TEMPORARILY STORE INFO ON LUXURY EXPENSES
2080                          'THAT CANNOT BE PAID IN FULL

2100    'GO THROUGH ALL THE LUXURY EXPENSES AND DETERMINE WHICH
2110    'ONES CAN BE PAID IN FULL

2120 FOR I = 1 TO NUMLUX
2130    INPUT#6, ENAME$, AMT, PROP, NEED
2140       'IF THERE IS ENOUGH IN BUDGET TO PAY EXPENSE, PAY AND DEDUCT
2150       'FROM BUDGET
2160   IF AMT > BUDGET THEN GOTO 2220
2170   BUDGET = BUDGET - AMT
2180   WRITE#7, ENAME$, AMT, PROP, NEED
2190   NUMPAID = NUMPAID+1   'COUNT THE NUMBER OF EXPENSES PAID IN FULL
2200   GOTO 2240
2210      'IF NOT ENOUGH IN BUDGET TO PAY EXPENSE, TEMPORARILY PUT IN 14
2220   WRITE#14, ENAME$, AMT, PROP, NEED
2230   SIZEUL = SIZEUL + 1   'INCREASE NUMBER OF UNPAID LUX EXPENSES
2240 NEXT I

2250 CLOSE #14
2260 CLOSE #6
2270 OPEN "I", #14, "GCLUX"

2280     'GO THROUGH LUX EXPENSES WHICH CANNOT BE PAID IN FULL AND
2290     'DETERMINE IF ANY OF THEM CAN AT LEAST BE PAID PARTIALLY
```

```
2300 FOR I = 1 TO SIZEUL
2310    INPUT#14, ENAME$, AMT, PROP, NEED
2320    IF (AMT*PROP) <= BUDGET THEN GOTO 2390
2330        'CANNOT PAY EVEN A PROPORTION OF THIS LUXURY EXPENSE,
2340        'SO PUT IT INTO THE NOT PAID ARRAY
2350    WRITE#9, ENAME$, AMT, PROP, NEED
2360    NUMNOPAID = NUMNOPAID + 1
2370    GOTO 2420
2380         'PAY A PROPORTION OF THE EXPENSE
2390    BUDGET = BUDGET - (AMT*PROP)
2400    WRITE#8, ENAME$,AMT, PROP, NEED
2410    NUMPARTPAID = NUMPARTPAID + 1
2420 NEXT I

2430 CLOSE
2440 OPEN "I", #7, "PAID"
2445 IF NUMPAID = 0 THEN GOTO 2500
2450 PRINT "THE FOLLOWING EXPENSES HAVE BEEN PAID IN FULL:"

2460 FOR I = 1 TO NUMPAID
2470    INPUT#7, ENAME$, AMT, PROP, NEED
2480    PRINT ENAME$
2490 NEXT I

2500 CLOSE #7
2510 OPEN "I", #8, "PARTPAID"
2515 IF NUMPARTPAID = 0 THEN GOTO 2580
2520 PRINT "THE FOLLOWING EXPENSES HAVE BEEN PARTIALLY PAID:"

2530 FOR I = 1 TO NUMPARTPAID
2540    INPUT#8, ENAME$, AMT, PROP, NEED
2550    AMOUNT = AMT * PROP
2560    PRINT ENAME$, AMOUNT
2570 NEXT I

2580 CLOSE #8
2590 OPEN "I", #9, "NOPAID"
2595 IF NUMNOPAID = 0 THEN GOTO 2650
2600 PRINT "THE FOLLOWING EXPENSES COULD NOT BE PAID:"

2610 FOR I = 1 TO NUMNOPAID
2620     INPUT#9, ENAME$, AMT, PROP, NEED
2630     PRINT ENAME$
2640 NEXT I

2650 PRINT "AFTER PAYING THESE EXPENSES, YOU ARE LEFT WITH A GRAND"
2660 PRINT "TOTAL OF $", BUDGET
2670 CLOSE
2680 STOP
```

```
2690 DATA 2,7
2700 DATA 1751.75
2705 DATA "winter"
2710       'INFORMATION FOR THE VARIABLE EXPENSES IS AS FOLLOWS
2720 DATA "PHONE", 22,95,.5,0
2730 DATA "ELECTRIC", 52,95,.25,0
2740 DATA "FOOD-LIVE",150,160,1.0,1
2750 DATA "FOOD-ENJOY",0,200,1.0,0
2760 DATA "VISA/MC",25,500,.10,0
2770 DATA "PARTY",15,200,1.0,0
2780 DATA "RECREATION",0,250,1.0,0
2790       'INFORMATION FOR THE FIXED EXPENSES IS AS FOLLOWS
2800 DATA "MORTGAGE",525,1.0,1
2810 DATA "COLLEGE-LOAN",235,.50,0
2820 END

3000 'subroutine for calculating spring expenses
3010 IF ENAME$ = "PHONE" THEN  GOTO 3080
3020 IF ENAME$ = "FOOD-ENJOY" THEN GOTO 3080
3030 IF ENAME$ = "FOOD-LIVE" THEN GOTO 3080
3040 IF ENAME$ = "ELECTRIC" THEN GOTO 3080
3050 IF ENAME$ = "VISA/MC" THEN GOTO 3080
3060 IF ENAME$ = "PARTY" THEN GOTO 3100
3070 IF ENAME$ = "RECREATION" THEN GOTO 3080
3080 AMT = (MIN + MAX) / 2
3090 GOTO 3200
3100 AMT = MIN
3200 RETURN

3300  'subroutine for calculating summer expenses
3310 IF ENAME$ = "PHONE" THEN GOTO 3390
3320 IF ENAME$ = "FOOD-ENJOY" THEN GOTO 3390
3330 IF ENAME$ = "FOOD-LIVE" THEN GOTO 3390
3340 IF ENAME$ = "ELECTRIC" THEN GOTO 3390
3350 IF ENAME$ = "VISA/MC" THEN GOTO 3390
3360 IF ENAME$ = "PARTY" THEN AMT = MAX
3370 IF ENAME$ = "RECREATION" THEN AMT = MAX
3380 GOTO 3400
3390 AMT = (MIN + MAX) / 2
3400 RETURN
```

```
3410   'subrouting for calculating fall expenses
3420 IF ENAME$ = "PHONE" THEN GOTO 3500
3430 IF ENAME$ = "FOOD-ENJOY" THEN GOTO 3500
3440 IF ENAME$ = "FOOD-LIVE" THEN GOTO 3500
3450 IF ENAME$ = "ELECTRIC" THEN GOTO 3500
3460 IF ENAME$ = "RECREATION" THEN GOTO 3500
3470 IF ENAME$ = "VISA/MC" THEN GOTO 3500
3480 IF ENAME$ = "PARTY" THEN AMT=MIN
3490 GOTO 3510
3500 AMT = (MIN + MAX) / 2
3510 RETURN

3520     'subroutine for calculating winter expenses
3530 IF ENAME$ = "PHONE" THEN GOTO 3610
3540 IF ENAME$ = "FOOD-ENJOY" THEN GOTO 3610
3550 IF ENAME$ = "FOOD-LIVE" THEN GOTO 3610
3560 IF ENAME$ = "ELECTRIC" THEN AMT = MAX
3570 IF ENAME$ = "PARTY" THEN AMT = MAX
3580 IF ENAME$ = "RECREATION" THEN AMT = MIN
3590 IF ENAME$ = "VISA/MC" THEN AMT = MAX
3600 GOTO 3620
3610 AMT = (MAX + MIN) / 2
3620 RETURN
```

A.2 Description of GoldWorks Rules for Household Budget

Priority	Name	Purpose
100	ELECTRIC-BILL-NOT-WINTER	Determines the expected amount for the electric bill for the spring, summer, and fall.
100	ELECTRIC-BILL-WINTER	Determines the expected amount of the electric bill for the winter.
100	ENT-PARTY-FALL-AND-SPRING	Determines the expected amount of partying expenses for the fall and spring months.
100	ENT-PARTY-WINTER-AND-SUMMER	Determines the expected amount of partying expenses for the winter and summer months.
100	ENT-REC-FALL-AND-SPRING	Determines the expected amount of recreational expenses for the spring and fall months.
100	ENT-REC-SUMMER	Determines the expected amount of recreational expenses for the summer months.
100	ENT-REC-WINTER	Determines the expected amount of recreational expenses for the winter months.
100	VBL-EXP-NO-SEASONAL-FLUCT	Determines the expected amount of all variable expenses whose amounts do not fluctuate with the seasons.
100	VISA/MC-NOT-WINTER	Determines the expected amount of VISA and MC bills for the spring, summer, and fall months.
100	VISA/MC-WINTER	Determines the expected amount of the VISA and MC bills for the winter months.
98	ASK-NEED-FIXED-EXP	Asks the user of 'need' for all fixed expenses which have no need previously assigned.
98	ASK-NEED-VARIABLE-EXP	Asks the user of 'need' for all variable expenses which have no need previously assigned.

95	AMOUNT-OF-PROP-PAYMENT	Determines the amount of partial payment accepted for fixed expenses which do not require full payment.
95	AMOUNT-OF-PROP-PYMT-VBL	Determines the amount of partial payment accepted for variable expenses which do not require full payment.
50	PAY-CRITICAL-VARIABLE-EXPENSES	Determines which critical variable expenses can be paid in full.
50	PAY-CRITICAL-FIXED-EXPENSES	Determines which critical fixed expenses can be paid in full.
45	CRIT-FIXED-EXP-CAN	Determines which critical fixed expenses cannot be paid
45	PAY-CRIT-PROP-FIXED-EXP	If possible, partially pay fixed critical expenses that could not be paid in full.
45	CRIT-VBL-EXP-CANNOT-PAY	Determines which variable expenses cannot be paid.
45	PAY-CRIT-PROP-VBL-EXP	If possible, partially pay variable critical expenses that could not be paid in full.
40	PAY-SEMI-CRITICAL-FIXED-EXPS	Determines which semi-critical fixed expenses can be paid in full.
40	PAY-SEMI-CRIT-VARIABLE-EXPS	Determines which semi-critical variable expenses can be paid in full.
35	SEMI-CRIT-FIXED-EXP-CAN	Determines which semi-critical expenses cannot be paid.
35	PAY-SEMI-CRIT-PROP-VBL-EXP	If possible, pay partially variable semi-critical expenses that could not be paid in full.
35	PAY-SEMI-CRIT-PROP-FIXED-EXP	If possible, pay partially fixed semi-critical expenses that could not be paid in full.
35	SEMI-CRIT-VBL-EXP-CANNOT-PAY	Determines which critical variable expenses cannot be paid.

30	PAY-CONVENIENT-FIXED-EXPENSES	Determines which convenient fixed expenses can be paid in full.
30	PAY-CONVENIENT-VBL-EXPENSES	Determines which convenient variable expenses can be paid in full.
25	CONV-FIXED-EXP-CAN	Determines which convenient expenses cannot be paid.
25	PAY-CONVENIENT-PROP-VBL-EXP	If possible, partially pay variable convenient that could not be paid in full.
25	AY-CONVENIENT-PROP-FIXED-EXP	If possible, partially pay fixed convenient that could not be paid in full.
25	CONV-VBL-EXP-CANNOT-PAY	Determines which convenient variable expenses cannot be paid.
20	PAY-LUXURY-FIXED-EXPENSES	Determines which luxury fixed expenses can be paid in full.
20	PAY-LUXURY-VBL-EXPENSES	Determines which luxury variable expenses can be paid in full.
15	LUX-FIXED-EXP-CAN	Determines which luxury expenses cannot be paid.
15	LUX-VBL-EXP-CANNOT-PAY	Determines which luxury expenses cannot be paid.
15	PAY-LUXURY-PROP-VBL-EXP	If possible, partially pay variable luxury expenses that could not be paid in full.
15	PAY-LUXURY-PROP-FIXED-EXP	If possible, partially pay fixed luxury expenses that could not be paid in full.
-5	DISPLAY-FINDINGS-VBL-NOT-PAID	Display output to user for variable expenses that could not be paid.
-5	DISPLAY-FINDINGS-VBL-PAID	display output to user for variable expenses that were paid in full.
-5	DISPLAY-FINDINGS-PARTIAL-VBL	Display output to user for variable expenses that were partially paid.

-5	DISPLAY-FINDINGS-PARTIAL-FIXED	Display output to user for fixed expenses that were partially paid.
-5	DISPLAY-FINDINGS-FIXED-NOT-PAID	Display output to user for fixed expenses that could not be paid.
-5	DISPLAY-FINDINGS-FIXED	Display output to user for fixed expenses that were paid in full.

A.3 Actual GoldWorks Rules for Household Budget

```
(DEFINE-RULE DISPLAY-FINDINGS-VBL-NOT-PAID
  (:print-name "DISPLAY-FINDINGS-VBL-NOT-PAID"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority -5
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NO
        WITH NEED-OF-PAYMENT ?NEED)

 THEN

  (INSTANCE TELL-OF-EXPENSE IS OUTPUT-WINDOW
        WITH DISPLAY
    (?X " which you consider to be a " ?NEED
      " item, has not been paid." :RETURN)))


(DEFINE-RULE DISPLAY-FINDINGS-VBL-PAID
  (:print-name "DISPLAY-FINDINGS-VBL-PAID"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority -5
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH IS-IT-PAID YES
        WITH NEED-OF-PAYMENT ?NEED)

 THEN

  (INSTANCE TELL-OF-EXPENSE IS OUTPUT-WINDOW
        WITH DISPLAY
    (?X " which you consider to be a " ?NEED
      " item, has been paid in full." :RETURN)))
```

```
(DEFINE-RULE DISPLAY-FINDINGS-PARTIAL-VBL
  (:print-name "DISPLAY-FINDINGS-PARTIAL-VBL"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority -5
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH NEED-OF-PAYMENT ?NEED
        WITH AMOUNT-PAID ?AMT
        WITH EXPECTED-AMOUNT ?TOTAL)

 THEN

  (INSTANCE TELL-OF-EXPENSE IS OUTPUT-WINDOW
        WITH DISPLAY
   (?X " which you consider to be a " ?NEED
    " item, has been partially paid. " ?AMT
    " out of the total bill (" ?TOTAL ") was paid. "
    :RETURN)))


(DEFINE-RULE DISPLAY-FINDINGS-PARTIAL-FIXED
  (:print-name "DISPLAY-FINDINGS-PARTIAL-FIXED"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority -5
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS FIXED-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH NEED-OF-PAYMENT ?NEED
        WITH AMOUNT-PAID ?AMT
        WITH AMOUNT ?TOTAL)

 THEN

  (INSTANCE TELL-OF-EXPENSE IS OUTPUT-WINDOW
        WITH DISPLAY
   (?X " which you consider to be a " ?NEED
    " item, has been partially paid. " ?AMT
    " out of the total bill (" ?TOTAL ") was paid. "
    :RETURN)))
```

```
(DEFINE-RULE DISPLAY-FINDINGS-FIXED-NOT-PAID
  (:print-name "DISPLAY-FINDINGS-FIXED-NOT-PAID"
   :doc-string ""
   :dependency NIL
   :direction  :FORWARD
   :certainty  1.0
   :explanation-string ""
   :priority -5
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS FIXED-EXPENSE
        WITH IS-IT-PAID NO
        WITH NEED-OF-PAYMENT ?NEED)

  THEN

  (INSTANCE TELL-OF-EXPENSE IS OUTPUT-WINDOW
        WITH DISPLAY
    (?X " which you consider to be a " ?NEED
      " item, has not been paid." :RETURN)))


(DEFINE-RULE DISPLAY-FINDINGS-FIXED
  (:print-name "DISPLAY-FINDINGS-FIXED"
   :doc-string ""
   :dependency NIL
   :direction  :FORWARD
   :certainty  1.0
   :explanation-string ""
   :priority -5
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS FIXED-EXPENSE
        WITH IS-IT-PAID YES
        WITH NEED-OF-PAYMENT ?NEED)

  THEN

  (INSTANCE TELL-OF-EXPENSE IS OUTPUT-WINDOW
        WITH DISPLAY
    (?X " which you consider to be a " ?NEED
      " item, has been paid in full." :RETURN)))
```

```
(DEFINE-RULE PAY-SEMI-CRIT-PROP-VBL-EXP
  (:print-name "PAY-SEMI-CRIT-PROP-VBL-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 35
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT SEMI-CRITICAL
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( < = ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))


(DEFINE-RULE PAY-SEMI-CRIT-PROP-FIXED-EXP
  (:print-name "PAY-SEMI-CRIT-PROP-FIXED-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 35
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT SEMI-CRITICAL
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( < = ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))
```

```
(DEFINE-RULE PAY-LUXURY-PROP-VBL-EXP
  (:print-name "PAY-LUXURY-PROP-VBL-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 15
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT LUXURY
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (< = ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))


(DEFINE-RULE PAY-LUXURY-PROP-FIXED-EXP
  (:print-name "PAY-LUXURY-PROP-FIXED-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 15
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT LUXURY
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (< = ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))
```

```
(DEFINE-RULE PAY-CRIT-PROP-VBL-EXP
  (:print-name "PAY-CRIT-PROP-VBL-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 45
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT CRITICAL
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( < = ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))

(DEFINE-RULE PAY-CRIT-PROP-FIXED-EXP
  (:print-name "PAY-CRIT-PROP-FIXED-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 45
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT CRITICAL
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( < = ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))
```

```
(DEFINE-RULE PAY-CONVENIENT-PROP-VBL-EXP
  (:print-name "PAY-CONVENIENT-PROP-VBL-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 25
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT CONVENIENT
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (< = ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))


(DEFINE-RULE PAY-CONVENIENT-PROP-FIXED-EXP
  (:print-name "PAY-CONVENIENT-PROP-FIXED-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 25
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT CONVENIENT
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (< = ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLAR ?PROP)))
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID PARTIALLY
        WITH AMOUNT-PAID ?PROP))
```

```
(DEFINE-RULE PAY-LUXURY-VBL-EXPENSES
  (:print-name "PAY-LUXURY-VBL-EXPENSES"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 20
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH EVALUATED YES
        WITH NEED-OF-PAYMENT LUXURY
        WITH EXPECTED-AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

 THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))

(DEFINE-RULE PAY-CONVENIENT-VBL-EXPENSES
  (:print-name "PAY-CONVENIENT-VBL-EXPENSES"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 30
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH EVALUATED YES
        WITH NEED-OF-PAYMENT CONVENIENT
        WITH EXPECTED-AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

 THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))
```

```
(DEFINE-RULE PAY-SEMI-CRIT-VARIABLE-EXPS
  (:print-name "PAY-SEMI-CRIT-VARIABLE-EXPS"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 40
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH EVALUATED YES
        WITH NEED-OF-PAYMENT SEMI-CRITICAL
        WITH EXPECTED-AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

 THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))


(DEFINE-RULE PAY-CRITICAL-VARIABLE-EXPENSES
  (:print-name "PAY-CRITICAL-VARIABLE-EXPENSES"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 50
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH EVALUATED YES
        WITH NEED-OF-PAYMENT CRITICAL
        WITH EXPECTED-AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

 THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))
```

```
(DEFINE-RULE ASK-NEED-FIXED-EXP
  (:print-name "ASK-NEED-FIXED-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 98
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT NOT-ASSIGNED)

 THEN

  (INSTANCE ASK-NEED-USER IS POPUP-ASK-USER
        WITH CONTENTS
   ("How important is " ?X " to you? Choose one of
     critical, semi-critical, convenient, or luxury.")
        WITH TARGET-INSTANCE ?X
        WITH TARGET-SLOT NEED-OF-PAYMENT
        WITH GO :YES))


(DEFINE-RULE ASK-NEED-VARIABLE-EXP
  (:print-name "ASK-NEED-VARIABLE-EXP"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 98
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT NOT-ASSIGNED)

 THEN

  (INSTANCE ASK-NEED-USER IS POPUP-ASK-USER
        WITH CONTENTS
   ("How important is " ?X " to you? Choose one of
     critical, semi-critical, convenient, or luxury.")
        WITH TARGET-INSTANCE ?X
        WITH TARGET-SLOT NEED-OF-PAYMENT
        WITH GO :YES))
```

```
(DEFINE-RULE PAY-CRITICAL-FIXED-EXPENSES
  (:print-name "PAY-CRITICAL-FIXED-EXPENSES"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 50
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH NEED-OF-PAYMENT CRITICAL
        WITH AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

  THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))


(DEFINE-RULE PAY-SEMI-CRITICAL-FIXED-EXPS
  (:print-name "PAY-SEMI-CRITICAL-FIXED-EXPS"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 40
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH NEED-OF-PAYMENT SEMI-CRITICAL
        WITH AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

  THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))
```

```
(DEFINE-RULE PAY-CONVENIENT-FIXED-EXPENSES
  (:print-name "PAY-CONVENIENT-FIXED-EXPENSES"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 30
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH NEED-OF-PAYMENT CONVENIENT
        WITH AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

 THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))


(DEFINE-RULE PAY-LUXURY-FIXED-EXPENSES
  (:print-name "PAY-LUXURY-FIXED-EXPENSES"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 20
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLARS)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NOT-ASSIGNED
        WITH NEED-OF-PAYMENT LUXURY
        WITH AMOUNT ?AMT) (> = ?DOLLARS ?AMT)

 THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID YES
        WITH AMOUNT-PAID ?AMT)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE
    (EVALUATE (- ?DOLLARS ?AMT))))
```

```
(DEFINE-RULE ELECTRIC-BILL-NOT-WINTER
  (:print-name "ELECTRIC-BILL-NOT-WINTER"
   :doc-string ""
   :dependency NIL
   :direction  :FORWARD
   :certainty  1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ELECTRIC-BILL IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX
        WITH MIN-EXPECTED ?MIN)
  (OR
   (OR
    (INSTANCE ?Y IS BUDGET
          WITH SEASON SPRING)
    (INSTANCE ?Y IS BUDGET
          WITH SEASON SUMMER))
   (INSTANCE ?Y IS BUDGET
         WITH SEASON FALL))

 THEN

  (INSTANCE ELECTRIC-BILL IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT
   (EVALUATE (* 0.5 (+ ?MAX ?MIN)))))


(DEFINE-RULE ELECTRIC-BILL-WINTER
  (:print-name "ELECTRIC-BILL-WINTER"
   :doc-string ""
   :dependency NIL
   :direction  :FORWARD
   :certainty  1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ELECTRIC-BILL IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX)
  (INSTANCE ?Y IS BUDGET
        WITH SEASON WINTER)

 THEN

  (INSTANCE ELECTRIC-BILL IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT ?MAX))
```

```
(DEFINE-RULE ENT-PARTY-FALL-AND-SPRING
  (:print-name "ENT-PARTY-FALL-AND-SPRING"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ENTERTAINMENT-PARTY IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MIN-EXPECTED ?MIN)
  (OR
   (INSTANCE ?Y IS BUDGET
         WITH SEASON SPRING)
   (INSTANCE ?Y IS BUDGET
         WITH SEASON FALL))

 THEN

  (INSTANCE ENTERTAINMENT-PARTY IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT ?MIN))


(DEFINE-RULE ENT-PARTY-WINTER-AND-SUMMER
  (:print-name "ENT-PARTY-WINTER-AND-SUMMER"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ENTERTAINMENT-PARTY IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX)
  (OR
   (INSTANCE ?Y IS BUDGET
         WITH SEASON WINTER)
   (INSTANCE ?Y IS BUDGET
         WITH SEASON SUMMER))

 THEN

  (INSTANCE ENTERTAINMENT-PARTY IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT ?MAX))
```

```
(DEFINE-RULE ENT-REC-FALL-AND-SPRING
  (:print-name "ENT-REC-FALL-AND-SPRING"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ENTERTAINMENT-RECREATIONAL IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MIN-EXPECTED ?MIN
        WITH MAX-EXPECTED ?MAX)
  (OR
   (INSTANCE ?Y IS BUDGET
         WITH SEASON SPRING)
   (INSTANCE ?Y IS BUDGET
         WITH SEASON FALL))

 THEN

  (INSTANCE ENTERTAINMENT-RECREATIONAL IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT
   (EVALUATE (* 0.5 ( + ?MIN ?MAX)))))


(DEFINE-RULE ENT-REC-SUMMER
  (:print-name "ENT-REC-SUMMER"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ENTERTAINMENT-RECREATIONAL IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX)
  (INSTANCE ?Y IS BUDGET
        WITH SEASON SUMMER)

 THEN

  (INSTANCE ENTERTAINMENT-RECREATIONAL IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT ?MAX))
```

```
(DEFINE-RULE ENT-REC-WINTER
  (:print-name "ENT-REC-WINTER"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ENTERTAINMENT-RECREATIONAL IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MIN-EXPECTED ?MIN)
  (INSTANCE ?Y IS BUDGET
        WITH SEASON WINTER)

 THEN

  (INSTANCE ENTERTAINMENT-RECREATIONAL IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT ?MIN))


(DEFINE-RULE VBL-EXP-NO-SEASONAL-FLUCT
  (:print-name "VBL-EXP-NO-SEASONAL-FLUCT"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH SEASONAL-FLUCTUATION NO
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX
        WITH MIN-EXPECTED ?MIN)

 THEN

  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT
   (EVALUATE (* 0.5 (+ ?MAX ?MIN)))))
```

```
(DEFINE-RULE VISA/MC-NOT-WINTER
  (:print-name "VISA/MC-NOT-WINTER"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE VISA/MC IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX
        WITH MIN-EXPECTED ?MIN)
  (OR
   (OR
    (INSTANCE ?Y IS BUDGET
          WITH SEASON SPRING)
    (INSTANCE ?Y IS BUDGET
          WITH SEASON SUMMER))
   (INSTANCE ?Y IS BUDGET
         WITH SEASON FALL))

 THEN

  (INSTANCE VISA/MC IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT
   (EVALUATE (* 0.5 (+ ?MAX ?MIN)))))


(DEFINE-RULE VISA/MC-WINTER
  (:print-name "VISA/MC-WINTER"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 100
   :sponsor TOP-SPONSOR)
  (INSTANCE VISA/MC IS VARIABLE-EXPENSE
        WITH EXPECTED-AMOUNT 0.0
        WITH MAX-EXPECTED ?MAX)
  (INSTANCE ?Y IS BUDGET
        WITH SEASON WINTER)

 THEN

  (INSTANCE VISA/MC IS VARIABLE-EXPENSE
        WITH EVALUATED YES
        WITH EXPECTED-AMOUNT ?MAX))
```

```
(DEFINE-RULE AMOUNT-OF-PROP-PAYMENT
  (:print-name "AMOUNT-OF-PROP-PAYMENT"
   :doc-string ""
   :dependency NIL
   :direction  :FORWARD
   :certainty  1.0
   :explanation-string ""
   :priority 95
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS FIXED-EXPENSE
        WITH AMOUNT-THAT-MUST-BE-PAID NOT-ASSIGNED
        WITH %-THAT-MUST-BE-PAID ?PROP
        WITH AMOUNT ?AMT)

 THEN

  (INSTANCE ?X IS FIXED-EXPENSE
        WITH AMOUNT-THAT-MUST-BE-PAID
   (EVALUATE (* ?PROP ?AMT))))


(DEFINE-RULE AMOUNT-OF-PROP-PYMT-VBL
  (:print-name "AMOUNT-OF-PROP-PYMT-VBL"
   :doc-string ""
   :dependency NIL
   :direction  :FORWARD
   :certainty  1.0
   :explanation-string ""
   :priority 95
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH AMOUNT-THAT-MUST-BE-PAID NOT-ASSIGNED
        WITH %-THAT-MUST-BE-PAID ?PROP
        WITH EXPECTED-AMOUNT ?AMT)

 THEN

  (INSTANCE ?X IS VARIABLE-EXPENSE
        WITH AMOUNT-THAT-MUST-BE-PAID
   (EVALUATE (* ?PROP ?AMT))))
```

```
(DEFINE-RULE CRIT-FIXED-EXP-CAN
  (:print-name "CRIT-FIXED-EXP-CAN"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 45
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT CRITICAL
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (> ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))


(DEFINE-RULE SEMI-CRIT-FIXED-EXP-CAN
  (:print-name "SEMI-CRIT-FIXED-EXP-CAN"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 35
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT SEMI-CRITICAL
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (> ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))
```

```
(DEFINE-RULE CONV-FIXED-EXP-CAN
  (:print-name "CONV-FIXED-EXP-CAN"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 25
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT CONVENIENT
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( > ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))


(DEFINE-RULE LUX-FIXED-EXP-CAN
  (:print-name "LUX-FIXED-EXP-CAN"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 15
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH NEED-OF-PAYMENT LUXURY
        WITH AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( > ?PROP ?DOLLAR)

 THEN

  (INSTANCE ?Y IS FIXED-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))
```

```
(DEFINE-RULE CRIT-VBL-EXP-CANNOT-PAY
  (:print-name "CRIT-VBL-EXP-CANNOT-PAY"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 45
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT CRITICAL
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( > ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))


(DEFINE-RULE SEMI-CRIT-VBL-EXP-CANNOT-PAY
  (:print-name "SEMI-CRIT-VBL-EXP-CANNOT-PAY"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 35
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT SEMI-CRITICAL
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) ( > ?AMT ?DOLLAR)
  ( > ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))
```

```
(DEFINE-RULE CONV-VBL-EXP-CANNOT-PAY
  (:print-name "CONV-VBL-EXP-CANNOT-PAY"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 25
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT CONVENIENT
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (> ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))


(DEFINE-RULE LUX-VBL-EXP-CANNOT-PAY
  (:print-name "LUX-VBL-EXP-CANNOT-PAY"
   :doc-string ""
   :dependency NIL
   :direction :FORWARD
   :certainty 1.0
   :explanation-string ""
   :priority 15
   :sponsor TOP-SPONSOR)
  (INSTANCE ?X IS BUDGET
        WITH AMOUNT-AVAILABLE ?DOLLAR)
  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH NEED-OF-PAYMENT LUXURY
        WITH EXPECTED-AMOUNT ?AMT
        WITH AMOUNT-THAT-MUST-BE-PAID ?PROP
        WITH IS-IT-PAID NOT-ASSIGNED) (> ?AMT ?DOLLAR)
  (> ?PROP ?DOLLAR)

  THEN

  (INSTANCE ?Y IS VARIABLE-EXPENSE
        WITH IS-IT-PAID NO
        WITH AMOUNT-PAID 0.0))
```

A.4 GoldWorks Frames for Household Budget

Name	Parent	Slots	Slot Default Value	Slot Constraint
BUDGET	TOP-FRAME	AMOUNT-AVAILABLE		
		SEASON		ONE-OF -SPRING -SUMMER -FALL -WINTER
EXPENSE	TOP-FRAME	NEED-OF-PAYMENT	NOT-ASSIGNED	ONE-OF -CRITICAL -SEMI-CRITICAL -CONVENIENT -LUXURY -NOT-ASSIGNED
		IS-IT-PAID	NOT-ASSIGNED	
		%-THAT-MUST-BE-PAID		
		AMOUNT-PAID		
		AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED	
FIXED-EXPENSE	EXPENSE	AMOUNT		
		NEED-OF-PAYMENT (from EXPENSE)	NOT-ASSIGNED	ONE-OF -CRITICAL -SEMI-CRITICAL -CONVENIENT -LUXURY -NOT-ASSIGNED
		IS-IT-PAID (from EXPENSE)	NOT-ASSIGNED	
		%-THAT-MUST-BE-PAID (from EXPENSE)		

		AMOUNT-PAID (from EXPENSE)		
		AMOUNT-THAT-MUST-BE-PAID (from EXPENSE)	NOT-ASSIGNED	
VARIABLE-EXPENSE	EXPENSE	MIN-EXPECTED		
		MAX-EXPECTED		
		EXPECTED-AMOUNT	0.0	
		SEASONAL-FLUCTUATION		ONE-OF -YES -NO
		EVALUATED	NO	ONE-OF -YES -NO
		NEED-OF-PAYMENT (from EXPENSE)	NOT-ASSIGNED	ONE-OF -CRITICAL -SEMI-CRITICAL -CONVENIENT -LUXURY -NOT-ASSIGNED
		IS-IT-PAID (from EXPENSE)	NOT-ASSIGNED	
		%-THAT-MUST-BE-PAID (from EXPENSE)		
		AMOUNT-PAID (from EXPENSE)		
		AMOUNT-THAT-MUST-BE-PAID (from EXPENSE)	NOT-ASSIGNED	

A.5 GoldWorks Instances for Household Budget

Name	Corresponding Frame	Slots	Initial Slot Assignment
TELL-OF-EXPENSE	OUTPUT-WINDOW	LEFT	0
		TOP	0
		WIDTH	80
		HEIGHT	25
		FOREGROUND-COLOR	RED
		BACKGROUND-COLOR	WHITE
		AUTO-NEWLINE	YES
		SCROLLING	SCROLL
ASK-NEED-USER	POPUP-ASK-USER	BORDER-COLOR	BLUE
		CENTER	X-AND-Y
		ANSWER-WIDTH	10
APRIL/88	BUDGET	AMOUNT-AVAILABLE	1500
		SEASON	SPRING
MORTGAGE-PAYMENT	FIXED-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	1.0
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	CRITICAL
		AMOUNT	525.0
COLLEGE-LOAN-PAYMENT	FIXED-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	0.5
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		AMOUNT	235.0
PHONE-BILL	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	0.25
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		MIN-EXPECTED	22.0
		MAX-EXPECTED	95.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	NO

		EVALUATED	NO
ELECTRIC-BILL	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	0.25
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		MIN-EXPECTED	52.0
		MAX-EXPECTED	95.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	YES
		EVALUATED	NO
FOOD-TO-LIVE	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	1.0
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	CRITICAL
		MIN-EXPECTED	150.0
		MAX-EXPECTED	160.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	NO
		EVALUATED	NO
FOOD-TO-ENJOY-LIVING	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	1.0
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		MIN-EXPECTED	0.0
		MAX-EXPECTED	200.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	NO
		EVALUATED	NO
VISA/MC	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	0.1
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		MIN-EXPECTED	25.0
		MAX-EXPECTED	500.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	YES
		EVALUATED	NO

ENTERTAINMENT-PARTY	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	1.0
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		MIN-EXPECTED	15.0
		MAX-EXPECTED	200.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	YES
		EVALUATED	NO
ENTERTAINMENT -RECREATIONAL	VARIABLE-EXPENSE	AMOUNT-THAT-MUST-BE-PAID	NOT-ASSIGNED
		%-THAT-MUST-BE-PAID	1.0
		IS-IT-PAID	NOT-ASSIGNED
		NEED-OF-PAYMENT	NOT-ASSIGNED
		MIN-EXPECTED	0.0
		MAX-EXPECTED	250.0
		EXPECTED-AMOUNT	0.0
		SEASONAL-FLUCTUATION	YES
		EVALUATED	NO

Appendix B

Knowledge Base Listings

```
execute; runtime; endoff;

actions

color = 15 find beg_display display "Would you like a print out of this session? Please note that it is not" find printit? find goto ;

!Rules Block

Rule beg_display

If beg_display = unknown

Then beg_display = found locate 4,21 display "WELCOME TO THE TAILOR SHOP ANALYST" locate 7,6 display "The Tailor Shop
Analyst is an expert system designed to evaluate the" display "financial position of the Virginia Tech Tailor Shop. It provides a user" dis-
play "with budget analysis, ratio analysis, trend statements, and graphs. It" display "also has the capability to answer 'what-if' type
questions. The 'knowledge'" display "for this system was provided mainly by Bruce Downey, Assistant Director" display "of Risk Man-
agement (formerly Financial Coordinator of Business & Auxiliary" display "Operations), Ralph Miller, Manager of the Tailor Shop, and
Dean Miller, " display "Fiscal Tecnician for the Tailor Shop." locate 17,20 display "Press any key to begin the consultation ¬" cls;

Rule go_the_no_print_route

If printit? = no

Then goto = npts !!no print tailor shop
    chain npts;

Rule go_the_print_route

If printit? = yes

Then goto = pts !!print tailor shop
    chain pts;


!Statements Block

ask printit?: "possible to get a print out of graphs or when updating the system."; choices printit?: no, yes;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15

  find todo
  find dummy
  cls ;

!Rules Block

Rule go_to_budget6_kbs

if todo = budget_analysis

then dummy = found
    chain budget6;


Rule go_to_ratio6_kbs

If todo = ratio_analysis

then dummy = found
    chain ratio6;


Rule go_to_trend_kbs

If todo = trend_statements

Then dummy = found
    chain trend;

Rule go_to_graph1_kbs

If todo = graphics

Then dummy = found
    bcall killgr
    chain graph1;

Rule go_to_whatif_kbs

If todo = what_if_analysis

Then dummy = found
    bcall createit
    chain whatif;

!Statements Block

ask todo: "What would you like to do?  Answer /Q when finished"; choices todo: budget_analysis,ratio_analysis, what_if_analysis,
trend_statements,graphics ;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 pdisplay " " pdisplay "What would you like to do? Answer /Q when finished" pdisplay " " pdisplay "budget analysis          ratio
analysis          what if analysis" pdisplay "trend statements" pdisplay " "
  find todo
  find dummy
  cls ;

!Rules Block

Rule go_to_budget6_kbs

if todo = budget_analysis

then dummy = found
    pdisplay " "
    pdisplay "budget analysis"
    pdisplay " "
    chain pbudget6;


Rule go_to_ratio6_kbs

If todo = ratio_analysis

then dummy = found
    pdisplay " "
    pdisplay "ratio analysis"
    pdisplay " "
    bcall killrat
    chain pratio6;


Rule go_to_trend_kbs

If todo = trend_statements

Then dummy = found
    pdisplay " "
    pdisplay "trend statements"
    pdisplay " "
    chain ptrend;


Rule go_to_whatif_kbs

If todo = what_if_analysis

Then dummy = found
    pdisplay " "
    pdisplay "what if analysis"
    pdisplay " "
    chain pwhatif;

!Statements Block

ask todo: "What would you like to do?  Answer /Q when finished."; choices todo: budget_analysis,ratio_analysis, what_if_analysis,
trend_statements;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 todo = ratio_analysis
  find farse ;

!rules block

rule start_ratio_analysis If todo = ratio_analysis Then farse = found
    wks date,b1,\vpp\playabis
    display "The most recent data is for the year ending June {date}."
    find continue_r
    find update_r;

Rule continue_on_dont_update If continue_r = yes Then update_r = found
    display "The system is currently gathering all of the information needed to"
    display "perform the analysis, and this takes a little time.  You will be"
    display "instructed when to continue."
    wks ca,b13..d16,\vpp\playca
    ca_weight_this = (ca[1])
    ca_weight_last = (ca[2])
    ca_weight_2 = (ca[3])
    ca_ave_this = (ca[4])
    ca_ave_last = (ca[5])
    ca_ave_2 = (ca[6])
    corps_comp_this = (ca[7])
    corps_comp_last = (ca[8])
    corps_comp_2 = (ca[9])
    t_num_cadets_this = (ca[10])
    t_num_cadets_last = (ca[11])
    t_num_cadets_2 = (ca[12])
    reset ca
    wks bs_this,b1..b14,\vpp\playabbs
    wks bs_last,c1..c14,\vpp\playabbs
    wks bs_2_ago,d1..d14,\vpp\playabbs
    wks t_assets_3,e9,\vpp\playabbs
    wks inv_3_ago,e7,\vpp\playabbs
    wks is_this,b1..b85,\vpp\playabis
    wks is_last,c1..c85,\vpp\playabis
    wks is_2_ago,d1..d85,\vpp\playabis
    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    net_income = (is_this[65])
    net_income_last = (is_last[65])
    net_income_2 = (is_2_ago[65])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])
    gross_profit = (is_this[16])
    gross_profit_last = (is_last[16])
    gross_profit_2 = (is_2_ago[16])
    t_mil_rev = (is_this[9])
    mil_rev_last = (is_last[9])
    mil_rev_2 = (is_2_ago[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    cost_uniforms_last = (is_last[15])
    cost_uniforms_2 = (is_2_ago[15])
    total_oper_exp_last = (is_last[64])
    total_oper_exp_2 = (is_2_ago[64])
    t_other_rev = (is_this[24])
    other_rev_last = (is_last[24])
    other_rev_2 = (is_2_ago[24])
    t_personal = (is_this[36])
    personal_last = (is_last[36])
    corps_e_to_r_this = (is_this[79])
    public_e_to_r_this = (is_this[81])
    s_f_s_e_to_r_this = (is_this[82])
    interdept_e_to_r_this = (is_this[83])
    music_e_to_r_this = (is_this[84])
    state_e_to_r_this = (is_this[85])
```

```
    corps_e_to_r_last = (is_last[79])
    public_e_to_r_last = (is_last[81])
    s_f_s_e_to_r_last = (is_last[82])
    interdept_e_to_r_last = (is_last[83])
    music_e_to_r_last = (is_last[84])
    state_e_to_r_last = (is_last[85])
    corps_e_to_r_2 = (is_2_ago[79])
    public_e_to_r_2 = (is_2_ago[81])
    s_f_s_e_to_r_2 = (is_2_ago[82])
    interdept_e_to_r_2 = (is_2_ago[83])
    music_e_to_r_2 = (is_2_ago[84])
    state_e_to_r_2 = (is_2_ago[85])

    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago

    display " "
    display "Press any key to examine the return on assets ratios. ¬"
    find current_ratio_display
    find ROA_display
    find gross_profit_ratio_display
    chain ratio3;


Rule continue_on_update_first If continue_r = no Then update_r = found
    display "Please be patient as the accrual statements must be calculated and this takes"
    display "a little time.  It also requires a little information which you will be asked"
    display "to supply."
    display ""
    wks mil_rev,aa7..aa12,\vpp\playis
    t_mil_rev = (mil_rev[6])
    wks cgs,aa13,\vpp\playis
    wks other_rev,aa17..aa22,\vpp\playis
    t_other_rev = (other_rev[6])
    public_rev = (other_rev[1])
    s_f_s_rev = (other_rev[2])
    interdept_rev = (other_rev[3])
    music_rev = (other_rev[4])
    state_rev = (other_rev[5])
    wks personal,aa26..aa34,\vpp\playis
    t_personal = (personal[9])
    wks contractual,aa36..aa45,\vpp\playis
    t_contract = (contractual[10])
    wks s_and_m,aa47..aa52,\vpp\playis
    t_s_and_m = (s_and_m[6])
    wks continuous,aa54..aa60,\vpp\playis
    t_contin = (continuous[7])
    wks equip,aa61,\vpp\playis
    wks direct_costs,aa66..aa72,\vpp\playis
    d_costs_corps = (direct_costs[1])
    d_costs_public = (direct_costs[3])
    d_costs_s_f_s = (direct_costs[4])
    d_costs_interdept = (direct_costs[5])
    d_costs_music = (direct_costs[6])
    d_costs_state = (direct_costs[7])
    wks indirect_costs,aa74,\vpp\playis
    wks bs_info,b1..b14,\vpp\playabbs
    wks t_assets_3,d9,\vpp\playabbs
    wks inv_3_ago,d7,\vpp\playabbs
    last_yr_inventory = (bs_info[7])
    last_yr_equip_value = (bs_info[8])
    last_yr_due_to = (bs_info[12])
    last_yr_reserves = (bs_info[13])
    wks dth_info,d1..d14,\vpp\playabbs
    pwks dth_info,e1..e14,\vpp\playabbs
    reset dth_info
    wks cth_info,c1..c14,\vpp\playabbs
    pwks cth_info,d1..d14,\vpp\playabbs
    inv_2_ago = (cth_info[7])
    due_to_2_ago = (cth_info[12])
    equip_2_ago = (cth_info[8])
    reset cth_info
    pwks bs_info,c1..c14,\vpp\playabbs
    reset bs_info
    wks dth_info,d1..d85,\vpp\playabis
    pwks dth_info,e1..e85,\vpp\playabis
```

```
    reset dth_info
    wks cth_info,c1..c85,\vpp\playabis
    pwks cth_info,d1..d85,\vpp\playabis
    net_income_2 = (cth_info[65])
    gross_profit_2 = (cth_info[16])
    mil_rev_2 = (cth_info[9])
    cost_uniforms_2 = (cth_info[15])
    total_oper_exp_2 = (cth_info[64])
    other_rev_2 = (cth_info[24])
    corps_e_to_r_2 = (cth_info[79])
    public_e_to_r_2 = (cth_info[81])
    s_f_s_e_to_r_2 = (cth_info[82])
    interdept_e_to_r_2 = (cth_info[83])
    music_e_to_r_2 = (cth_info[84])
    state_e_to_r_2 = (cth_info[85])
    reset cth_info
    wks bth_info,b1..b85,\vpp\playabis
    pwks bth_info,c1..c85,\vpp\playabis
    corps_e_to_r_last = (bth_info[79])
    public_e_to_r_last = (bth_info[81])
    s_f_s_e_to_r_last = (bth_info[82])
    interdept_e_to_r_last = (bth_info[83])
    music_e_to_r_last = (bth_info[84])
    state_e_to_r_last = (bth_info[85])
    net_income_last = (bth_info[65])
    gross_profit_last = (bth_info[16])
    mil_rev_last = (bth_info[9])
    cost_uniforms_last = (bth_info[15])
    total_oper_exp_last = (bth_info[64])
    other_rev_last = (bth_info[24])
    personal_last = (bth_info[36])
    reset bth_info
    wks cth,c1..c16,\vpp\playca
    pwks cth,d1..d16,\vpp\playca
    wks bth,b1..b16,\vpp\playca
    pwks bth,c1..c16,\vpp\playca
    corps_e_to_r_this = (d_costs_corps / t_mil_rev)
    public_e_to_r_this = (d_costs_public / public_rev)
    s_f_s_e_to_r_this = (d_costs_s_f_s / s_f_s_rev)
    interdept_e_to_r_this = (d_costs_interdept / interdept_rev)
    music_e_to_r_this = (d_costs_music / music_rev)
    state_e_to_r_this = (d_costs_state / state_rev)
    ca_weight_last = (bth[13])
    ca_weight_2 = (cth[13])
    ca_ave_last = (bth[14])
    ca_ave_2 = (cth[14])
    corps_comp_last = (bth[15])
    corps_comp_2 = (cth[15])
    t_num_cadets_last = (bth[16])
    t_num_cadets_2 = (cth[16])
    current_year = (date + 1)
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
   pwks current_year,b1,\vpp\playabis
   pwks cuent_year,b1,\vpp\playabbs
   display "To do this analysis, the value of ending inventory is needed for June (current_year)."
   find inventory_ques
   find inventory_value
   display "Please wait a moment.  You will be instructed when to continue."
   find new_equip_value
   find ca_update
   find update_abis
   find new_reserves;

Rule inventory_value_found If inventory_ques = yes Then inventory_value = found
    find issued_inv
    find unissued_inv
    put_inventory[1] = (issued_inv)
    put_inventory[2] = (unissued_inv)
    total_inv = (issued_inv + unissued_inv)
    pwks put_inventory, b5..b6,\vpp\playabbs
    inv_for_is = (issued_inv + unissued_inv)
    pwks total_inv,b14,\vpp\playabis;


Rule inventory_value_found If inventory_ques = no Then inventory_value = found
    find total_inv
    pwks total_inv,b7,\vpp\playabbs
    pwks total_inv,b14,\vpp\playabis;
```

```
Rule equip_purchases_no If equip = 0 Then new_equip_value = found;

Rule equip_purchases_yes If equip > 0 Then new_equip_value = found
    find the_display
    find equip_number
    z = (equip_number)
    whiletrue z > 0 then
      find equip_name
      new_equip[1] = (equip_name)
      find cost
      find purchase_month
      find purchase_year
      find useful_life
      display "Please wait a moment, you will be instructed when to continue."
      display " "
      new_equip[2] = (cost)
      new_equip[3] = (purchase_month)
      new_equip[4] = (purchase_year)
      new_equip[5] = (useful_life)
      find to_put
      z = (z - 1)
!     display "equip_number is now {z} ¬"
      reset equip_name
      reset cost
      reset purchase_month
      reset purchase_year
      reset useful_life
      reset to_put
      reset new_equip
    end !   display "about to find total_equip_value ¬"
    find total_equip_value; !    display "have found total_equip_value ¬";

Rule find_the_display If todo = ratio_analysis Then the_display = found
    display " "
    display "Press any key to continue. ¬"
    display " "
    display "Equipment purchases during the year have totalled ${equip}."
    display " "
    display "After each prompt, please give the applicable information for each piece of"
    display "equipment separately.";

Rule find_current_values If todo = ratio_analysis Then total_equip_value = found
    wks vbl,a4..e25,\vpp\playequi

    y = 1
    x = (vbl[y])
    total_current_value = 0
    total_depreciation = 0

! this next loop calculates the depreciation and current value for each ! piece of equipment, and assigns those with positive values (i.e., those
! which aren't paid off) to an array to later be summed.
    whiletrue vbl[y] < > unknown then
      reset if_neg
      reset year_to_use
      y2 = (y + 1)
      y3 = (y + 2)
      y4 = (y + 3)
      y5 = (y + 4)
      dep_cost = (vbl[y2])
      month = (vbl[y3])
      yr = (vbl[y4])
      life = (vbl[y5])
      find year_to_use
      depr = (dep_cost / life)
      current_value = (dep_cost - (depr * (current_year + 1 - year_to_use)))
      find if_neg
      y = (y + 5)
      x = (vbl[y])
    end
    pwks total_current_value,b8,\vpp\playabbs
    pwks total_depreciation,b63,\vpp\playabis;

Rule purchase_year_of_equip If purchase_month < = 6 Then purchase_year = (current_year);

Rule purchase_year_of_equip If purchase_month > 6 Then purchase_year = (date);

Rule look_for_empty_equip_rows If todo = ratio_analysis Then wks empty?,a11..a25,\vpp\playequi
    to_put = found
    find put_it
    reset put_it;
```

```
Rule put_equip_in_empty_row If empty?[1] = unknown Then pwks new_equip,a11..e11,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[2] = unknown Then pwks new_equip,a12..e12,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[3] = unknown Then pwks new_equip,a13..e13,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[4] = unknown Then pwks new_equip,a14..e14,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[5] = unknown Then pwks new_equip,a15..e15,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[6] = unknown Then pwks new_equip,a16..e16,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[7] = unknown Then pwks new_equip,a17..e17,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[8] = unknown Then pwks new_equip,a18..e18,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[9] = unknown Then pwks new_equip,a19..e19,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[10] = unknown Then pwks new_equip,a20..e20,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[11] = unknown Then pwks new_equip,a21..e21,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[12] = unknown Then pwks new_equip,a22..e22,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[13] = unknown Then pwks new_equip,a23..e23,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[14] = unknown Then pwks new_equip,a24..e24,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[15] = unknown Then pwks new_equip,a25..e25,\vpp\playequi
    put_it = found;

Rule year_to_use If month < = 6 Then year_to_use = (yr);

Rule year_to_use If month > 6 Then year_to_use = (yr + 1);

Rule if_neg If current_value < = 0 Then if_neg = found;

 Rule if_neg If current_value > 0 Then total_current_value = (total_current_value + current_value)
    total_depreciation = (total_depreciation + depr)
    if_neg = found;

Rule ca_update If todo = ratio_analysis Then ca_update = found
    display 'Now a little information regarding the number of members in the corps and' display 'commutation allowances is needed.
Please answer the questions after the' display 'prompts.' display ' '
    display 'How many freshmen were enrolled in the corps of cadets during the year ending'
    find num_fresh
    find num_soph
    find num_jun
    find num_sen
    corps_num[1] = (num_fresh)
    corps_num[2] = (num_soph)
    corps_num[3] = (num_jun)
    corps_num[4] = (num_sen)
    display 'How much was the commutation allowance for freshmen during the year ending'
    find ca_fresh
    find ca_soph
    find ca_jun
    find ca_sen
    display 'The processing in progress at this time will take a few minutes.  You'
    display 'will be instructed when to continue.'
    corps_ca[1] = (ca_fresh)
    corps_ca[2] = (ca_soph)
    corps_ca[3] = (ca_jun)
    corps_ca[4] = (ca_sen)
    corps_comp_this1 = ((num_fresh*1) + (num_soph*2) + (num_jun*3) + (num_sen * 4))
```

```
    t_num_cadets_this = (num_fresh + num_soph + num_jun + num_sen)
    corps_comp_this = (corps_comp_this1 / t_num_cadets_this)
    pwks current_year,b1,\vpp\playca
    pwks corps_num,b8..b11,\vpp\playca
    pwks corps_ca,b3..b6,\vpp\playca
    ca_weight_this1 = ((num_fresh * ca_fresh) + (num_soph * ca_soph) + (num_jun * ca_jun) + (num_sen * ca_sen))
    ca_weight_this = (ca_weight_this1 / (num_fresh + num_soph + num_jun + num_sen))
    ca_ave_this = ((ca_fresh + ca_soph + ca_jun + ca_sen) / 4);

Rule update_abis If todo = ratio_analysis Then update_abis = found
    pwks mil_rev,b4..b8,\vpp\playabis
    pwks last_yr_inventory,b12,\vpp\playabis
    pwks cgs,b13,\vpp\playabis
    pwks inv_for_is,b14,\vpp\playabis
    pwks other_rev,b19..b24,\vpp\playabis
    pwks personal,b28..b36,\vpp\playabis
    pwks contractual,b38..b47,\vpp\playabis
    pwks s_and_m,b49..b54,\vpp\playabis
    pwks continuous,b56..b62,\vpp\playabis
    pwks direct_costs,b68..b74,\vpp\playabis
    pwks indirect_costs,b76,\vpp\playabis;

Rule find_reserves If todo = ratio_analysis Then net_income_1 = (t_mil_rev - last_yr_inventory - cgs + total_inv + t_other_rev)
    net_income = (net_income_1 - t_personal - t_contract - t_s_and_m - t_contin - total_depreciation)
    gross_profit = (t_mil_rev - last_yr_inventory - cgs + total_inv)
    t_expenses1 = (last_yr_inventory + cgs - total_inv + t_personal + t_contract)
    t_expenses = (t_expenses1 + t_s_and_m + t_contin + total_depreciation)
    cost_uniforms_this = (last_yr_inventory + cgs - total_inv)
    wks equip,aa61,\vpp\playis
    new_reserves = (last_yr_reserves + net_income)
    new_due_to = (total_inv + total_current_value - new_reserves)
    pwks new_reserves,b13,\vpp\playabbs
    display " "
    display "Press any key to examine the current ratios. ¬"
    display " "
    find current_ratio_display
    find ROA_display
    find gross_profit_ratio_display
    chain ratio3;

Rule calculate_current_ratios If todo = ratio_analysis Then current_ratio = (total_inv / new_due_to)
    current_ratio_last = (last_yr_inventory / last_yr_due_to)
    current_ratio_2 = (inv_2_ago / due_to_2_ago);

Rule calculate_ROAs If todo = ratio_analysis Then ROA = (net_income / ((total_inv + total_current_value + last_yr_inventory +
last_yr_equip_value)/2))
    ROA_last = (net_income_last / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago)/2))
    ROA_2 = (net_income_2 / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_gross_profit_ratios If todo = ratio_analysis Then gross_profit_ratio = (gross_profit / t_mil_rev)
    gross_profit_ratio_last = (gross_profit_last / mil_rev_last)
    gross_profit_ratio_2 = (gross_profit_2 / mil_rev_2);

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios If todo = ratio_analysis Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2))
    t_asset_turn_display = found;

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2))
    inv_turn_display = found;

Rule display_for_current_ratio If current_ratio < > unknown Then cls
    color = 11
    locate 2,30
    display "CURRENT RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,45
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```
    format current_ratio, 5.3
    display "{current_ratio}"
    locate 8,35
    format current_ratio_last, 5.3
    display "{current_ratio_last}"
    locate 8,25
    format current_ratio_2, 5.3
    display "{current_ratio_2}"
    current_ratio_display = found
    find current_ratio_analysis;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio is a measure of the organization's ability to" display "meet its short_term financial obligations
as they fall due. A ratio " display "of 1.25 or better is considered 'acceptable' for the Tailor Shop. " locate 15,6 display "As can be seen
above, the current situation is not good. The" display "ratio is below its acceptable level for the most recent year, and also," display "is has
been declining for the past several years. This means that" display "other auxiliary enterprises are financing an increasing proportion of"
display "the Tailor Shop's operating expenses. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to
be satisfactory. However," display "it is declining over time which indicates that the other auxiliary " display "enterprises are financing an
increasing proportion of the Tailor " display "Shop's operating expenses. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > = 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the current situation looks very good. Not only" display "does the current ratio exceed the acceptable
level, but is is also " display "increasing over time. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present situation appears promising. " display "Although the current ratio has not yet reached its
acceptable level," display "it is moving in the right direction. Therefore, there is no need" display "for concern. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "The figures above show cause for concern. Not only is the current" display "ratio below its acceptable level, but it has also
decreased over the" display "past year. This decrease however, does not exhibit a trend over time. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to
be satisfactory. There has" display "been a decline in the ratio over the past year, however, there appears" display "to be no trend in this
direction. ¬ "
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio falls below the " display "predefined acceptable level, which is generally con-
sidered to be" display "unsatisfactory. However, it has improved over the past year. " display "Therefore, the situation should be closely
monitored to make " display "certain that it continues to move in the right direction. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
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  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' ¬" display " " locate 15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to be satisfactory. " display "Furthermore, it has increased over the past year leaving little " display "cause for concern. ¬"
    current_ratio_analysis = found;

Rule ROA_display IF ROA < > unknown Then ROA_display = found
    cls
    color = 11
    locate 2,27
    display "RETURN ON ASSETS"
    locate 5,6 display "The Return on Assets ratio (ROA) is designed to measure how much" display "income is produced for each dollar of total assets held. In a profit" display "oriented organization, a high ROA is desirable. Since the primary" display "responsibility of the Tailor Shop is to provide a service, rather than" display "produce a profit, it does not necessarily strive for a high ROA. Rather," display "it should target a specific ROA. If net income is to be used only to" display "replace old equipment, than an ROA of around .004 is desirable. On the" display "other hand, if net income is also used to repay the amount borrowed from" display "other auxiliaries (say over a 10 year period), then an ROA of around .08" display "is desirable. In any case, the ROA should not be negative as a negative" display "ROA indicates a net loss on the operations."
    locate 18,20 display "Press any key to see the ROA analysis ¬"
    find rest_of_display_ROA;

Rule display_for_ROA If ROA < > unknown Then rest_of_display_ROA = found
    cls
    color = 11
    locate 2,29
    display "RETURN ON ASSETS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format ROA, 5.3
    display "{ROA}"
    locate 8,34
    format ROA_last, 5.3
    display "{ROA_last}"
    locate 8,24
    format ROA_2, 5.3
    display "{ROA_2}"
    find ROA_analysis;

Rule analyze_ROA_0_a If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The ROA" display "is negative and doesn't apear to be improving. Thus, the Tailor Shop is" display "operating in the red and has to depend on other auxiliary enterprises to" display "help pay its operating expenses. ¬";

Rule analyze_ROA_0_b If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.004 and
  ROA > = 0 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The small" display "size of the ROA indicates that although income is positive, it is not large" display "enough to cover expected demand for equipment replacements. Furthermore," display "the situation does not appear to be improving. ¬";

Rule analyze_ROA_0_c If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.09 and
  ROA > = .004 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level. This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display "being decreased. ¬";

Rule analyze_ROA_0_d If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display "the amount owed to other auxiliary enterprises. It should be noted however," display "that it is possible that the the Tailor Shop will be accused of gouging " display "its customers since the ROA is so high. ¬";

Rule analyze_ROA_1_a If ROA < (ROA_last) and
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  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by {mil_dec}% over the past
year. Meanwhile, costs incurred for" display "salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by {personal_inc}% over the past year.¬";

Rule analyze_ROA_1_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by {mil_dec}% over the past
year.¬";

Rule analyze_ROA_1_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Costs" display
"incurred for salaries and fringe benefits (which generally make up around" display "60 % of total costs) have increased by
{personal_inc}% over the past year.¬";

Rule analyze_ROA_2_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display
"{mil_dec}% over the past year. Meanwhile, costs incurred for salaries and" display "fringe benefits (which generally make up around 60%
of total costs) have" display "increased by {personal_inc}% over the past year.¬";

Rule analyze_ROA_2_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display
"{mil_dec}% over the past year.¬";
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Rule analyze_ROA_2_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the ROA positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by {personal_inc}% over the past year.¬";

Rule analyze_ROA_3_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically" display "constitutes 75% of total re-
venue) has decreased by {mil_dec}% over the past" display "year. Meanwhile, costs incurred for salaries and fringe benefits (which" dis-
play "generally make up around 60% of total costs) have increased by {personal_inc}%" display " over the past year.¬";

Rule analyze_ROA_3_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically " display "constitures 75% of total re-
venue) has decreased by {mil_dec}% over ths past year.¬";

Rule analyze_ROA_3_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. Costs incurred for salaries and fringe benefits " display "(which generally make up
around 60% of total costs) have increased by {personal_inc}%" display "over the past year.¬";

Rule analyze_ROA_4 If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only
high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display
"the amount owed to other auxiliary enterprises. There are a couple of things" display "to note here however. First, the ROA is so high
that the Tailor Shop might" display "be accused of gouging its customers. And second, the ROA is decreasing" display "over time . This
may signal that income is decreasing, or it may signal" display "a concerted effort on the part of management to bring down prices to an"
display "'acceptable' level.¬";
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Rule analyze_ROA_5 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that ex-
penses exceed income. This means that the" display "Tailor Shop has to depend on the other auxiliaries to cover its operating" display
"expenses. On a positive note, the ROA is increasing over time, indicating " display "that improvements are being made. ¬ ";

Rule analyze_ROA_6 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA >= 0 and
  ROA <.004 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it is improving over time. At this point, it" display "is not earning enough to cover all of expected demand for equipment" display "re-
placement. However, if the current trend continues, they should be " display "able to do so in the future. ¬ ";

Rule analyze_ROA_7 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA >= .004 and
  ROA <.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving
over time, but it falls in a very good region." display "An ROA in this region indicates that net income is sufficient to cover" display "ex-
pected demand for equipment replacement, and also to pay back some of the" display "debt owed to the other auxiliary enterprises. ¬ ";

Rule analyze_ROA_8 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA >= .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving
over time, but it indicates that a substantial " display "dent can be made in its debt to other auxiliary enterprices. On the" display "negative
side, an ROA of this magnitude indicates that revenues greatly" display "exceed expenses which could be considered price gouging. ¬ ";

Rule analyze_ROA_9_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
has decreased over the past year. A glance at the" display "income statements will give a good indication of why this is happening." display
"Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by {mil_dec}%. Meanwhile,
costs incurred for salaries" display "and fringe benefits (which generally make up around 60% of total costs) have" display "increased by
{personal_inc}%. ¬ ";

Rule analyze_ROA_9_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal <= (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by {mil_dec}%. ¬ ";

Rule analyze_ROA_9_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev >= (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of total costs) have increased by
{personal_inc}% over the past" display "year. ¬ ";

Rule analyze_ROA_10_a If ROA < (ROA_last) and
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  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%. Meanwhile, costs incurred for salaries and" display "fringe benefits (whidh generally make up around 60% of total costs)
have" display "increased by (personal_inc)% over the past year.¬";

Rule analyze_ROA_10_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%.¬";

Rule analyze_ROA_10_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Costs " display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of total costs) have
increased by (personal_inc)% over the past year.¬";

Rule analyze_ROA_11_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically constitues 75% of total
revenue) has decreased by (mil_dec)% over" display "the past year. Meanwhile, costs incurred for salaries and fringe benefits" display
"(which generally make up around 60% of total costs) have increased by (personal_inc)%" display "over the past year.¬";

Rule analyze_ROA_11_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
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    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically consititues 75% of
total revenue) has decreased by (mil_dec)% over" display "the past year.¬";

Rule analyze_ROA_11_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. Costs incurred for salaries and fringe" display "benefits (which generally
make up around 60% of total costs), have increased" display "by (personal_inc)% over the past year.¬";

Rule analyze_ROA_12 If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The ROA is very high, which in-
dicates that a substantial dent can be made" display "in its debt to other auxiliary enterprises. Notice that the ROA has" display "decreased
over the past year. This may indicate a decline in income, or" display "it may indicate a concerted effort on the part of management to
bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into.¬";

Rule analyze_ROA_13 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that net
income is also negative. This means that" display "the Tailor Shop is depending on the other auxiliaries to cover some of" display "its op-
erating expenses. On a positive note, the ROA has improved over the" display "past year indicating that improvements are being made.¬";

Rule analyze_ROA_14 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0 and
  ROA <.004 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it has improved over the past year. At this" display "point, it is not earning enough to cover all of expected demand for equipment" display
"replacement. However, if the current trend continues, they should be able to" display "do so in the future.¬";

Rule analyze_ROA_15 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .004 and
  ROA <.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The ROA falls within a very good
region indicating that net income is" display "sufficient to cover expected demand and also pay back some of the debt owed" display "to
other auxiliary enterprises. It should be noted however, that the ROA" display "has fallen over the past year. This indicates decreasing
earnings, and should" display "be checked into.¬";

Rule analyze_ROA_16 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the ROA improved
over the past year, but it also indicates that" display "a substantial dent can be made in their debt to other auxiliary enterprices." display
"On the negative side, an ROA of this magnitude indicates that revenues" display "greatly exceed expenses which could be considered price
gouging.¬";

Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule gross_profit_display IF gross_profit_ratio < > unknown Then cls
    color = 11
    locate 4,17
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 7,6 display "The Gross Profit Ratio was designed to measure the percentage of" display "each sales dollar remaining after the
cost of goods sold (cost of uniforms" display "issued) has been covered. In other words, this ratio indicates how much of" display "each
sales dollar is available to cover operating expenses. If operating" display "expenses are not being met, prices can be raised, or expenses
lowered, and" display "an increased gross profit ratio will result. For the Tailor Shop, this is" display "a good figure to watch to determine
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what is happening with commutation" display "allowances, inventory, and 'bags' issued to cadets.¬" cls locate 3,1 display "In the Tailor
Shop's situation, a change in the gross profit could" display "indicate;" locate 6,6 display "- a change in commutation allowances," locate
7,6 display "- a change in the 'mix' of cadets (i.e., freshmen vs." locate 8,8 display "sophomores vs. juniors vs. seniors)," locate 9,6 display
"- a change in the cost of uniforms," locate 10,6 display "- a change in the number of uniform items per 'bag' or" locate 11,8 display "in
their quality, or" locate 12,6 display "- an undervaluation or overvaluation in inventory." display " " display "With the above in mind, our
'expert' will perform its analysis. However," display "determining changes in the cost of individual uniform items or in their" display
"quality is beyond the scope of this system. Therefore, if one of these" display "has changed significantly, it should be taken into consid-
eration while " display "viewing the following analysis."
    locate 20,8 display "Press any key to see the Gross Profit Ratio analysis¬"
    gross_profit_ratio_display = found
    find rest_of_display_gross_profit;

Rule display_for_GPR If gross_profit_ratio < > unknown Then rest_of_display_gross_profit = found
    cls
    color = 11
    locate 2,18
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format gross_profit_ratio, 5.3
    display "{gross_profit_ratio}"
    locate 8,34
    format gross_profit_ratio_last, 5.3
    display "{gross_profit_ratio_last}"
    locate 8,24
    format gross_profit_ratio_2, 5.3
    display "{gross_profit_ratio_2}"
    gpr_2_% = (.05 * gross_profit_ratio_2)
    gpr_last_% = (.05 * gross_profit_ratio_last)
    inc_weight_this = ((ca_weight_this - ca_weight_last) / ca_weight_last)
    inc_weight_last = ((ca_weight_last - ca_weight_2) / ca_weight_2)
    inc_ave_this = ((ca_ave_this - ca_ave_last) / ca_ave_last)
    inc_ave_last = ((ca_ave_last - ca_ave_2) / ca_ave_2)
    dec_weight_this = ((ca_weight_last - ca_weight_this) / ca_weight_last)
    dec_weight_last = ((ca_weight_2 - ca_weight_last) / ca_weight_2)
    dec_ave_this = ((ca_ave_last - ca_ave_this) / ca_ave_last)
    dec_ave_last = ((ca_ave_2 - ca_ave_last) / ca_ave_2)
    inc_corps_comp_this = ((corps_comp_this - corps_comp_last) / corps_comp_last)
    inc_corps_comp_last = ((corps_comp_last - corps_comp_2) / corps_comp_2)
    inc_t_num_cadets_this = ((t_num_cadets_this - t_num_cadets_last) / t_num_cadets_last)
    inc_t_num_cadets_last = ((t_num_cadets_last - t_num_cadets_2) / t_num_cadets_2)
    dec_corps_comp_this = ((corps_comp_last - corps_comp_this) / corps_comp_last)
    dec_corps_comp_last = ((corps_comp_2 - corps_comp_last) / corps_comp_2)
    dec_t_num_cadets_this = ((t_num_cadets_last - t_num_cadets_this) / t_num_cadets_last)
    dec_t_num_cadets_last = ((t_num_cadets_2 - t_num_cadets_last) / t_num_cadets_2)
    uniform_cost_per_cadet_this = (cost_uniforms_this / t_num_cadets_this)
    uniform_cost_per_cadet_last = (cost_uniforms_last / t_num_cadets_last)
    find gross_profit_ratio_analysis;

Rule gross_profit_analysis_1 If gross_profit_ratio_last < (gross_profit_ratio_2 + gpr_2_%) and
  gross_profit_ratio_last > = (gross_profit_ratio_2 - gpr_2_%) and
  gross_profit_ratio < (gross_profit_ratio_last + gpr_last_%) and
  gross_profit_ratio > = (gross_profit_ratio_last - gpr_last_%) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6 display "As can be seen above, the gross profit ratio is not changing" display "significantly. Unless management is inten-
tionally trying to change it," display "this situation appears optimal."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "in-
creased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of
upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
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  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05

Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
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    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downard trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "de-
creased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of
underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 *. 95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above,'the gross profit ratio is on a definite" display "dowwnard trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less fa-
vorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that average" display "commutation allowances have decreased over the past year by (dec_ave_%)%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display
"beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
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  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "in-
creased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of
upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by {inc_ave_%}%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued."
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by {inc_ave_%}%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
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  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have decreased over the past year by {dec_ave_%}%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less favorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display "beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;
```

```
ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; runtime;

actions

color = 15 todo = ratio_analysis display "The system has just changed files and must load the applicable information," display "which
requires a little time.  You will be instructed when to continue."  find get_data display " " display "Press any key to examine the expense
to revenue ratios.¬" find exp_to_rev_display find exp_to_rev_mkt_seg_display find t_asset_turn_display find inv_turn_display chain npts
color = 15 ;


Rule get_necessary_data If get_data = unknown Then get_data = found
    wks ca,b13..d16,\vpp\playca
    ca_weight_this = (ca[1])
    ca_weight_last = (ca[2])
    ca_weight_2 = (ca[3])
    ca_ave_this = (ca[4])
    ca_ave_last = (ca[5])
    ca_ave_2 = (ca[6])
    corps_comp_this = (ca[7])
    corps_comp_last = (ca[8])
    corps_comp_2 = (ca[9])
    t_num_cadets_this = (ca[10])
    t_num_cadets_last = (ca[11])
    t_num_cadets_2 = (ca[12])
    reset ca
    wks bs_this,b1..b14,\vpp\playabbs
    wks bs_last,c1..c14,\vpp\playabbs
    wks bs_2_ago,d1..d14,\vpp\playabbs
    wks t_assets_3,e9,\vpp\playabbs
    wks inv_3_ago,e7,\vpp\playabbs
    wks is_this,b1..b85,\vpp\playabis
    wks is_last,c1..c85,\vpp\playabis
    wks is_2_ago,d1..d85,\vpp\playabis
    wks is_2_ago_a,d79..d85,\vpp\playabis
    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    net_income = (is_this[65])
    net_income_last = (is_last[65])
    net_income_2 = (is_2_ago[65])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])
    gross_profit = (is_this[16])
    gross_profit_last = (is_last[16])
    gross_profit_2 = (is_2_ago[16])
    t_mil_rev = (is_this[9])
    mil_rev_last = (is_last[9])
    mil_rev_2 = (is_2_ago[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    cost_uniforms_last = (is_last[15])
    cost_uniforms_2 = (is_2_ago[15])
    total_oper_exp_last = (is_last[64])
    total_oper_exp_2 = (is_2_ago[64])
    t_other_rev = (is_this[24])
    other_rev_last = (is_last[24])
    other_rev_2 = (is_2_ago[24])
    t_personal = (is_this[36])
    personal_last = (is_last[36])
    corps_e_to_r_this = (is_this[79])
    public_e_to_r_this = (is_this[81])
    s_f_s_e_to_r_this = (is_this[82])
    interdept_e_to_r_this = (is_this[83])
    music_e_to_r_this = (is_this[84])
    state_e_to_r_this = (is_this[85])
    corps_e_to_r_last = (is_last[79])
    public_e_to_r_last = (is_last[81])
    s_f_s_e_to_r_last = (is_last[82])
    interdept_e_to_r_last = (is_last[83])
    music_e_to_r_last = (is_last[84])
```

```
    state_e_to_r_last = (is_last[85])
    corps_e_to_r_2 = (is_2_ago_a[1])
    public_e_to_r_2 = (is_2_ago_a[3])
    s_f_s_e_to_r_2 = (is_2_ago_a[4])
    interdept_e_to_r_2 = (is_2_ago_a[5])
    music_e_to_r_2 = (is_2_ago_a[6])
    state_e_to_r_2 = (is_2_ago_a[7])
    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago;

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios

If todo = ratio_analysis

Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2));

Rule exp_to_rev_display IF exp_to_rev_ratio < > unknown Then exp_to_rev_display = found
    cls
    color = 11
    locate 2,27
    display "EXPENSE TO REVENUE RATIO"
    locate 4,6 display "The expense to revenue ratio was designed to measure how much of each" display "revenue dollar is consumed by expenses. The primary responsibility of" display "the Tailor Shop is to provide a service, rather than to produce a" display "profit. However, given the level of service provided and the prices" display "charged, it should strive for a low expense to revenue ratio. If net" display "income is to be used only to replace old equipment, then an expense to " display "revenue ratio of around .995 is desirable. On the other hand, if net" display "income is also to be used to repay the amount borrowed from other" display "auxiliaries (say over a 10 year period), then a ratio of around .93 is" display "desirable. In any case, the expense to revenue ratio should be less than" display "1, since a ratio greater than 1 indicates that expenses exceed revenues."
    locate 19,13 display "Press any key to see the Expense to Revenue analysis¬"
    find rest_of_display_e_to_r;

Rule display_for_exp_to_rev If exp_to_rev_ratio < > unknown Then rest_of_display_e_to_r = found
    cls
    color = 11
    locate 2,25
    display "EXPENSE TO REVENUE RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format exp_to_rev_ratio, 5.3
    display "{exp_to_rev_ratio}"
    locate 8,34
    format exp_to_rev_ratio_last, 5.3
    display "{exp_to_rev_ratio_last}"
    locate 8,24
    format exp_to_rev_ratio_2, 5.3
    display "{exp_to_rev_ratio_2}"
    find e_to_r_analysis;

Rule analyze_exp_to_rev_0_a If exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The expense" display "to revenue ratio is greater than 1 and does not apear to be improving. Thus," display "the Tailor Shop is operating in the red and counting on other auxiliary" display "enterprises to help pay its operating expenses.¬";

Rule analyze_exp_to_rev_0_b If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio > = 0.995 and
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  exp_to_rev_ratio < = 1 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The size" display "size of the expense to revenue ratio
indicates that although income is" display "positive, it is not large enough to cover expected demand for equipment" display "replacements.
@Aermore, the situation does not appear to be improving. ¬";

Rule analyze_exp_to_rev_0_c If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_last * .999) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable
level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from" display "other auxiliaries
are being decreased. ¬";

Rule analyze_exp_to_rev_0_d If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last_last * .999) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "It should be noted however, that it is possible that the the
Tailor Shop will" display "be accused of gouging its customers since the ratio is so low. ¬";

Rule analyze_exp_to_rev_ratio_1_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year." display "Meanwhile, costs incurred for salaries and fringe benefits (which generally" display "make up
around 60% of total costs) have increased by (personal_inc)% over" display "the past year. ¬";

Rule analyze_exp_to_rev_ratio_1_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year. ¬";

Rule analyze_exp_to_rev_ratio_1_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Costs incurred for salaries and fringe benefits (which" display "generally make up around 60 % of total costs) have in-
creased by (personal_inc)%" display "over the past year. ¬";

Rule analyze_exp_to_rev_ratio_2_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
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    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by {mil_dec}% over the past year. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around
60% of total" display "costs) have increased by {personal_inc}% over the past year.¬";

Rule analyze_exp_to_rev_ratio_2_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by {mil_dec}% over the past year.¬";

Rule analyze_exp_to_rev_ratio_2_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statementw will give a good indication of why
this is happening. Meanwhile," display "costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of
total costs) have increased by {personal_inc}% over the past" display "year.¬";

Rule analyze_exp_to_rev_ratio_3_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is increasing over time. A
glance at the income" display "statements will show why this is happening. The revenue from the corps" display "(which typically consti-
tutes 75% of total revenue) has decreased by {mil_dec}%" display "over the past year. Meanwhile, costs incurred for salaries and fringe"
display "benefits (which generally make up around 60% of total costs) have increased" display "by {personal_inc}% over the past year.¬";

Rule analyze_exp_to_rev_ratio_3_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is decreasing over time. A
glance at the income " display "statements will show why this is happening. The revenue from the corps" display "(which typically
constitures 75% of total revenue) has decreased by {mil_dec}%" display "over the past year.¬";

Rule analyze_exp_to_rev_ratio_3_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
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  exp_to_rev_ratio < = .995 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio is decreasing over time. A
glance at the income" display "statements will show why this is happening. Costs incurred for salaries and" display "fringe benefits (which
generally make up around 60% of total costs) have" display "increased by (personal_inc)% over the past year.¬";

Rule analyze_exp_to_rev_ratio_4 If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 0.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "There are a couple of things to note here however. First, the
expense to" display "revenue ratio is so low that the Tailor Shop might be accused of gouging" display "its customers. And second, the ratio
is incraseing over time . This may" display "signal that income is decreasing, or it may signal a concerted effort on" display "the part of
management to bring down prices to an 'acceptable' level.¬";

Rule analyze_exp_to_rev_ratio_5 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1
which indicates that expenses exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries
to cover its operating expenses. On a positive note, the ratio" display "is decreasing over time, indicating that improvements are being
made.¬";

Rule analyze_exp_to_rev_ratio_6 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the expense to revenue
ratio is barely less than 1, it is" display "improving over time. At this point, it is not earning enough to cover" display "all of expected de-
mand for equipment replacement. However, if the current" display "trend continues, they should be able to do so in the future.¬";

Rule analyze_exp_to_rev_ratio_7 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio >.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it falls" display "in a very good region. A ratio in this region indicates that net income is" display "sufficient
to cover expected demand for equipment replacement, and also to" display "pay back some of the debt owed to the other auxiliary enter-
prises.¬";

Rule analyze_exp_to_rev_ratio_8 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it" display "indicates that a substantial dent can be made in its debt to other auxiliary" display "enterprises.
On the negative side, a ratio so small indicates that revenues" display "greatly exceed expenses which could be considered price
gouging.¬";

Rule analyze_exp_to_rev_ratio_9_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but has increased over the" display "past year. A glance at the income statements will give a good indication of" dis-
play "why this is happening. Revenue from the corps (which typically constitutes" display "more than 75% of total revenue) has decreased
by (mil_dec)%. Meanwhile, costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of
total costs) have increased by (personal_inc)%.¬";

Rule analyze_exp_to_rev_ratio_9_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
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  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Revenue from the corps (which typically" display "constitutes more than 75% of total revenue) has decreased
by (mil_dec)%.¬";

Rule analyze_exp_to_rev_ratio_9_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Costs incurred for salaries and fringe benefits" display "(which generally make up around 60% of total costs)
have increased by (personal_inc)%" display "over the past year.¬";

Rule analyze_exp_to_rev_ratio_10_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
is less than 1, it has increased over the past year." display "Furthermore, its size indicates that the present rate of income is not" display
"enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indication
of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has
decreased by (mil_dec)%. Meanwhile, costs incurred for salaries" display "and fringe benefits (whidh generally make up around 60% of
total costs) have" display "increased by (personal_inc)% over the past year.¬";

Rule analyze_exp_to_rev_ratio_10_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is" display
"not enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indi-
cation of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue)
has decreased by (mil_dec)%.¬";

Rule analyze_exp_to_rev_ratio_10_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is not" dis-
play "enough to cover expected demand for equipment replacements. A glance at the" display "income statements will give a good indi-
cation of why this is happening. Costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display
"of total costs) have increased by (personal_inc)% over the past year.¬";
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Rule analyze_exp_to_rev_ratio_11_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically
constitues 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. Meanwhile, costs incurred for salaries and
fringe" display "benefits (which generally make up around 60% of total costs) have increased by" display " (personal_inc)% over the past
year.¬ ";

Rule analyze_exp_to_rev_ratio_11_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio has decreased over the past
year. A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically
consititues 75% of total revenue) has decreased by" display " (mil_dec)% over the past year.¬ ";

Rule analyze_exp_to_rev_ratio_11_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening. Costs incurred for" display "salaries and fringe benefits
(which generally make up around 60% of total" display "costs), have increased by (personal_inc)% over the past year.¬ ";

Rule analyze_exp_to_rev_ratio_12 If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The expense to revenue ratio is
quite low, indicating that a substantial " display "dent can be made in its debt to other auxiliary enterprises. Notice that the" display "ratio
has ineased over the past year. This may indicate a decline in income," display "or it may indicate a concerted effort on the part of man-
agement to bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into.¬ ";

Rule analyze_exp_to_rev_ratio_13 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1
which indicates that costs exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries to
cover some of its operating expenses. On a positive note," display "the ratio has decreased over the past year indicating that improvements"
display "are being made.¬ ";

Rule analyze_exp_to_rev_ratio_14 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is not too bad. " display "Although the expense to revenue
ratio is barely less than 1, it has improved" display "over the past year. At this point, the Tailor Shop is not earning enough to" display
"cover all of expected demand for equipment replacement. However, if the" display "current trend continues, they should be able to do so
in the future.¬ ";
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Rule analyze_exp_to_rev_ratio_15 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio > .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The expense to revenue ratio falls
within a very good region indicating" display "that net income is sufficient to cover expected demand and also pay back" display "some of
the debt owed to other auxiliary enterprises. It should be noted" display "however, that the ratio has increased over the past year. This
indicates" display "decreasing earnings, and should be checked into.¬";

Rule analyze_exp_to_rev_ratio_16 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the expense to re-
venue ratio improved over the past year, but" display "it also indicates that a substantial dent can be made in their debt to other" display
"auxiliary enterprises. On the negative side, a ratio this small indicates" display "that revenues greatly exceed expenses which could be
considered price gouging.¬";

Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule exp_to_rev_mkt_seg_display IF corps_e_to_r_this < > unknown Then exp_to_rev_mkt_seg_display = found
    cls
    color = 11
    locate 3,27
    display "EXPENSE TO REVENUE RATIO"
    locate 5,30
    display "BY MARKET SEGMENT"
    locate 8,6 display "Expense to revenue ratios are also calculated for each market segment" display "of the Tailor Shop. These are very
useful as they show which market" display "segments are able to cover their individual expenses. It should be noted" display "however, that
overhead expenses are not included in any of these figures." display "Thus, if all segments showed a ratio of 1.0, the Tailor Shop would
not be" display "able to cover all of its expenses, due to overhead expenses not included" display "in the computations. Overhead expenses
for the Tailor Shop generally" display "constitute between 20% and 30% of total expenses, which is currently" display "between $30,000
and $60,000." locate 19,15 display "Press any key to see the Expense to Revenue ratios¬"
    find rest_of_display_mkt_seg;

Rule display_for-mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_seg = found
    cls
    locate 2,25
    color = 11
    display "EXPENSE TO REVENUE RATIOS"
    locate 4,29
    display "BY MARKET SEGMENT"
    locate 7,12
    display "MARKET SEGMENT"
    locate 7,38
    display "{year_2_ago}"
    locate 7,48
    display "{last_year}"
    locate 7,58
    display "{current_year}"
    locate 9,12
    display "Corps"
    locate 10,12
    display "Public"
    locate 11,12
    display "Student/Faculty/Staff"
    locate 12,12
    display "Interdepartmental"
    locate 13,12
    display "Music Department"
    locate 14,12
    display "State Related"
    locate 17,20
    color = 12
    display "market segment not covering its expenses"
    locate 18,22
    color = 14
    display "market segment covering its expenses"
    locate 19,28
    color = 11
    display "* upward trend - not good"
    find rest_of_display_mkt_segs;

Rule display_for_mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_segs = found
    find corps_e_r_display_this
    find public_e_r_display_this
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    find s_f_s_e_r_display_this
    find interdept_e_r_display_this
    find music_e_r_display_this
    find state_e_r_display_this
    find corps_e_r_display_last
    find public_e_r_display_last
    find s_f_s_e_r_display_last
    find interdept_e_r_display_last
    find music_e_r_display_last
    find state_e_r_display_last
    find corps_e_r_display_2
    find public_e_r_display_2
    find s_f_s_e_r_display_2
    find interdept_e_r_display_2
    find music_e_r_display_2
    find state_e_r_display_2
    find corps_star_display
    find public_star_display
    find s_f_s_star_display
    find interdept_star_display
    find music_star_display
    find state_star_display;

Rule corps_display_this If corps_e_to_r_this < = 1.0 Then color = 14
    locate 9,58
    format corps_e_to_r_this, 4.2
    display "{corps_e_to_r_this}"
    corps_e_r_display_this = found else color = 12
    locate 9,58
    format corps_e_to_r_this,4.2
    display "{corps_e_to_r_this}";

Rule public_display_this If public_e_to_r_this < = 1.0 Then color = 14
    locate 10,58
    format public_e_to_r_this, 4.2
    display "{public_e_to_r_this}"
    public_e_r_display_this = found else color = 12
    locate 10,58
    format public_e_to_r_this,4.2
    display "{public_e_to_r_this}";

Rule s_f_s_display_this If s_f_s_e_to_r_this < = 1.0 Then color = 14
    locate 11,58
    format s_f_s_e_to_r_this, 4.2
    display "{s_f_s_e_to_r_this}"
    s_f_s_e_r_display_this = found else color = 12
    locate 11,58
    format s_f_s_e_to_r_this,4.2
    display "{s_f_s_e_to_r_this}";

Rule interdept_display_this If interdept_e_to_r_this < = 1.0 Then color = 14
    locate 12,58
    format interdept_e_to_r_this, 4.2
    display "{interdept_e_to_r_this}"
    interdept_e_r_display_this = found else color = 12
    locate 12,58
    format interdept_e_to_r_this,4.2
    display "{interdept_e_to_r_this}";

Rule music_display_this If music_e_to_r_this < = 1.0 Then color = 14
    locate 13,58
    format music_e_to_r_this, 4.2
    display "{music_e_to_r_this}"
    music_e_r_display_this = found else color = 12
    locate 13,58
    format music_e_to_r_this,4.2
    display "{music_e_to_r_this}";

Rule state_display_this If state_e_to_r_this < = 1.0 Then color = 14
    locate 14,58
    format state_e_to_r_this, 4.2
    display "{state_e_to_r_this}"
    state_e_r_display_this = found else color = 12
    locate 14,58
    format state_e_to_r_this,4.2
    display "{state_e_to_r_this}";

Rule corps_display_last If corps_e_to_r_last < = 1.0 Then color = 14
    locate 9,48
    format corps_e_to_r_last, 4.2
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    display "(corps_e_to_r_last)"
    corps_e_r_display_last = found else color = 12
    locate 9,48
    format corps_e_to_r_last,4.2
    display "(corps_e_to_r_last)";

Rule public_display_last If public_e_to_r_last < = 1.0 Then color = 14
    locate 10,48
    format public_e_to_r_last, 4.2
    display "(public_e_to_r_last)"
    public_e_r_display_last = found else color = 12
    locate 10,48
    format public_e_to_r_last,4.2
    display "(public_e_to_r_last)";

Rule s_f_s_display_last If s_f_s_e_to_r_last < = 1.0 Then color = 14
    locate 11,48
    format s_f_s_e_to_r_last, 4.2
    display "(s_f_s_e_to_r_last)"
    s_f_s_e_r_display_last = found else color = 12
    locate 11,48
    format s_f_s_e_to_r_last,4.2
    display "(s_f_s_e_to_r_this)";

Rule interdept_display_last If interdept_e_to_r_last < = 1.0 Then color = 14
    locate 12,48
    format interdept_e_to_r_last, 4.2
    display "(interdept_e_to_r_last)"
    interdept_e_r_display_last = found else color = 12
    locate 12,48
    format interdept_e_to_r_last,4.2
    display "(interdept_e_to_r_last)";

Rule music_display_last If music_e_to_r_last < = 1.0 Then color = 14
    locate 13,48
    format music_e_to_r_last, 4.2
    display "(music_e_to_r_last)"
    music_e_r_display_last = found else color = 12
    locate 13,48
    format music_e_to_r_last,4.2
    display "(music_e_to_r_last)";

Rule state_display_last If state_e_to_r_last < = 1.0 Then color = 14
    locate 14,48
    format state_e_to_r_last, 4.2
    display "(state_e_to_r_last)"
    state_e_r_display_last = found else color = 12
    locate 14,48
    format state_e_to_r_last,4.2
    display "(state_e_to_r_last)";

Rule corps_display_2 If corps_e_to_r_2 < = 1.0 Then color = 14
    locate 9,38
    format corps_e_to_r_2, 4.2
    display "(corps_e_to_r_2)"
    corps_e_r_display_2 = found else color = 12
    locate 9,38
    format corps_e_to_r_2,4.2
    display "(corps_e_to_r_2)";

Rule public_display_2 If public_e_to_r_2 < = 1.0 Then color = 14
    locate 10,38
    format public_e_to_r_2, 4.2
    display "(public_e_to_r_2)"
    public_e_r_display_2 = found else color = 12
    locate 10,38
    format public_e_to_r_2,4.2
    display "(public_e_to_r_2)";

Rule s_f_s_display_2 If s_f_s_e_to_r_2 < = 1.0 Then color = 14
    locate 11,38
    format s_f_s_e_to_r_2, 4.2
    display "(s_f_s_e_to_r_2)"
    s_f_s_e_r_display_2 = found else color = 12
    locate 11,38
    format s_f_s_e_to_r_2,4.2
    display "(s_f_s_e_to_r_2)";

Rule interdept_display_2 If interdept_e_to_r_2 < = 1.0 Then color = 14
    locate 12,38
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    format interdept_e_to_r_2, 4.2
    display "{interdept_e_to_r_2}"
    interdept_e_r_display_2 = found else color = 12
    locate 12,38
    format interdept_e_to_r_2,4.2
    display "{interdept_e_to_r_2}";

Rule music_display_2 If music_e_to_r_2 < = 1.0 Then color = 14
    locate 13,38
    format music_e_to_r_2, 4.2
    display "{music_e_to_r_2}"
    music_e_r_display_2 = found else color = 12
    locate 13,38
    format music_e_to_r_2,4.2
    display "{music_e_to_r_2}";

Rule state_display_2 If state_e_to_r_2 < = 1.0 Then color = 14
    locate 14,38
    format state_e_to_r_2, 4.2
    display "{state_e_to_r_2}"
    state_e_r_display_2 = found else color = 12
    locate 14,38
    format state_e_to_r_2,4.2
    display "{state_e_to_r_2}";

Rule star_corps_display If corps_e_to_r_this > = (corps_e_to_r_last) and
  corps_e_to_r_last > = (corps_e_to_r_2) Then corps_star_display = found
    color = 11
    locate 9,64
    display "*";

Rule star_public_display If public_e_to_r_this > = (public_e_to_r_last) and
  public_e_to_r_last > = (public_e_to_r_2) Then public_star_display = found
    color = 11
    locate 10,64
    display "*";

Rule star_s_f_s_display If s_f_s_e_to_r_this > = (s_f_s_e_to_r_last) and
  s_f_s_e_to_r_last > = (s_f_s_e_to_r_2) Then s_f_s_star_display = found
    color = 11
    locate 11,64
    display "*";

Rule star_interdept_display If interdept_e_to_r_this > = (interdept_e_to_r_last) and
  interdept_e_to_r_last > = (interdept_e_to_r_2) Then interdept_star_display = found
    color = 11
    locate 12,64
    display "*";

Rule star_music_display If music_e_to_r_this > = (music_e_to_r_last) and
  music_e_to_r_last > = (music_e_to_r_2) Then music_star_display = found
    color = 11
    locate 13,64
    display "*";

Rule star_state_display If state_e_to_r_this > = (state_e_to_r_last) and
  state_e_to_r_last > = (state_e_to_r_2) Then state_star_display = found
    color = 11
    locate 14,64
    display "* ¬" else locate 19,77
    display "  ¬";

Rule display_for_t_asset_turn If t_asset_turn_ratio < > unknown Then cls
    color = 11
    locate 1,24
    display "TOTAL ASSET TURNOVER RATIOS"
    locate 4,45
    display "{current_year}"
    locate 4,35
    display "{last_year}"
    locate 4,25
    display "{year_2_ago}"
    locate 7,44
    format t_asset_turn_ratio, 5.3
    display "{t_asset_turn_ratio}"
    locate 7,34
    format t_asset_turn_ratio_last, 5.3
    display "{t_asset_turn_ratio_last}"
    locate 7,24
    format t_asset_turn_ratio_2, 5.3
```

```
    display "{t_asset_turn_ratio_2}"
    t_asset_turn_display = found
    find t_asset_turn_analysis;

Rule analyze_t_asset_turn_1 If t_asset_turn_ratio >= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio_last >= (t_asset_turn_ratio_2) and
   t_asset_turn_ratio >= 1.0 Then locate 10,6
     color = 10
     display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
     locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it is improving over time.¬"

     t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_2 If t_asset_turn_ratio >= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio >= 1.0 Then locate 10,6
     color = 10
     display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
     locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it has improved over the past
year.¬"
     t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_3 If t_asset_turn_ratio >= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio_last >= (t_asset_turn_ratio_2) and
   t_asset_turn_ratio >= .9 and
   t_asset_turn_ratio < 1.0 Then locate 10,6
     color = 10
     display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
     locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and is improving over time.¬"

     t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_4 If t_asset_turn_ratio >= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio >= .9 and
   t_asset_turn_ratio < 1.0 Then locate 10,6
     color = 10
     display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
     locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and has improved over the past year.¬"

     t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_5 If t_asset_turn_ratio >= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio_last >= (t_asset_turn_ratio_2) and
   t_asset_turn_ratio <= .9 Then locate 10,6
     color = 14
     display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
     locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
it does appear to be improving over time.¬"

     t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_6 If t_asset_turn_ratio >= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio <= .9 Then locate 10,6
     color = 12
     display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
     locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
it has improved over the past year and may" display "continue to do so in the future.¬"

     t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_7 If t_asset_turn_ratio <= (t_asset_turn_ratio_last) and
   t_asset_turn_ratio_last <= (t_asset_turn_ratio_2) and
   t_asset_turn_ratio >= 1.0 Then locate 10,6
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    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it appears to be decreasing
over time. Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_8 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it has decreased over the past
year. Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_9 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < 1.0 and
  t_asset_turn_ratio > .90 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it appears to be
decreasing over time. Management" display "might want to determine whether this is just random fluctuation or an actual" display
"trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_10 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < 1.0 and
  t_asset_turn_ratio > = 0.9 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it has decreased
over the past year. Management" display "might want to determine whether this is just random fluctuation or the" display "beginning of a
downward trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_11 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < 0.9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high
enough for the level of assets" display "being held. Furthermore, there appears to be a downward trend over time." display "This is defi-
nitely something that management should check into. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_12 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < 0.9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high
enough for the level of assets" display "being held. Furthermore, is has decreased over the past year. Management" display "should de-
termine whether or not this is merely random fluctuation or the" display "beginning of a downward trend. ¬"
    t_asset_turn_analysis = found;

Rule displayinv_turn_ratio_beg If inv_turn_ratio < > unknown Then cls
    locate 1,25
    color = 11
    display "INVENTORY TURNOVER RATIOS"
    locate 4,6 display "The inventory turnover ratio is designed to measure how fast an " display "organization turns over its inventory.
Ideally, this number is quite high," display "since it is best to turn over goods as quickly as possible. Doing so" display "decreases the
possiblity of lowering the value of the goods due to" display "obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory"
display "however, cannot be turned over more than once a year, because uniforms" display "issued to cadets are considered part of total
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inventory.  In the case of" display "the Tailor Shop, this ratio is calculated by dividing income produced" display "from the corps by the
average dollar value of inventory (which consists" display "almost solely of cadet uniforms).  If this ratio is very low, say less" display "than
.50, it indicates that the Tailor Shop is holding a large amount of" display "unissued inventory in the shop.  Given these circumstances, any
ratio" display "which is greater than 0.75 is considered to be 'acceptable.' " locate 19,13 display "Press any key to see the inventory turnover
analysis¬"
    inv_turn_display = found
    find actual_inv_turn_display;

Rule display_for_inv_turn If inv_turn_ratio < > unknown Then cls
    color = 11
    locate 3,25
    display "INVENTORY TURNOVER RATIOS"
    locate 6,45
    display "{current_year}"
    locate 6,35
    display "{last_year}"
    locate 6,25
    display "{year_2_ago}"
    locate 9,44
    format inv_turn_ratio, 5.3
    display "{inv_turn_ratio}"
    locate 9,34
    format inv_turn_ratio_last, 5.3
    display "{inv_turn_ratio_last}"
    locate 9,24
    format inv_turn_ratio_2, 5.3
    display "{inv_turn_ratio_2}"
    actual_inv_turn_display = found
    find inv_turn_analysis;

Rule analyze_inv_turn_1 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = 0.8 Then locate 9,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good.  Not" display "only does it fall within a good
range, but it is increasing over time.¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_2 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good.  Not" display "only does it fall within a good
range, but it has increased over the past" display "year.¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_3 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable.  Not" display "only does it appear reasonable, but
it is increasing over time.¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_4 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable.  Not" display "only does it appear reasonable, but
it has increased over the past year.¬"

    inv_turn_analysis = found;

Rule analyze_inv_turn_5 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like.  However,
it does appear to be improving over time.¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_6 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like.  However,
it has improved over the past year and may" display "continue to do so in the future.¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_7 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
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  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good." display "However, it appears to be decreasing
over time. Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_8 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good." display "However, it has decreased over the past
year. Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_9 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > .750 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level. However, it appears to be
decreasing over time. Management might" display "want to determine whether this is just random fluctuation or an actual" display
"trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_10 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > = 0.75 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level. However, it has decreased
over the past year. Management might want" display "to determine whether this is just random fluctuation or the beginning of a" display
"downward trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_11 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low. This" display "indicates that revenues are not high
enough for the level of assets being" display "held. Furthermore, there appears to be a downward trend over time. This" display "is defi-
nitely something that management should check into. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_12 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low. This" display "indicates that revenues are not high
enough for the level of assets being" display "held. Furthermore, is has decreased over the past year. Management should" display "de-
termine whether or not this is merely random fluctuation or the beginning" display "of a downward trend. ¬"
    inv_turn_analysis = found;


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; endoff; runtime; actions

color = 15

todo = graphics !loadfacts tempdata bcall eraseit display "Displaying graphics entails both loading and calculating large amounts" display
"of data. This of course, requires a substantial amount of time. Please" display "be patient. You will be instructed when to continue."
find old_actual_values_cont     ! the _cont was added on 10/18 find budget_figures find calc_exp_costs find calc_exp_rev find
rev_expectations find new_actual_values cls whileknown which_stmt
   find which_stmt
   reset what_next
   reset stmt_number
   reset which_stmt
   cls
   find which_stmt end

;

!Rules Block

Rule go_get_first_month_no

If todo = graphics

Then wks month_no,c4,\vpp\playis
    old_actual_values = found
    find old_actual_values_cont;



Rule go_find_last_yrs_data_1

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,c12..n12,\vpp\playis
    wks old_public_rev,c17..n17,\vpp\playis
    wks old_s_f_s_rev,c18..n18,\vpp\playis
    wks old_interdept_rev,c19..n19,\vpp\playis
    wks old_music_rev,c20..n20,\vpp\playis
    wks old_state_rev,c21..n21,\vpp\playis
    wks old_personal,c34..n34,\vpp\playis
    wks old_contract,c45..n45,\vpp\playis
    wks old_s_&_m,c52..n52,\vpp\playis
    wks old_contin,c60..n60,\vpp\playis
    wks old_uniforms,c13..n13,\vpp\playis
    wks old_oper_exp,c62..n62,\vpp\playis
    wks old_corps_costs,c66..n66,\vpp\playis
    wks old_public_costs,c68..n68,\vpp\playis
    wks old_s_f_s_costs,c69..n69,\vpp\playis
    wks old_interdept_costs,c70..n70,\vpp\playis
    wks old_music_costs,c71..n71,\vpp\playis
    wks old_state_costs,c72..n72,\vpp\playis
    count_it = 1
    find old_t_costs
    find old_t_revs

else reset old_actual_values_cont
    wks month_no,d4,\vpp\playis; !    find old_actual_values_cont;

Rule calc_old_total_costs

If old_total_costs[1] = unknown

Then x = 1

    whiletrue x < = 12 then
     old_total_costs[x] = (old_uniforms[x] + old_oper_exp[x])
     x = (x+1)
    end

    old_t_costs = found;

!display "old_total_costs[1] = {old_total_costs[1]}" !display "old_total_costs[6] = {old_total_costs[9]}" !display "old_total_costs[9] =
{old_total_costs[9]} ¬ ";
```

```
Rule go_find_last_yrs_data_2

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,d12..o12,\vpp\playis
    wks old_public_rev,d17..o17,\vpp\playis
    wks old_s_f_s_rev,d18..o18,\vpp\playis
    wks old_interdept_rev,d19..o19,\vpp\playis
    wks old_music_rev,d20..o20,\vpp\playis
    wks old_state_rev,d21..o21,\vpp\playis
    wks old_personal,d34..o34,\vpp\playis
    wks old_contract,d45..o45,\vpp\playis
    wks old_s_&_m,d52..o52,\vpp\playis
    wks old_contin,d60..o60,\vpp\playis
    wks old_oper_exp,d62..o62,\vpp\playis
    wks old_uniforms,d13..o13,\vpp\playis
    wks old_corps_costs,d66..o66,\vpp\playis
    wks old_public_costs,d68..o68,\vpp\playis
    wks old_s_f_s_costs,d69..o69,\vpp\playis
    wks old_interdept_costs,d70..o70,\vpp\playis
    wks old_music_costs,d71..o71,\vpp\playis
    wks old_state_costs,d72..o72,\vpp\playis
    count_it = 2
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,e4,\vpp\playis; !    find old_actual_values_cont;


Rule go_find_last_yrs_data_3

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,e12..p12,\vpp\playis
    wks old_public_rev,e17..p17,\vpp\playis
    wks old_s_f_s_rev,e18..p18,\vpp\playis
    wks old_interdept_rev,e19..p19,\vpp\playis
    wks old_music_rev,e20..p20,\vpp\playis
    wks old_state_rev,e21..p21,\vpp\playis
    wks old_personal,e34..p34,\vpp\playis
    wks old_contract,e45..p45,\vpp\playis
    wks old_s_&_m,e52..p52,\vpp\playis
    wks old_contin,e60..p60,\vpp\playis
    wks old_uniforms,e13..p13,\vpp\playis
    wks old_oper_exp,e62..p62,\vpp\playis
    wks old_corps_costs,e66..p66,\vpp\playis
    wks old_public_costs,e68..p68,\vpp\playis
    wks old_s_f_s_costs,e69..p69,\vpp\playis
    wks old_interdept_costs,e70..p70,\vpp\playis
    wks old_music_costs,e71..p71,\vpp\playis
    wks old_state_costs,e72..p72,\vpp\playis
    count_it = 3
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,f4,\vpp\playis; !    find old_actual_values_cont;


Rule go_find_last_yrs_data_4

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,f12..q12,\vpp\playis
    wks old_public_rev,f17..q17,\vpp\playis
    wks old_s_f_s_rev,f18..q18,\vpp\playis
    wks old_interdept_rev,f19..q19,\vpp\playis
    wks old_music_rev,f20..q20,\vpp\playis
    wks old_state_rev,f21..q21,\vpp\playis
    wks old_personal,f34..q34,\vpp\playis
    wks old_contract,f45..q45,\vpp\playis
    wks old_s_&_m,f52..q52,\vpp\playis
    wks old_contin,f60..q60,\vpp\playis
    wks old_uniforms,f13..q13,\vpp\playis
    wks old_oper_exp,f62..q62,\vpp\playis
    wks old_corps_costs,f66..q66,\vpp\playis
```

```
    wks old_public_costs,f68..q68,\vpp\playis
    wks old_s_f_s_costs,f69..q69,\vpp\playis
    wks old_interdept_costs,f70..q70,\vpp\playis
    wks old_music_costs,f71..q71,\vpp\playis
    wks old_state_costs,f72..q72,\vpp\playis
    count_it = 4
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,g4,\vpp\playis; !    find old_actual_values_cont;
```

Rule go_find_last_yrs_data_5

If month_no = 12

Then old_actual_values_cont = found

```
    wks old_corps_rev,g12..r12,\vpp\playis
    wks old_public_rev,g17..r17,\vpp\playis
    wks old_s_f_s_rev,g18..r18,\vpp\playis
    wks old_interdept_rev,g19..r19,\vpp\playis
    wks old_music_rev,g20..r20,\vpp\playis
    wks old_state_rev,g21..r21,\vpp\playis
    wks old_personal,g34..r34,\vpp\playis
    wks old_contract,g45..r45,\vpp\playis
    wks old_s_&_m,g52..r52,\vpp\playis
    wks old_contin,g60..r60,\vpp\playis
    wks old_uniforms,g13..r13,\vpp\playis
    wks old_oper_exp,g62..r62,\vpp\playis
    wks old_corps_costs,g66..r66,\vpp\playis
    wks old_public_costs,g68..r68,\vpp\playis
    wks old_s_f_s_costs,g69..r69,\vpp\playis
    wks old_interdept_costs,g70..r70,\vpp\playis
    wks old_music_costs,g71..r71,\vpp\playis
    wks old_state_costs,g72..r72,\vpp\playis
    count_it = 5
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,h4,\vpp\playis; !    find old_actual_values_cont;
```

Rule go_find_last_yrs_data_6

If month_no = 12

Then old_actual_values_cont = found

```
    wks old_corps_rev,h12..s12,\vpp\playis
    wks old_public_rev,h17..s17,\vpp\playis
    wks old_s_f_s_rev,h18..s18,\vpp\playis
    wks old_interdept_rev,h19..s19,\vpp\playis
    wks old_music_rev,h20..s20,\vpp\playis
    wks old_state_rev,h21..s21,\vpp\playis
    wks old_personal,h34..s34,\vpp\playis
    wks old_contract,h45..s45,\vpp\playis
    wks old_s_&_m,h52..s52,\vpp\playis
    wks old_contin,h60..s60,\vpp\playis
    wks old_uniforms,h13..s13,\vpp\playis
    wks old_oper_exp,h62..s62,\vpp\playis
    wks old_corps_costs,h66..s66,\vpp\playis
    wks old_public_costs,h68..s68,\vpp\playis
    wks old_s_f_s_costs,h69..s69,\vpp\playis
    wks old_interdept_costs,h70..s70,\vpp\playis
    wks old_music_costs,h71..s71,\vpp\playis
    wks old_state_costs,h72..s72,\vpp\playis
    count_it = 6
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,i4,\vpp\playis; !    find old_actual_values_cont;
```

Rule go_find_last_yrs_data_7

If month_no = 12

Then old_actual_values_cont = found

```
    wks old_corps_rev,i12..t12,\vpp\playis
```

```
    wks old_public_rev,i17..t17,\vpp\playis
    wks old_s_f_s_rev,i18..t18,\vpp\playis
    wks old_interdept_rev,i19..t19,\vpp\playis
    wks old_music_rev,i20..t20,\vpp\playis
    wks old_state_rev,i21..t21,\vpp\playis
    wks old_personal,i34..t34,\vpp\playis
    wks old_contract,i45..t45,\vpp\playis
    wks old_s_&_m,i52..t52,\vpp\playis
    wks old_contin,i60..t60,\vpp\playis
    wks old_uniforms,i13..t13,\vpp\playis
    wks old_oper_exp,i62..t62,\vpp\playis
    wks old_corps_costs,i66..t66,\vpp\playis
    wks old_public_costs,i68..t68,\vpp\playis
    wks old_s_f_s_costs,i69..t69,\vpp\playis
    wks old_interdept_costs,i70..t70,\vpp\playis
    wks old_music_costs,i71..t71,\vpp\playis
    wks old_state_costs,i72..t72,\vpp\playis
    count_it = 7
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,j4,\vpp\playis; !    find old_actual_values_cont;


Rule go_find_last_yrs_data_8

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,j12..u12,\vpp\playis
    wks old_public_rev,j17..u17,\vpp\playis
    wks old_s_f_s_rev,j18..u18,\vpp\playis
    wks old_interdept_rev,j19..u19,\vpp\playis
    wks old_music_rev,j20..u20,\vpp\playis
    wks old_state_rev,j21..u21,\vpp\playis
    wks old_personal,j34..u34,\vpp\playis
    wks old_contract,j45..u45,\vpp\playis
    wks old_s_&_m,j52..u52,\vpp\playis
    wks old_contin,j60..u60,\vpp\playis
    wks old_uniforms,j13..u13,\vpp\playis
    wks old_oper_exp,j62..u62,\vpp\playis
    wks old_corps_costs,j66..u66,\vpp\playis
    wks old_public_costs,j68..u68,\vpp\playis
    wks old_s_f_s_costs,j69..u69,\vpp\playis
    wks old_interdept_costs,j70..u70,\vpp\playis
    wks old_music_costs,j71..u71,\vpp\playis
    wks old_state_costs,j72..u72,\vpp\playis
    count_it = 8
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,k4,\vpp\playis; !    find old_actual_values_cont;


Rule go_find_last_yrs_data_9

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,k12..v12,\vpp\playis
    wks old_public_rev,k17..v17,\vpp\playis
    wks old_s_f_s_rev,k18..v18,\vpp\playis
    wks old_interdept_rev,k19..v19,\vpp\playis
    wks old_music_rev,k20..v20,\vpp\playis
    wks old_state_rev,k21..v21,\vpp\playis
    wks old_personal,k34..v34,\vpp\playis
    wks old_contract,k45..v45,\vpp\playis
    wks old_s_&_m,k52..v52,\vpp\playis
    wks old_contin,k60..v60,\vpp\playis
    wks old_uniforms,k13..v13,\vpp\playis
    wks old_oper_exp,k62..v62,\vpp\playis
    wks old_corps_costs,k66..v66,\vpp\playis
    wks old_public_costs,k68..v68,\vpp\playis
    wks old_s_f_s_costs,k69..v69,\vpp\playis
    wks old_interdept_costs,k70..v70,\vpp\playis
    wks old_music_costs,k71..v71,\vpp\playis
    wks old_state_costs,k72..v72,\vpp\playis
    count_it = 9
    find old_t_costs
```

```
else reset old_actual_values_cont
    wks month_no,l4,\vpp\playis; !     find old_actual_values_cont;


Rule go_find_last_yrs_data_10

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,l12..w12,\vpp\playis
    wks old_public_rev,l17..w17,\vpp\playis
    wks old_s_f_s_rev,l18..w18,\vpp\playis
    wks old_interdept_rev,l19..w19,\vpp\playis
    wks old_music_rev,l20..w20,\vpp\playis
    wks old_state_rev,l21..w21,\vpp\playis
    wks old_personal,l34..w34,\vpp\playis
    wks old_contract,l45..w45,\vpp\playis
    wks old_s_&_m,l52..w52,\vpp\playis
    wks old_contin,l60..w60,\vpp\playis
    wks old_uniforms,l13..w13,\vpp\playis
    wks old_oper_exp,l62..w62,\vpp\playis
    wks old_corps_costs,l66..w66,\vpp\playis
    wks old_public_costs,l68..w68,\vpp\playis
    wks old_s_f_s_costs,l69..w69,\vpp\playis
    wks old_interdept_costs,l70..w70,\vpp\playis
    wks old_music_costs,l71..w71,\vpp\playis
    wks old_state_costs,l72..w72,\vpp\playis
    count_it = 10
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,m4,\vpp\playis; !     find old_actual_values_cont;


Rule go_find_last_yrs_data_11

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,m12..x12,\vpp\playis
    wks old_public_rev,m17..x17,\vpp\playis
    wks old_s_f_s_rev,m18..x18,\vpp\playis
    wks old_interdept_rev,m19..x19,\vpp\playis
    wks old_music_rev,m20..x20,\vpp\playis
    wks old_state_rev,m21..x21,\vpp\playis
    wks old_personal,m34..x34,\vpp\playis
    wks old_contract,m45..x45,\vpp\playis
    wks old_s_&_m,m52..x52,\vpp\playis
    wks old_contin,m60..x60,\vpp\playis
    wks old_uniforms,m13..x13,\vpp\playis
    wks old_oper_exp,m62..x62,\vpp\playis
    wks old_corps_costs,m66..x66,\vpp\playis
    wks old_public_costs,m68..x68,\vpp\playis
    wks old_s_f_s_costs,m69..x69,\vpp\playis
    wks old_interdept_costs,m70..x70,\vpp\playis
    wks old_music_costs,m71..x71,\vpp\playis
    wks old_state_costs,m72..x72,\vpp\playis
    count_it = 11
    find old_t_costs

else reset old_actual_values_cont
    wks month_no,n4,\vpp\playis; !     find old_actual_values_cont;


Rule go_find_last_yrs_data_12

If month_no = 12

Then old_actual_values_cont = found
    wks old_corps_rev,n12..y12,\vpp\playis
    wks old_public_rev,n17..y17,\vpp\playis
    wks old_s_f_s_rev,n18..y18,\vpp\playis
    wks old_interdept_rev,n19..y19,\vpp\playis
    wks old_music_rev,n20..y20,\vpp\playis
    wks old_state_rev,n21..y21,\vpp\playis
    wks old_personal,n34..y34,\vpp\playis
    wks old_contract,n45..y45,\vpp\playis
    wks old_s_&_m,n52..y52,\vpp\playis
    wks old_contin,n60..y60,\vpp\playis
```

```
    wks old_uniforms,n13..y13,\vpp\playis
    wks old_oper_exp,n62..y62,\vpp\playis
    wks old_corps_costs,n66..y66,\vpp\playis
    wks old_public_costs,n68..y68,\vpp\playis
    wks old_s_f_s_costs,n69..y69,\vpp\playis
    wks old_interdept_costs,n70..y70,\vpp\playis
    wks old_music_costs,n71..y71,\vpp\playis
    wks old_state_costs,n72..y72,\vpp\playis
    count_it = 12
    find old_t_costs;


Rule go_get_budget_figures

If budget_figures = unknown

Then budget_figures = found
    wks personal_figs,b10..c10,\vpp\playbud
    wks contract_figs,b16..c16,\vpp\playbud
    wks s_&_m_figs,b20..c20,\vpp\playbud
    wks contin_figs,b27..c27,\vpp\playbud
    wks uniforms_figs,b29..c29,\vpp\playbud

    personal_bud_this = (personal_figs[1])
    contract_bud_this = (contract_figs[1])
    s_&_m_bud_this = (s_&_m_figs[1])
    contin_bud_this = (contin_figs[1])
    uniforms_bud_this = (uniforms_figs[1])

    personal_bud_last = (personal_figs[2])
    contract_bud_last = (contract_figs[2])
    s_&_m_bud_last = (s_&_m_figs[2])
    contin_bud_last = (contin_figs[2])
    uniforms_bud_last = (uniforms_figs[2])

!display "        personal_bud_this = (personal_bud_this)" !display "        contract_bud_this = (contract_bud_this)" !display "
s_&_m_bud_this = (s_&_m_bud_this)" !display "        contin_bud_this = (contin_bud_this)" !display "        uniforms_bud_this =
(uniforms_bud_this) ¬";

!display "    personal_bud_last = (personal_bud_last)" !display "    contract_bud_last = (contract_bud_last)" !display "    s_&_m_bud_last
= (s_&_m_bud_last)" !display "    contin_bud_last = (contin_bud_last)" !display "    uniforms_bud_last = (uniforms_bud_last) ¬";

Rule calc_exp_costs

If calc_exp_costs = unknown

Then calc_exp_costs = ok

    x = 1
    whiletrue x < = 12 then
      exp_personal[x] = ((old_personal[x] / personal_bud_last) * personal_bud_this)
      exp_contract[x] = ((old_contract[x] / contract_bud_last) * contract_bud_this)
      exp_s_&_m[x] = ((old_s_&_m[x] / s_&_m_bud_last) * s_&_m_bud_this)
      exp_contin[x] = ((old_contin[x] / contin_bud_last) * contin_bud_this)
      exp_uniforms[x] = ((old_uniforms[x] / uniforms_bud_last) * uniforms_bud_this)
      exp_total[x]    =    (exp_personal[x] + exp_contract[x] + exp_s_&_m[x] + exp_contin[x] + exp_uniforms[x])    !display    "exp_total[x]    =
(exp_total[x]) ¬"

      x = (x + 1)
    end

    reset old_personal
    reset old_contract
    reset old_s_&_m
    reset old_contin
    reset old_uniforms


!       display "exp_personal[1] = (exp_personal[1])" !       display "exp_contract[1] = (exp_contract[1])" !       display "exp_s_&_m[1] =
(exp_s_&_m[1])" !       display "exp_contin[1] = (exp_contin[1])" !       display "exp_uniforms[1] = (exp_uniforms[1]) ¬"

!       display "exp_personal[x] = (exp_personal[5])" !       display "exp_contract[5] = (exp_contract[5])" !       display "exp_s_&_m[5] =
(exp_s_&_m[5])" !       display "exp_contin[5] = (exp_contin[5])" !       display "exp_uniforms[5] = (exp_uniforms[5]) ¬"

!       display "exp_personal[x] = (exp_personal[12])" !       display "exp_contract[12] = (exp_contract[12])" !       display "exp_s_&_m[12]
= (exp_s_&_m[12])" !       display "exp_contin[12] = (exp_contin[12])" !       display "exp_uniforms[12] = (exp_uniforms[12]) ¬"

;

Rule go_get_rev_budget_data     !!!HERE
```

```
If calc_exp_rev = unknown

Then wks budget_rev, b3..c3, \vpp\playbud
    calc_exp_rev = found
    budget_rev_now = (budget_rev[1])
    budget_rev_past = (budget_rev[2]) !display "budget_rev_now = (budget_rev_now)" !display "budget_rev_past = (budget_rev_past) ¬"


    diff = (budget_rev_now - budget_rev_past)
    find rev_diff;


Rule rev_budget_same

If diff = 0

Then mil_exp_inc = 0
    public_exp_inc = 0
    s_f_s_exp_inc = 0
    interdept_exp_inc = 0
    music_exp_inc = 0
    state_exp_inc = 0
    display "the difference in budgeted revenue is 0! ¬" ! delete later!!!!!!!
    rev_diff = found;


Rule rev_budget_higher

If diff > 0 Then display " "
    display "Press any key to continue. ¬"
    display " "
    display "The budget for revenue has increased this year by ${diff)."
    find resp_rev_mkt_segments  ! statement - determines which segments
                                ! are expected to contribute more this year
    rev_diff = found

    find mil_higher? ! leads to a series of rules which calculate
                     ! changes in expectations

    find public_higher?
    find s_f_s_higher?
    find interdept_higher?
    find music_higher?
    find state_higher?
    display " "
    display "More processing is necessary.  You will be instructed when to"
    display "continue.";


Rule rev_budget_lower

If diff < 0 Then diff = (@abs(diff))
    display " "
    display "Press any key to continue. ¬"
    display " "
    display "The budget for revenue has decreased this year by ${diff)."
    find resp_rev_mkt_segments_l  ! statement - determines which segments
                                  ! are expected to contribute less this year
    display " "
    diff = (0 - diff)
    rev_diff = found
    find mil_lower? ! leads to a series of rules which calculate
                    ! changes in expectations
    find public_lower?
    find s_f_s_lower?
    find interdept_lower?
    find music_lower?
    find state_lower?
    display " "
    display "More processing is necessary.  You will be instructed when to"
    display "continue.";


Rule military_exp_higher

If resp_rev_mkt_segments = military

Then find mil_exp_inc_h
```

```
    mil_exp_inc = (mil_exp_inc_h)
    mil_higher? = found;

Rule military_exp_not_higher

If resp_rev_mkt_segments < > military

Then mil_exp_inc = 0
    mil_higher? = found;

Rule military_exp_lower

If resp_rev_mkt_segments_1 = military

Then find mil_exp_inc_1 !    display "mil_exp_inc = {mil_exp_inc}" !    display "mil_exp_inc_1 = {mil_exp_inc_1}"
    mil_exp_inc = (0 - mil_exp_inc_1) !    display "mil_exp_inc = {mil_exp_inc}" !    display "mil_exp_inc_1 = {mil_exp_inc_1} ¬"

    mil_lower? = found;

Rule military_exp_not_lower

If resp_rev_mkt_segments_1 < > military

Then mil_exp_inc = 0
    mil_lower? = found;

Rule public_exp_higher

If resp_rev_mkt_segments = public

Then find public_exp_inc_h
    public_exp_inc = (public_exp_inc_h)
    public_higher? = found;

Rule public_exp_not_higher

If resp_rev_mkt_segments < > public

Then public_exp_inc = 0
    public_higher? = found;

Rule public_exp_lower

If resp_rev_mkt_segments_1 = public

Then find public_exp_inc_1
    public_exp_inc = (0 - public_exp_inc_1)
    public_lower? = found;

Rule public_exp_not_lower

If resp_rev_mkt_segments_1 < > public

Then public_exp_inc = 0
    public_lower? = found;

Rule s_f_s_exp_higher

If resp_rev_mkt_segments = stu_fac_staff

Then find s_f_s_exp_inc_h
    s_f_s_exp_inc = (s_f_s_exp_inc_h)
    s_f_s_higher? = found;

Rule s_f_s_exp_not_higher

If resp_rev_mkt_segments < > stu_fac_staff

Then s_f_s_exp_inc = 0
    s_f_s_higher? = found;
```

```
Rule s_f_s_exp_lower

If resp_rev_mkt_segments_1 = stu_fac_staff

Then find s_f_s_exp_inc_l
    s_f_s_exp_inc = (0 - s_f_s_exp_inc_l)
    s_f_s_lower? = found;


Rule s_f_s_exp_not_lower

If resp_rev_mkt_segments_1 < > stu_fac_staff

Then s_f_s_exp_inc = 0
    s_f_s_lower? = found;


Rule interdept_exp_higher

If resp_rev_mkt_segments = interdepartmental

Then find interdept_exp_inc_h
    interdept_exp_inc = (interdept_exp_inc_h)
    interdept_higher? = found;


Rule interdept_exp_not_higher

If resp_rev_mkt_segments < > interdepartmental

Then interdept_exp_inc = 0
    interdept_higher? = found;


Rule interdept_exp_lower

If resp_rev_mkt_segments_1 = interdepartmental

Then find interdept_exp_inc_l
    interdept_exp_inc = (0 - interdept_exp_inc_l)
    interdept_lower? = found;


Rule interdept_exp_not_lower

If resp_rev_mkt_segments_1 < > interdepartmental

Then interdept_exp_inc = 0
    interdept_lower? = found;


Rule music_exp_higher

If resp_rev_mkt_segments = music_dept

Then find music_exp_inc_h
    music_exp_inc = (music_exp_inc_h)
    music_higher? = found;


Rule music_exp_not_higher

If resp_rev_mkt_segments < > music_dept

Then music_exp_inc = 0
    music_higher? = found;


Rule music_exp_lower

If resp_rev_mkt_segments_1 = music_dept

Then find music_exp_inc_l
    music_exp_inc = (0 - music_exp_inc_l)
    music_lower? = found;


Rule music_exp_not_lower
```

```
If resp_rev_mkt_segments_1 < > music_dept

Then music_exp_inc = 0
    music_lower? = found;


Rule state_exp_higher

If resp_rev_mkt_segments = state_related

Then find state_exp_inc_h
    state_exp_inc = (state_exp_inc_h)
     n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;


Rule state_exp_not_higher

If resp_rev_mkt_segments < > state_related

Then state_exp_inc = 0
    n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;


Rule state_exp_lower

If resp_rev_mkt_segments_1 = state_related

Then find state_exp_inc_1
    state_exp_inc = (0 - state_exp_inc_l)
    state_lower? = found;


Rule state_exp_not_lower

If resp_rev_mkt_segments_1 < > state_related

Then state_exp_inc = 0
    state_lower? = found;



Rule calc_expects_revs

If rev_expectations = unknown

Then rev_expectations = working_on_it
    exp_inc[1] = (public_exp_inc)
    exp_inc[2] = (s_f_s_exp_inc)
    exp_inc[3] = (interdept_exp_inc)
    exp_inc[4] = (music_exp_inc)
    exp_inc[5] = (state_exp_inc)

    wks mil_rev_last_yr, aa12,\vpp\playis
    wks other_rev_last_yr, aa17..aa22,\vpp\playis
    total_rev_last = (mil_rev_last_yr + other_rev_last_yr[6]) !display "total_rev_last = {total_rev_last} ¬"
    mil_rev_exp = (((mil_rev_last_yr/total_rev_last) * budget_rev[2]) + mil_exp_inc) !display "mil_rev_exp = {mil_rev_exp} ¬"
    x = 1
    whiletrue x < 6  then

     ex[x] = (((other_rev_last_yr[x]/total_rev_last) * budget_rev[2]) + exp_inc[x])

      x = (x+1)
    end

!display "mil_rev_exp = {mil_rev_exp)" !display "ex[1] = {ex[1])" !display "ex[2] = {ex[2])" !display "ex[3] = {ex[3])" !display "ex[4] =
{ex[4])" !display "ex[5] = {ex[5]) ¬"

    public_rev_exp = (ex[1])
    s_f_s_rev_exp = (ex[2])
    interdept_rev_exp = (ex[3])
    music_rev_exp = (ex[4])
    state_rev_exp = (ex[5])

    x = 1
    whiletrue x < = 12 then
      exp_corps_rev[x] = ((old_corps_rev[x] / old_corps_rev[1]) * mil_rev_exp)
```

```
    exp_public_rev[x] = ((old_public_rev[x] / old_public_rev[1]) * public_rev_exp)
    exp_s_f_s_rev[x] = ((old_s_f_s_rev[x] / old_s_f_s_rev[1]) * s_f_s_rev_exp)
    exp_interdept_rev[x] = ((old_interdept_rev[x] / old_interdept_rev[1]) * interdept_rev_exp)
    exp_music_rev[x] = ((old_music_rev[x] / old_music_rev[1]) * music_rev_exp)
    exp_state_rev[x] = ((old_state_rev[x] / old_state_rev[1]) * state_rev_exp)
    exp_total_rev1[x] = (exp_corps_rev[x] + exp_public_rev[x] + exp_s_f_s_rev[x] + exp_interdept_rev[x])
    exp_total_rev[x] = (exp_total_rev1[x] + exp_music_rev[x] + exp_state_rev[x])


    x = (x + 1)
  end ; !display "exp_corps_rev[1] = {exp_corps_rev[1]}" !display "exp_public_rev[1] = {exp_public_rev[1]}" !display "exp_s_f_s_rev[1]
= {exp_s_f_s_rev[1]}" !display "exp_interdept_rev[1] = {exp_interdept_rev[1]}" !display "exp_music_rev[1] = {exp_music_rev[1]}" !display
"exp_state_rev[1] = {exp_state_rev[1]} ¬" ! !display "exp_corps_rev[5] = {exp_corps_rev[5]}" !display "exp_public_rev[5] =
{exp_public_rev[5]}" !display "exp_s_f_s_rev[5] = {exp_s_f_s_rev[5]}" !display "exp_interdept_rev[5] = {exp_interdept_rev[5]}" !display
"exp_music_rev[5] = {exp_music_rev[5]}" !display "exp_state_rev[5] = {exp_state_rev[5]} ¬"

!display "exp_corps_rev[12] = {exp_corps_rev[12]}" !display "exp_public_rev[12] = {exp_public_rev[12]}" !display "exp_s_f_s_rev[12] =
{exp_s_f_s_rev[12]}" !display "exp_interdept_rev[12] = {exp_interdept_rev[12]}" !display "exp_music_rev[12] = {exp_music_rev[12]}" !dis-
play "exp_state_rev[12] = {exp_state_rev[12]} ¬";

Rule go_find_this_yrs_data_1

If count_it = 1

Then new_actual_values = found
    wks new_corps_rev,b12,\vpp\playis
    wks new_public_rev,b17,\vpp\playis
    wks new_s_f_s_rev,b18,\vpp\playis
    wks new_interdept_rev,b19,\vpp\playis
    wks new_music_rev,b20,\vpp\playis
    wks new_state_rev,b21,\vpp\playis
    wks new_personal,b34,\vpp\playis
    wks new_contract,b45,\vpp\playis
    wks new_s_&_m,b52,\vpp\playis
    wks new_contin,b60,\vpp\playis
    wks new_uniforms,b13,\vpp\playis
    wks new_oper_exp,b62,\vpp\playis
    wks new_corps_costs,b66,\vpp\playis
    wks new_public_costs,b68,\vpp\playis
    wks new_s_f_s_costs,b69,\vpp\playis
    wks new_interdept_costs,b70,\vpp\playis
    wks new_music_costs,b71,\vpp\playis
    wks new_state_costs,b72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule calc_new_total_costs

If new_total_costs[1] = unknown

Then x = 1

    whiletrue x <= 12 then
      new_total_costs[x] = (new_uniforms[x] + new_oper_exp[x])
      x = (x + 1)
    end

    new_t_costs = found

!display "new_total_costs[1] = {new_total_costs[1]}" !display "new_total_costs[2] = {new_total_costs[2]}" !display "new_total_costs[3] =
{new_total_costs[3]} ¬"; ;

Rule calc_new_total_revenues

If new_total_revs[1] = unknown

Then x = 1

    whiletrue x <= 12 then
      new_total_revs1[x] = (new_corps_rev[x] + new_public_rev[x] + new_s_f_s_rev[x] + new_interdept_rev[x])
      new_total_revs[x] = (new_total_revs1[x] + new_music_rev[x] + new_state_rev[x])
      x = (x + 1)
    end

    new_t_revs = found;


Rule go_find_this_yrs_data_2

If count_it = 2
```

```
Then new_actual_values = found
    wks new_corps_rev,b12..c12,\vpp\playis
    wks new_public_rev,b17..c17,\vpp\playis
    wks new_s_f_s_rev,b18..c18,\vpp\playis
    wks new_interdept_rev,b19..c19,\vpp\playis
    wks new_music_rev,b20..c20,\vpp\playis
    wks new_state_rev,b21..c21,\vpp\playis
    wks new_personal,b34..c34,\vpp\playis
    wks new_contract,b45..c45,\vpp\playis
    wks new_s_&_m,b52..c52,\vpp\playis
    wks new_contin,b60..c60,\vpp\playis
    wks new_uniforms,b13..c13,\vpp\playis
    wks new_oper_exp,b62..c62,\vpp\playis
    wks new_corps_costs,b66..c66,\vpp\playis
    wks new_public_costs,b68..c68,\vpp\playis
    wks new_s_f_s_costs,b69..c69,\vpp\playis
    wks new_interdept_costs,b70..c70,\vpp\playis
    wks new_music_costs,b71..c71,\vpp\playis
    wks new_state_costs,b72..c72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_3

If count_it = 3

Then new_actual_values = found
    wks new_corps_rev,b12..d12,\vpp\playis
    wks new_public_rev,b17..d17,\vpp\playis
    wks new_s_f_s_rev,b18..d18,\vpp\playis
    wks new_interdept_rev,b19..d19,\vpp\playis
    wks new_music_rev,b20..d20,\vpp\playis
    wks new_state_rev,b21..d21,\vpp\playis
    wks new_personal,b34..d34,\vpp\playis
    wks new_contract,b45..d45,\vpp\playis
    wks new_s_&_m,b52..d52,\vpp\playis
    wks new_contin,b60..d60,\vpp\playis
    wks new_uniforms,b13..d13,\vpp\playis
    wks new_oper_exp,b62..d62,\vpp\playis
    wks new_corps_costs,b66..d66,\vpp\playis
    wks new_public_costs,b68..d68,\vpp\playis
    wks new_s_f_s_costs,b69..d69,\vpp\playis
    wks new_interdept_costs,b70..d70,\vpp\playis
    wks new_music_costs,b71..d71,\vpp\playis
    wks new_state_costs,b72..d72,\vpp\playis
    find new_t_revs
    find new_t_costs;


Rule go_find_this_yrs_data_4

If count_it = 4

Then new_actual_values = found
    wks new_corps_rev,b12..e12,\vpp\playis
    wks new_public_rev,b17..e17,\vpp\playis
    wks new_s_f_s_rev,b18..e18,\vpp\playis
    wks new_interdept_rev,b19..e19,\vpp\playis
    wks new_music_rev,b20..e20,\vpp\playis
    wks new_state_rev,b21..e21,\vpp\playis
    wks new_personal,b34..e34,\vpp\playis
    wks new_contract,b45..e45,\vpp\playis
    wks new_s_&_m,b52..e52,\vpp\playis
    wks new_contin,b60..e60,\vpp\playis
    wks new_uniforms,b13..e13,\vpp\playis
    wks new_oper_exp,b62..e62,\vpp\playis
    wks new_corps_costs,b66..e66,\vpp\playis
    wks new_public_costs,b68..e68,\vpp\playis
    wks new_s_f_s_costs,b69..e69,\vpp\playis
    wks new_interdept_costs,b70..e70,\vpp\playis
    wks new_music_costs,b71..e71,\vpp\playis
    wks new_state_costs,b72..e72,\vpp\playis
    find new_t_revs
    find new_t_costs;


Rule go_find_this_yrs_data_5

If count_it = 5
```

```
Then new_actual_values = found
    wks new_corps_rev,b12..f12,\vpp\playis
    wks new_public_rev,b17..f17,\vpp\playis
    wks new_s_f_s_rev,b18..f18,\vpp\playis
    wks new_interdept_rev,b19..f19,\vpp\playis
    wks new_music_rev,b20..f20,\vpp\playis
    wks new_state_rev,b21..f21,\vpp\playis
    wks new_personal,b34..f34,\vpp\playis
    wks new_contract,b45..f45,\vpp\playis
    wks new_s_&_m,b52..f52,\vpp\playis
    wks new_contin,b60..f60,\vpp\playis
    wks new_uniforms,b13..f13,\vpp\playis
    wks new_oper_exp,b62..f62,\vpp\playis
    wks new_corps_costs,b66..f66,\vpp\playis
    wks new_public_costs,b68..f68,\vpp\playis
    wks new_s_f_s_costs,b69..f69,\vpp\playis
    wks new_interdept_costs,b70..f70,\vpp\playis
    wks new_music_costs,b71..f71,\vpp\playis
    wks new_state_costs,b72..f72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_6

If count_it = 6

Then new_actual_values = found
    wks new_corps_rev,b12..g12,\vpp\playis
    wks new_public_rev,b17..g17,\vpp\playis
    wks new_s_f_s_rev,b18..g18,\vpp\playis
    wks new_interdept_rev,b19..g19,\vpp\playis
    wks new_music_rev,b20..g20,\vpp\playis
    wks new_state_rev,b21..g21,\vpp\playis
    wks new_personal,b34..g34,\vpp\playis
    wks new_contract,b45..g45,\vpp\playis
    wks new_s_&_m,b52..g52,\vpp\playis
    wks new_contin,b60..g60,\vpp\playis
    wks new_uniforms,b13..g13,\vpp\playis
    wks new_oper_exp,b62..g62,\vpp\playis
    wks new_corps_costs,b66..g66,\vpp\playis
    wks new_public_costs,b68..g68,\vpp\playis
    wks new_s_f_s_costs,b69..g69,\vpp\playis
    wks new_interdept_costs,b70..g70,\vpp\playis
    wks new_music_costs,b71..g71,\vpp\playis
    wks new_state_costs,b72..g72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_7

If count_it = 7

Then new_actual_values = found
    wks new_corps_rev,b12..h12,\vpp\playis
    wks new_public_rev,b17..h17,\vpp\playis
    wks new_s_f_s_rev,b18..h18,\vpp\playis
    wks new_interdept_rev,b19..h19,\vpp\playis
    wks new_music_rev,b20..h20,\vpp\playis
    wks new_state_rev,b21..h21,\vpp\playis
    wks new_personal,b34..h34,\vpp\playis
    wks new_contract,b45..h45,\vpp\playis
    wks new_s_&_m,b52..h52,\vpp\playis
    wks new_contin,b60..h60,\vpp\playis
    wks new_uniforms,b13..h13,\vpp\playis
    wks new_oper_exp,b62..h62,\vpp\playis
    wks new_corps_costs,b66..h66,\vpp\playis
    wks new_public_costs,b68..h68,\vpp\playis
    wks new_s_f_s_costs,b69..h69,\vpp\playis
    wks new_interdept_costs,b70..h70,\vpp\playis
    wks new_music_costs,b71..h71,\vpp\playis
    wks new_state_costs,b72..h72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_8

If count_it = 8

Then new_actual_values = found
```

```
    wks new_corps_rev,b12..i12,\vpp\playis
    wks new_public_rev,b17..i17,\vpp\playis
    wks new_s_f_s_rev,b18..i18,\vpp\playis
    wks new_interdept_rev,b19..i19,\vpp\playis
    wks new_music_rev,b20..i20,\vpp\playis
    wks new_state_rev,b21..i21,\vpp\playis
    wks new_personal,b34..i34,\vpp\playis
    wks new_contract,b45..i45,\vpp\playis
    wks new_s_&_m,b52..i52,\vpp\playis
    wks new_contin,b60..i60,\vpp\playis
    wks new_uniforms,b13..i13,\vpp\playis
    wks new_oper_exp,b62..i62,\vpp\playis
    wks new_corps_costs,b66..i66,\vpp\playis
    wks new_public_costs,b68..i68,\vpp\playis
    wks new_s_f_s_costs,b69..i69,\vpp\playis
    wks new_interdept_costs,b70..i70,\vpp\playis
    wks new_music_costs,b71..i71,\vpp\playis
    wks new_state_costs,b72..i72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_9

If count_it = 9

Then new_actual_values = found
    wks new_corps_rev,b12..j12,\vpp\playis
    wks new_public_rev,b17..j17,\vpp\playis
    wks new_s_f_s_rev,b18..j18,\vpp\playis
    wks new_interdept_rev,b19..j19,\vpp\playis
    wks new_music_rev,b20..j20,\vpp\playis
    wks new_state_rev,b21..j21,\vpp\playis
    wks new_personal,b34..j34,\vpp\playis
    wks new_contract,b45..j45,\vpp\playis
    wks new_s_&_m,b52..j52,\vpp\playis
    wks new_contin,b60..j60,\vpp\playis
    wks new_uniforms,b13..j13,\vpp\playis
    wks new_oper_exp,b62..j62,\vpp\playis
    wks new_corps_costs,b66..j66,\vpp\playis
    wks new_public_costs,b68..j68,\vpp\playis
    wks new_s_f_s_costs,b69..j69,\vpp\playis
    wks new_interdept_costs,b70..j70,\vpp\playis
    wks new_music_costs,b71..j71,\vpp\playis
    wks new_state_costs,b72..j72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_10

If count_it = 10

Then new_actual_values = found
    wks new_corps_rev,b12..k12,\vpp\playis
    wks new_public_rev,b17..k17,\vpp\playis
    wks new_s_f_s_rev,b18..k18,\vpp\playis
    wks new_interdept_rev,b19..k19,\vpp\playis
    wks new_music_rev,b20..k20,\vpp\playis
    wks new_state_rev,b21..k21,\vpp\playis
    wks new_personal,b34..k34,\vpp\playis
    wks new_contract,b45..k45,\vpp\playis
    wks new_s_&_m,b52..k52,\vpp\playis
    wks new_contin,b60..k60,\vpp\playis
    wks new_uniforms,b13..k13,\vpp\playis
    wks new_oper_exp,b62..k62,\vpp\playis
    wks new_corps_costs,b66..k66,\vpp\playis
    wks new_public_costs,b68..k68,\vpp\playis
    wks new_s_f_s_costs,b69..k69,\vpp\playis
    wks new_interdept_costs,b70..k70,\vpp\playis
    wks new_music_costs,b71..k71,\vpp\playis
    wks new_state_costs,b72..k72,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_11

If count_it = 11

Then new_actual_values = found
    wks new_corps_rev,b12..l12,\vpp\playis
    wks new_public_rev,b17..l17,\vpp\playis
```

```
    wks new_s_f_s_rev,b18..118,\vpp\playis
    wks new_interdept_rev,b19..119,\vpp\playis
    wks new_music_rev,b20..120,\vpp\playis
    wks new_state_rev,b21..121,\vpp\playis
    wks new_personal,b34..134,\vpp\playis
    wks new_contract,b45..145,\vpp\playis
    wks new_s_&_m,b52..152,\vpp\playis
    wks new_contin,b60..160,\vpp\playis
    wks new_uniforms,b13..113,\vpp\playis
    wks new_oper_exp,b62..162,\vpp\playis
    wks new_corps_costs,b66..166,\vpp\playis
    wks new_public_costs,b68..168,\vpp\playis
    wks new_s_f_s_costs,b69..169,\vpp\playis
    wks new_interdept_costs,b70..170,\vpp\playis
    wks new_music_costs,b71..171,\vpp\playis
    wks new_state_costs,b72..172,\vpp\playis
    find new_t_revs
    find new_t_costs;

Rule go_find_this_yrs_data_12

If count_it = 12

Then new_actual_values = found
    wks new_corps_rev,b12..m12,\vpp\playis
    wks new_public_rev,b17..m17,\vpp\playis
    wks new_s_f_s_rev,b18..m18,\vpp\playis
    wks new_interdept_rev,b19..m19,\vpp\playis
    wks new_music_rev,b20..m20,\vpp\playis
    wks new_state_rev,b21..m21,\vpp\playis
    wks new_personal,b34..m34,\vpp\playis
    wks new_contract,b45..m45,\vpp\playis
    wks new_s_&_m,b52..m52,\vpp\playis
    wks new_contin,b60..m60,\vpp\playis
    wks new_uniforms,b13..m13,\vpp\playis
    wks new_oper_exp,b62..m62,\vpp\playis
    wks new_corps_costs,b66..m66,\vpp\playis
    wks new_public_costs,b68..m68,\vpp\playis
    wks new_s_f_s_costs,b69..m69,\vpp\playis
    wks new_interdept_costs,b70..m70,\vpp\playis
    wks new_music_costs,b71..m71,\vpp\playis
    wks new_state_costs,b72..m72,\vpp\playis
    find new_t_revs
    find new_t_costs;


Rule display_for_which_stmt

If todo = graphics

Then display ' '
    display "Press any key to view the different selections.¬"
    cls
    color = 11
    locate 4,15
    display "Select the number corresponding to the series"
    locate 5,15
    display "of graphs which you would like to see."
    locate 9,20
    display "1  budget versus actual expenses"
    locate 11,20
    display "2  budget versus actual revenues"
    locate 13,20
    display "3  actual revenues versus actual costs"
    locate 14,24
    display "by market segment"
    locate 16,20
    display "4  exit to main menu"

    find stmt_number
    which_stmt = found
    find what_next;


Rule go_to_expgraphs_kbs

If stmt_number = 1

Then what_next = exit_to_expgraphs_kbs
    reset what_next
```

```
    reset which_stmt
    reset stmt_number
    savefacts tempdata !display "i'm about to enter expgraph¬"
    chain expgraph;

Rule go_to_revgraph_kbs

If stmt_number = 2

Then what_next = exit_to_revgraphs_kbs
    reset what_next
    reset which_stmt
    reset stmt_number
    savefacts tempdata !display "i'm about to enter revgraph¬"
    chain revgraph;

Rule go_to_seggraph_kbs

If stmt_number = 3

Then what_next = exit_to_seggraphs_kbs
    reset what_next
    reset which_stmt
    reset stmt_number
    savefacts tempdata !display "i'm about to enter seggraph¬"
    chain seggraph;

Rule go_to_ts_kbs

If stmt_number = 4

Then what_next = exit_to_ts
    reset what_next
    reset which_stmt
    reset stmt_number
    savefacts tempdata
    reset what_next !display "i'm about to enter ts¬"
      bcall eraseit
      chain npts;



!Statements Block

ask resp_rev_mkt_segments: "Which market segments are responsible for contributing more this year to total revenue?"; choices resp_rev_mkt_segments: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;

ask resp_rev_mkt_segments_l: "Which market segments are responsible for contributing less this year to total revenue?"; choices resp_rev_mkt_segments_l: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;


ask mil_exp_inc_h: "How much is military revenue expected to increase?"; range mil_exp_inc_h: 0,1000000;

ask mil_exp_inc_l: "How much is military revenue expected to decrease?"; range mil_exp_inc_l: 0,1000000;

ask public_exp_inc_h: "How much is public revenue expected to increase?"; range public_exp_inc_h: 0,1000000;

ask s_f_s_exp_inc_h: "How much is student/faculty/staff revenue expected to increase?"; range s_f_s_exp_inc_h: 0,1000000;

ask interdept_exp_inc_h: "How much is interdepartmental revenue expected to increase?"; range interdept_exp_inc_h: 0,1000000;

ask music_exp_inc_h: "How much is music department revenue expected to increase?"; range music_exp_inc_h: 0,1000000;

ask state_exp_inc_h: "How much is state related revenue expected to increase?"; range state_exp_inc_h: 0,1000000;


ask public_exp_inc_l: "How much is public revenue expected to decrease?"; range public_exp_inc_l: 0,1000000;

ask s_f_s_exp_inc_l: "How much is student/faculty/staff revenue expected to decrease?"; range s_f_s_exp_inc_l: 0,1000000;

ask interdept_exp_inc_l: "How much is interdepartmental revenue expected to decrease?"; range interdept_exp_inc_l: 0,1000000;

ask music_exp_inc_l: "How much is music department revenue expected to decrease?"; range music_exp_inc_l: 0,1000000;

ask state_exp_inc_l: "How much is state related revenue expected to decrease?"; range state_exp_inc_l: 0,1000000;

ask stmt_number: " "; choices stmt_number: 1,2,3,4;
```

plural: exp_corps_rev, exp_public_rev, exp_s_f_s_rev,exp_personal,exp_contract; plural: exp_s_&_m, exp_contin, exp_uniforms, old_total_costs;

plural: resp_rev_mkt_segments, resp_rev_mkt_segments_l;

bkcolor = 1;

```
execute; endoff; runtime;

actions color = 15 bcall killwi todo = what_if_analysis find what_if_display find get_data locate 18,26 display "Press any key to continue¬" savefacts widata chain whatif1;

!Rules block

Rule what_if_display If todo = what_if_analysis Then color = 11
    what_if_display = found
    locate 1,30 display "WHAT-IF ANALYSIS" locate 3,6 display "In order to see the effects of changes, this section of the expert " display "system allows changes to be made to many of the parameters of importance " display "in the Tailor Shop. For example, it is possible to change the composition" display "of the corps, increase or decrease specific costs and revenues, or " display "eliminate an entire market segment. On the following screen several " display "options will be presented. Although many changes can be made at once, " display "please select the change options one at a time as each option will ask " display "for specifics. After making all of the changes desired, select option 9" display "to perform the analysis. The system will then proceed to a menu where" display "you can choose any of the analyses desired. Note however that this" display "is not the main menu, and therefore, when you want to exit what-if" display "analysis, choose 'return to main menu' from the menu." locate 17,31 display "*** NOTICE ***" locate 19,1 display "Processing is now in progress, please wait until you are told to continue.";

Rule get_necessary_data If get_data = unknown Then get_data = found
    wks bs_this,b1..b14,\vpp\playabbs
    wks is_this,b1..b76,\vpp\playabis
    wks uniforms,b10,\vpp\playcbis
    wks act_equip,b55,\vpp\playcbis
    wks cbis_oper_exp,b56,\vpp\playcbis
    wks cbis_net_income,b57,\vpp\playcbis
    wks cbis_personal,b31,\vpp\playcbis
    wks cbis_corps_rev,b9,\vpp\playcbis
    wks cbis_contract,b41,\vpp\playcbis
    wks cbis_s_&_m,b47,\vpp\playcbis
    wks cbis_contin,b54,\vpp\playcbis
    wks other_rev_wicbis,b14..b18,\vpp\playcbis
    public_wicbis = (other_rev_wicbis[1])
    s_f_s_wicbis = (other_rev_wicbis[2])
    interdept_wicbis = (other_rev_wicbis[3])
    music_wicbis = (other_rev_wicbis[4])
    state_wicbis = (other_rev_wicbis[5])
    cbis_personal_x = (cbis_personal)
    act_equip_x = (act_equip)
    cbis_contract_x = (cbis_contract)
    cbis_s_&_m_x = (cbis_s_&_m)
    cbis_contin_x = (cbis_contin)
    current_year = (bs_this[1])
    total_inv = (bs_this[7])
    new_due_to = (bs_this[12])
    reserves_this = (bs_this[13])
    wks reserves_last,c13,\vpp\playabbs
    t_assets_this = (bs_this[9])
    total_oper_exp = (is_this[64])
    net_income = (is_this[65])
    total_current_value = (bs_this[8])
    t_mil_rev = (is_this[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)
    t_other_rev = (is_this[24])
    t_rev_this = (t_mil_rev + t_other_rev)
    t_personal = (is_this[36])
    wages_gen_wiabis = (is_this[34])
    wages_stud_wiabis = (is_this[35])
    t_wages = (wages_gen_wiabis + wages_stud_wiabis)
    contract_this = (is_this[47])
    s_&_m_this = (is_this[54])
    contin_this = (is_this[62])
    deprec_this = (is_this[63])
    public_rev_this = (is_this[19])
    s_f_s_rev_this = (is_this[20])
    interdept_rev_this = (is_this[21])
    music_rev_this = (is_this[22])
    state_rev_this = (is_this[23])
    corps_cost_this = (is_this[68])
    public_cost_this = (is_this[70])
    s_f_s_cost_this = (is_this[71])
    interdept_cost_this = (is_this[72])
    music_cost_this = (is_this[73])
    state_cost_this = (is_this[74])
```

```
    wks ca,b1..b16,\vpp\playca
    freshmen_number = (ca[8])
    sophomore_number = (ca[9])
    junior_number = (ca[10])
    senior_number = (ca[11])
    freshmen_ca = (ca[3])
    sophomore_ca = (ca[4])
    junior_ca = (ca[5])
    senior_ca = (ca[6])
    reset ca
    wks bud,b1..b29,\vpp\playbud
    rev_bud = (bud[3])
    equip_bud = (bud[5])
    fringes_bud = (bud[7])
    salaries_bud = (bud[8])
    wages_bud = (bud[9])
    uniforms_bud = (bud[29])
    tele_bud = (bud[12])
    r_&_m_bud = (bud[13])
    travel_bud = (bud[14])
    other_contract_bud = (bud[15])
    repair_s_&_m_bud = (bud[18])
    other_s_&_m_bud = (bud[19])
    elect_bud = (bud[22])
    w_&_s_bud = (bud[23])
    agency_charges_bud = (bud[24])
    insure_bud = (bud[25])
    other_contin_bud = (bud[26])
    reset bud
    wks count_it,b4,\vpp\playis
    find monthly_info;

Rule monthly_info_1 If count_it = 1 Then monthly_info = found
    wks corps_rev_wiis,b12,\vpp\playis
    wks corps_rev_old_wiis,c12..n12,\vpp\playis
    wks uniforms_old_wiis,c13..n13,\vpp\playis
    wks uniforms_wiis,b13,\vpp\playis
    wks public_rev_wiis,b17,\vpp\playis
    wks s_f_s_rev_wiis,b18,\vpp\playis
    wks interdept_rev_wiis,b19,\vpp\playis
    wks music_rev_wiis,b20,\vpp\playis
    wks state_rev_wiis,b21,\vpp\playis
    wks wages_gen,b32,\vpp\playis
    wks wages_stud,b33,\vpp\playis
    wks personal_wiis,b34,\vpp\playis
    wks contract_wiis,b45,\vpp\playis
    wks s_&_m_wiis,b52,\vpp\playis
    wks contin_wiis,b60,\vpp\playis
    wks equip_wiis,b61,\vpp\playis
    wks corps_cost_wiis,b66,\vpp\playis
    wks public_cost_wiis,b68,\vpp\playis
    wks s_f_s_cost_wiis,b69,\vpp\playis
    wks interdept_cost_wiis,b70,\vpp\playis
    wks music_cost_wiis,b71,\vpp\playis
    wks state_cost_wiis,b72,\vpp\playis;

Rule monthly_info_2 If count_it = 2 Then monthly_info = found
    wks corps_rev_wiis,b12..c12,\vpp\playis
    wks corps_rev_old_wiis,d12..o12,\vpp\playis
    wks uniforms_old_wiis,d13..o13,\vpp\playis
    wks uniforms_wiis,b13..c13,\vpp\playis
    wks public_rev_wiis,b17..c17,\vpp\playis
    wks s_f_s_rev_wiis,b18..c18,\vpp\playis
    wks interdept_rev_wiis,b19..c19,\vpp\playis
    wks music_rev_wiis,b20..c20,\vpp\playis
    wks state_rev_wiis,b21..c21,\vpp\playis
    wks wages_gen,b32..c32,\vpp\playis
    wks wages_stud,b33..c33,\vpp\playis
    wks personal_wiis,b34..c34,\vpp\playis
    wks contract_wiis,b45..c45,\vpp\playis
    wks s_&_m_wiis,b52..c52,\vpp\playis
    wks contin_wiis,b60..c60,\vpp\playis
    wks equip_wiis,b61..c61,\vpp\playis
    wks corps_cost_wiis,b66..c66,\vpp\playis
    wks public_cost_wiis,b68..c68,\vpp\playis
    wks s_f_s_cost_wiis,b69..c69,\vpp\playis
    wks interdept_cost_wiis,b70..c70,\vpp\playis
    wks music_cost_wiis,b71..c71,\vpp\playis
    wks state_cost_wiis,b72..c72,\vpp\playis;
```

```
Rule monthly_info_3 If count_it = 3 Then monthly_info = found
    wks corps_rev_wiis,b12..d12,\vpp\playis
    wks corps_rev_old_wiis,e12..p12,\vpp\playis
    wks uniforms_old_wiis,e13..p13,\vpp\playis
    wks uniforms_wiis,b13..d13,\vpp\playis
    wks public_rev_wiis,b17..d17,\vpp\playis
    wks s_f_s_rev_wiis,b18..d18,\vpp\playis
    wks interdept_rev_wiis,b19..d19,\vpp\playis
    wks music_rev_wiis,b20..d20,\vpp\playis
    wks state_rev_wiis,b21..d21,\vpp\playis
    wks wages_gen,b32..d32,\vpp\playis
    wks wages_stud,b33..d33,\vpp\playis
    wks personal_wiis,b34..d34,\vpp\playis
    wks contract_wiis,b45..d45,\vpp\playis
    wks s_&_m_wiis,b52..d52,\vpp\playis
    wks contin_wiis,b60..d60,\vpp\playis
    wks equip_wiis,b61..d61,\vpp\playis
    wks corps_cost_wiis,b66..d66,\vpp\playis
    wks public_cost_wiis,b68..d68,\vpp\playis
    wks s_f_s_cost_wiis,b69..d69,\vpp\playis
    wks interdept_cost_wiis,b70..d70,\vpp\playis
    wks music_cost_wiis,b71..d71,\vpp\playis
    wks state_cost_wiis,b72..d72,\vpp\playis;

Rule monthly_info_4 If count_it = 4 Then monthly_info = found
    wks corps_rev_wiis,b12..e12,\vpp\playis
    wks corps_rev_old_wiis,f12..q12,\vpp\playis
    wks uniforms_old_wiis,f13..q13,\vpp\playis
    wks uniforms_wiis,b13..e13,\vpp\playis
    wks public_rev_wiis,b17..e17,\vpp\playis
    wks s_f_s_rev_wiis,b18..e18,\vpp\playis
    wks interdept_rev_wiis,b19..e19,\vpp\playis
    wks music_rev_wiis,b20..e20,\vpp\playis
    wks state_rev_wiis,b21..e21,\vpp\playis
    wks wages_gen,b32..e32,\vpp\playis
    wks wages_stud,b33..e33,\vpp\playis
    wks personal_wiis,b34..e34,\vpp\playis
    wks contract_wiis,b45..e45,\vpp\playis
    wks s_&_m_wiis,b52..e52,\vpp\playis
    wks contin_wiis,b60..e60,\vpp\playis
    wks equip_wiis,b61..e61,\vpp\playis
    wks corps_cost_wiis,b66..e66,\vpp\playis
    wks public_cost_wiis,b68..e68,\vpp\playis
    wks s_f_s_cost_wiis,b69..e69,\vpp\playis
    wks interdept_cost_wiis,b70..e70,\vpp\playis
    wks music_cost_wiis,b71..e71,\vpp\playis
    wks state_cost_wiis,b72..e72,\vpp\playis;

Rule monthly_info_5 If count_it = 5 Then monthly_info = found
    wks corps_rev_wiis,b12..f12,\vpp\playis
    wks corps_rev_old_wiis,g12..r12,\vpp\playis
    wks uniforms_old_wiis,g13..r13,\vpp\playis
    wks uniforms_wiis,b13..f13,\vpp\playis
    wks public_rev_wiis,b17..f17,\vpp\playis
    wks s_f_s_rev_wiis,b18..f18,\vpp\playis
    wks interdept_rev_wiis,b19..f19,\vpp\playis
    wks music_rev_wiis,b20..f20,\vpp\playis
    wks state_rev_wiis,b21..f21,\vpp\playis
    wks wages_gen,b32..f32,\vpp\playis
    wks wages_stud,b33..f33,\vpp\playis
    wks personal_wiis,b34..f34,\vpp\playis
    wks contract_wiis,b45..f45,\vpp\playis
    wks s_&_m_wiis,b52..f52,\vpp\playis
    wks contin_wiis,b60..f60,\vpp\playis
    wks equip_wiis,b61..f61,\vpp\playis
    wks corps_cost_wiis,b66..f66,\vpp\playis
    wks public_cost_wiis,b68..f68,\vpp\playis
    wks s_f_s_cost_wiis,b69..f69,\vpp\playis
    wks interdept_cost_wiis,b70..f70,\vpp\playis
    wks music_cost_wiis,b71..f71,\vpp\playis
    wks state_cost_wiis,b72..f72,\vpp\playis;

Rule monthly_info_6 If count_it = 6 Then monthly_info = found
    wks corps_rev_wiis,b12..g12,\vpp\playis
    wks corps_rev_old_wiis,h12..s12,\vpp\playis
    wks uniforms_old_wiis,h13..s13,\vpp\playis
    wks uniforms_wiis,b13..g13,\vpp\playis
    wks public_rev_wiis,b17..g17,\vpp\playis
    wks s_f_s_rev_wiis,b18..g18,\vpp\playis
    wks interdept_rev_wiis,b19..g19,\vpp\playis
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    wks music_rev_wiis,b20..g20,\vpp\playis
    wks state_rev_wiis,b21..g21,\vpp\playis
    wks wages_gen,b32..g32,\vpp\playis
    wks wages_stud,b33..g33,\vpp\playis
    wks personal_wiis,b34..g34,\vpp\playis
    wks contract_wiis,b45..g45,\vpp\playis
    wks s_&_m_wiis,b52..g52,\vpp\playis
    wks contin_wiis,b60..g60,\vpp\playis
    wks equip_wiis,b61..g61,\vpp\playis
    wks corps_cost_wiis,b66..g66,\vppiis
    wks public_cost_wiis,b68..g68,\vpp\playis
    wks s_f_s_cost_wiis,b69..g69,\vpp\playis
    wks interdept_cost_wiis,b70..g70,\vpp\playis
    wks music_cost_wiis,b71..g71,\vpp\playis
    wks state_cost_wiis,b72..g72,\vpp\playis;

Rule monthly_info_7 If count_it = 7 Then monthly_info = found
    wks corps_rev_wiis,b12..h12,\vpp\playis
    wks corps_rev_old_wiis,i12..t12,\vpp\playis
    wks uniforms_old_wiis,i13..t13,\vpp\playis
    wks uniforms_wiis,b13..h13,\vpp\playis
    wks public_rev_wiis,b17..h17,\vpp\playis
    wks s_f_s_rev_wiis,b18..h18,\vpp\playis
    wks interdept_rev_wiis,b19..h19,\vpp\playis
    wks music_rev_wiis,b20..h20,\vpp\playis
    wks state_rev_wi,b21..h21,\vpp\playis
    wks wages_gen,b32..h32,\vpp\playis
    wks wages_stud,b33..h33,\vpp\playis
    wks personal_wiis,b34..h34,\vpp\playis
    wks contract_wiis,b45..h45,\vpp\playis
    wks s_&_m_wiis,b52..h52,\vpp\playis
    wks contin_wiis,b60..h60,\vpp\playis
    wks equip_wiis,b61..h61,\vpp\playis
    wks corps_cost_wiis,b66..h66,\vpp\playis
    wks public_cost_wiis,b68..h68,\vpp\playis
    wks s_f_s_cost_wiis,b69..h69,\vpp\playis
    wks interdept_cost_wiis,b70..h70,\vpp\playis
    wks music_cost_wiis,b71..h71,\vpp\playis
    wks state_cost_wiis,b72..h72,\vpp\playis;

Rule monthly_info_8 If count_it = 8 Then monthly_info = found
    wks corps_rev_wiis,b12..i12,\vpp\playis
    wks corps_rev_old_wiis,j12..u12,\vpp\playis
    wks uniforms_old_wiis,j13..u13,\vpp\playis
    wks uniforms_wiis,b13..i13,\vpp\playis
    wks public_rev_wiis,b17..i17,\vpp\playis
    wks s_f_s_rev_wiis,b18..i18,\vpp\playis
    wks interdept_rev_wiis,b19..i19,\vpp\playis
    wks music_rev_wiis,b20..i20,\vpp\playis
    wks state_rev_wiis,b21..i21,\vpp\playis
    wks wages_gen,b32..i32,\vpp\playis
    wks wages_stud,b33..i33,\vpp\playis
    wks personal_wiis,b34..i34,\vpp\playis
    wks contract_wiis,b45..i45,\vpp\playis
    wks s_&_m_wiis,b52..i52,\vpp\playis
    wks contin_wiis,b60..i60,\vpp\playis
    wks equip_wiis,b61..i61,\vpp\playis
    wks corps_cost_wiis,b66..i66,\vpp\playis
    wks public_cost_wiis,b68..i68,\vpp\playis
    wks s_f_s_cost_wiis,b69..i69,\vpp\playis
    wks interdept_cost_wiis,b70..i70,\vpp\playis
    wks music_cost_wiis,b71..i71,\vpp\playis
    wks state_cost_wiis,b72..i72,\vpp\playis;

Rule monthly_info_9 If count_it = 9 Then monthly_info = found
    wks corps_rev_wiis,b12..j12,\vpp\playis
    wks corps_rev_old_wiis,k12..v12,\vpp\playis
    wks uniforms_old_wiis,k13..v13,\vpp\playis
    wks uniforms_wiis,b13..j13,\vpp\playis
    wks public_rev_wiis,b17..j17,\vpp\playis
    wks s_f_s_rev_wiis,b18..j18,\vpp\playis
    wks interdept_rev_wiis,b19..j19,\vpp\playis
    wks music_rev_wiis,b20..j20,\vpp\playis
    wks state_rev_wiis,b21..j21,\vpp\playis
    wks wages_gen,b32..j32,\vpp\playis
    wks wages_stud,b33..j33,\vpp\playis
    wks personal_wiis,b34..j34,\vpp\playis
    wks contract_wiis,b45..j45,\vpp\playis
    wks s_&_m_wiis,b52..j52,\vpp\playis
    wks contin_wiis,b60..j60,\vpp\playis
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    wks equip_wiis,b61..j61,\vpp\playis
    wks corps_cost_wiis,b66..j66,\vpp\playis
    wks public_cost_wiis,b68..j68,\vpp\playis
    wks s_f_s_cost_wiis,b69..j69,\vpp\playis
    wks interdept_cost_wiis,b70..j70,\vpp\playis
    wks music_cost_wiis,b71..j71,\vpp\playis
    wks state_cost_wiis,b72..j72,\vpp\playis;

Rule monthly_info_10 If count_it = 10 Then monthly_info = found
    wks corps_rev_wiis,b12..k12,\vpp\playis
    wks corps_rev_old_wiis,l12..w12,\vpp\playis
    wks uniforms_old_wiis,l13..w13,\vpp\playis
    wks uniforms_wiis,b13..k13,\vpp\playis
    wks public_rev_wiis,b17..k17,\vpp\playis
    wks s_f_s_rev_wiis,b18..k18,\vpp\playis
    wks interdept_rev_wiis,b19..k19,\vpp\playis
    wks music_rev_wiis,b20..k20,\vpp\playis
    wks state_rev_wiis,b21..k21,\vpp\playis
    wks wages_gen,b32..k32,\vpp\playis
    wks wages_stud,b33..k33,\vpp\playis
    wks personal_wiis,b34..k34,\vpp\playis
    wks contract_wiis,b45..k45,\vpp\playis
    wks s_&_m_wiis,b52..k52,\vpp\playis
    wks contin_wiis,b60..k60,\vpp\playis
    wks equip_wiis,b61..k61,\vpp\playis
    wks corps_cost_wiis,b66..k66,\vpp\playis
    wks public_cost_wiis,b68..k68,\vpp\playis
    wks s_f_s_cost_wiis,b69..k69,\vpp\playis
    wks interdept_cost_wiis,b70..k70,\vpp\playis
    wks music_cost_wiis,b71..k71,\vpp\playis
    wks state_cost_wiis,b72..k72,\vpp\playis;

Rule monthly_info_11 If count_it = 11 Then monthly_info = found
    wks corps_rev_wiis,b12..l12,\vpp\playis
    wks corps_rev_old_wiis,m12..x12,\vpp\playis
    wks uniforms_old_wiis,m13..x13,\vpp\playis
    wks uniforms_wiis,b13..l13,\vpp\playis
    wks public_rev_wiis,b17..l17,\vpp\playis
    wks s_f_s_rev_wiis,b18..l18,\vpp\playis
    wks interdept_rev_wiis,b19..l19,\vpp\playis
    wks music_rev_wiis,b20..l20,\vpp\playis
    wks state_rev_wiis,b21..l21,\vpp\playis
    wks wages_gen,b32..l32,\vpp\playis
    wks wages_stud,b33..l33,\vpp\playis
    wks personal_wiis,b34..l34,\vpp\playis
    wks contract_wiis,b45..l45,\vpp\playis
    wks s_&_m_wiis,b52..l52,\vpp\playis
    wks contin_wiis,b60..l60,\vpp\playis
    wks equip_wiis,b61..l61,\vpp\playis
    wks corps_cost_wiis,b66..l66,\vpp\playis
    wks public_cost_wiis,b68..l68,\vpp\playis
    wks s_f_s_cost_wiis,b69..l69,\vpp\playis
    wks interdept_cost_wiis,b70..l70,\vpp\playis
    wks music_cost_wiis,b71..l71,\vpp\playis
    wks state_cost_wiis,b72..l72,\vpp\playis;

Rule monthly_info_12 If count_it = 12 Then monthly_info = found
    wks corps_rev_wiis,b12..m12,\vpp\playis
    wks corps_rev_old_wiis,n12..y12,\vpp\playis
    wks uniforms_old_wiis,n13..y13,\vpp\playis
    wks uniforms_wiis,b13..m13,\vpp\playis
    wks public_rev_wiis,b17..m17,\vpp\playis
    wks s_f_s_rev_wiis,b18..m18,\vpp\playis
    wks interdept_rev_wiis,b19..m19,\vpp\playis
    wks music_rev_wiis,b20..m20,\vpp\playis
    wks state_rev_wiis,b21..m21,\vpp\playis
    wks wages_gen,b32..m32,\vpp\playis
    wks wages_stud,b33..m33,\vpp\playis
    wks personal_wiis,b34..m34,\vpp\playis
    wks contract_wiis,b45..m45,\vpp\playis
    wks s_&_m_wiis,b52..m52,\vpp\playis
    wks contin_wiis,b60..m60,\vpp\playis
    wks equip_wiis,b61..m61,\vpp\playis
    wks corps_cost_wiis,b66..m66,\vpp\playis
    wks public_cost_wiis,b68..m68,\vpp\playis
    wks s_f_s_cost_wiis,b69..m69,\vpp\playis
    wks interdept_cost_wiis,b70..m70,\vpp\playis
    wks music_cost_wiis,b71..m71,\vpp\playis
    wks state_cost_wiis,b72..m72,\vpp\playis;
```

! Statement Block

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5,6,7,8,9,10; ask change_freshmen: "leave this number the same?"; ask change_sophomore: "leave this number the same?"; ask change_junior: "leave this number the same?"; ask change_senior: "leave this number the same?"; choices change_freshmen,change_sophomore,change_junior,change_senior: increase, decrease, same;

ask change_freshmen_number: "By how many?"; ask change_sophomore_number: "By how many?"; ask change_junior_number: "By how many?"; ask change_senior_number: "By how many?";

ask change_freshmen_ca: "you like to increase, decrease or leave this amount the same?"; ask change_sophomore_ca: "you like to increase, decrease or leave this amount the same?"; ask change_junior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_senior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_freshmen_number_ca: "By how much?"; ask change_sophomore_number_ca: "By how much?"; ask change_junior_number_ca: "By how much?"; ask change_senior_number_ca: "By how much?"; choices change_freshmen_ca,change_sophomore_ca,change_junior_ca,change_senior_ca: increase, decrease,same;

ask bag_price_direction: "of uniform items?"; choices bag_price_direction: increase, decrease; ask amount_bag_change: "By how much per cadet?";

ask which_segments: "as many as you like.";

choices which_segments, seg_drops: Public, Student_Fac_Staff, Interdepartmental, Music_Dept, State_Related;

ask public_direction: "Would you like to increase or decrease prices charged to the public?"; ask s_f_s_direction: "Would you like to increase or decrease prices charged to students, faculty, and staff?"; ask interdept_direction: "Would you like to increase or decrease prices charged to other departments?"; ask music_direction: "Would you like to increase or decrease prices charged to the music department?"; ask state_direction: "Would you like to increase or decrease prices charged to state related activities?"; choices public_direction,s_f_s_direction,interdept_direction,music_direction,state_direction: increase, decrease;

ask public_%: "By what percentage? Do not enter as a decimal."; ask s_f_s_%: "By what percentage? Do not enter as a decimal."; ask interdept_%: "By what percentage? Do not enter as a decimal."; ask music_%: "By what percentage? Do not enter as a decimal."; ask state_%: "By what percentage? Do not enter as a decimal."; ask personal_%: "By what percentage? Do not enter as a decimal."; ask contract_%: "By what percentage? Do not enter as a decimal."; ask s_&_m_%: "By what percentage? Do not enter as a decimal."; ask contin_%: "By what percentage? Do not enter as a decimal."; ask equip_%: "By what percentage? Do not enter as a decimal."; ask personal_$: "On an annual basis, how much would you like to change personnel expenses?"; ask contract_$: "On an annual basis, how much would you like to change contractual expenses?"; ask s_&_m_$: "On an annual basis, how much would you like to change supplies & materials?"; ask contin_$: "On an annual basis, how much would you like to change continuous expenses?"; ask equip_$: "On an annual basis, how much would you like to change equipment purchases?";

ask which_expenses: "Choose as many as you like."; choices which_expenses: personnel, contractual, supplies_&_materials, continuous, equipment;

ask personal_direction: "Would you like to increase or decrease personnel expenses?"; ask contract_direction: "Would you like to increase or decrease contractual expenses?"; ask s_&_m_direction: "Would you like to increase or decrease supplies & materials?"; ask contin_direction: "Would you like to increase or decrease continuous expenses?"; ask equip_direction: "Would you like to increase or decrease equipment purchases?"; choices personal_direction,contract_direction,s_&_m_direction,contin_direction,equip_direction: increase, decrease;

ask personal_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contract_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask s_&_m_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contin_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask equip_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices personal_terms,contract_terms,s_&_m_terms,contin_terms,equip_terms: percentage, dollar;

ask which_bud_items: "Choose as many as you like."; choices which_bud_items:revenue,equipment,uniforms,salaries,wages,fringe_benefits,telecommunications,repair_&_maintenance, travel,other_contractual,repair_supplies,other_supplies,electricity,water_&_sewer,agency_charges,insurance,other_continuous;

ask rev_bud_direction: "Would you like to increase or decrease the budget for revenue?"; ask equip_bud_direction: "Would you like to increase or decrease the budget for equipment?"; ask uniforms_bud_direction: "Would you like to increase or decrease the budget for uniforms?"; ask salaries_bud_direction: "Would you like to increase or decrease the budget for salaries?"; ask wages_bud_direction: "Would you like to increase or decrease the budget for wages?"; ask fringes_bud_direction: "Would you like to increase or decrease the budget for fringe benefits?"; ask tele_bud_direction: "Would you like to increase or decrease the budget for telecommunications?"; ask r_&_m_bud_direction: "Would you like to increase or decrease the budget for repairs & maintenance?"; ask travel_bud_direction: "Would you like to increase or decrease the budget for travel?"; ask other_contract_bud_direction: "Would you like to increase or decrease the budget for other contractual expenses?"; ask repair_s_&_m_bud_direction: "Would you like to increase or decrease the budget for repair supplies?"; ask other_s_&_m_bud_direction: "Would you like to increase or decrease the budget for other supplies and maintenance?"; ask elect_bud_direction: "Would you like to increase or decrease the budget for electricity?"; ask w_&_s_bud_direction: "Would you like to increase or decrease the budget for water and sewer?"; ask agency_charges_bud_direction: "Would you like to increase or decrease the budget for agency_charges?"; ask insure_bud_direction: "Would you like to increase or decrease the budget for insurance?"; ask other_contin_bud_direction: "Would you like to increase or decrease the budget for other continuous expenses?";

choices rev_bud_direction,equip_bud_direction,uniforms_bud_direction,salaries_bud_direction: increase,decrease; choices wages_bud_direction,fringes_bud_direction,tele_bud_direction,r_&_m_bud_direction: increase, decrease; choices travel_bud_direction,other_contract_bud_direction,repair_s_&_m_bud_direction: increase,decrease; choices other_s_&_m_bud_direction,elect_bud_direction,w_&_s_bud_direction,agency_charges_bud_direction: increase,decrease; choices insure_bud_direction, other_contin_bud_direction: increase, decrease;

ask bud_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices bud_terms: percentage, dollar;

```
ask bud_%: "By what percentage? Do not enter as a decimal."; ask bud_$: "By how many dollars per year?";

ask seg_drops: "Which market segments should be dropped?";

plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis,
s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;
```

```
endoff; execute; runtime;

actions

color = 15 todo = budget_analysis find beg_display find farse chain npts;

!rules block

Rule beginning_display

If todo = budget_analysis Then beg_display = found
    cls
    locate 1,29
    display "BUDGET ANALYSIS"
    locate 3,6 display "Budget analysis is used to determine whether or not the organiztion's" display "revenues and expenses have been
within budget over time. For the Tailor" display "Shop, a budget is determined in advance for the year. A monthly review" display "of the
budget versus actual data is conducted to determine whether or" display "not the Tailor Shop is operating within its budget. An acceptance
" display "range, which is currently + or - 20% of the expected amount for each" display "revenue and expense category, is used to deter-
mine whether or not each" display "item is within budget." display " ";

Rule tell_user_of_budget_limits If todo = budget_analysis Then find change_limits  ! statement allows user to specify which limits to
change
    find change_limits_costs ! statement allows user to specify limits
    farse = ok
    military_ll_b = 20
    military_ul_b = 20
    public_ll_b = 20
    public_ul_b = 20
    s_f_s_ll_b = 20
    s_f_s_ul_b = 20
    interdept_ll_b = 20
    interdept_ul_b = 20
    music_ll_b = 20
    music_ul_b = 20
    state_ll_b = 20
    state_ul_b = 20
    fringes_ll_b = 20
    salaries_ll_b = 20
    wages_ll_b = 20
    total_personal_ll_b = 20
    tele_ll_b = 20
    R_and_M_ll_b = 20
    travel_ll_b = 20
    other_contract_ll_b = 20
    total_contract_ll_b = 20
    repair_ll_b = 20
    other_s_and_m_ll_b = 20
    total_s_and_m_ll_b = 20
    equip_ll_b = 20
    uniforms_ll_b = 20
    elect_ll_b = 20
    w_and_s_ll_b = 20
    insure_ll_b = 20
    agency_ll_b = 20
    other_contin_ll_b = 20
    total_contin_ll_b = 20
    fringes_ul_b = 20
    salaries_ul_b = 20
    wages_ul_b = 20
    total_personal_ul_b = 20
    tele_ul_b = 20
    R_and_M_ul_b = 20
    travel_ul_b = 20
    other_contract_ul_b = 20
    total_contract_ul_b = 20
    repair_ul_b = 20
    other_s_and_m_ul_b = 20
    total_s_and_m_ul_b = 20
    equip_ul_b = 20
    uniforms_ul_b = 20
    elect_ul_b = 20
    w_and_s_ul_b = 20
    insure_ul_b = 20
    agency_ul_b = 20
    other_contin_ul_b = 20
    total_contin_ul_b = 20
    find change_values ! leads to a series of rules to change or leave limits on revenues
```

```
    find change_values_costs ! leads to rules as above, but for costs
    find explain_rev_budget
    find rev_budget ! leads to a series of rules which get budget and if there
                    ! is a difference, accounts for it through prompts
     reset rev_budget
    find kill_time_display
    find expectations  ! find expected values for all revenue categories
   find cost_expectations ! fill in later
    cls
    display "The calculations are now complete.  Press any key to examine"
    display "the revenue part of the analysis.¬"
    find mil_rev_to_display       ! leads to rules which determine whether or
    find public_rev_to_display    ! not each revenue category is within its
    find s_f_s_rev_to_display     ! limits, and then informs the user
    find interdept_rev_to_display
    find music_rev_to_display
    find state_rev_to_display
    find within_rev_to_display
    cls
    display "The revenue section of budgeting anlaysis is now finished.  Press any"
    display "key to examine the expense section.¬"
    find personal_to_display
    find contract_to_display
    find contin_to_display
    find s_and_m_to_display
    find uniforms_to_display
    find equip_to_display;

Rule display_explanation_and_kill_time If todo = budget_analysis Then kill_time_display = found
    cls
    locate 1,4 display "The following analysis will determine whether or not each revenue and" display "expense category is over budget,
under budget, or within budget (i.e., over," display "under, or within the previously prescribed ranges). In this analysis, if" display "an item
is over or under budget, this will be indicated along with the " display "percentage by which it is over or under budget. The actual and
budget" display "values will not be displayed. Given the annual budget, one must break the" display "budget down into 12 monthly inter-
vals. This is done by using the previous" display "year's actual figures to determine how much of the current year's budget" display "should
have been used thus far in any given month. For categories which" display "provide a fairly steady flow of income or expense (e.g. sala-
ries), any" display "exception is important. For other categories however, the flow of funds" display "may be discontinuous. For example,
most of the revenue from the corps is" display "booked to the Tailor Shop late in the year, while revenue from the music" display "depart-
ment is typically paid twice, once in the fall and once in the" display "spring. Repairs and maintenance will be erratic. For categories such
" display "as these, an early or late payment will appear as an exception."  locate 18,4 display "At this time, calculation of all expected
values is in progress. Please" display "be patient as this takes time. You will be instructed when to continue.";

Rule display_to_explain_rev_budget If todo = budget_analysis Then explain_rev_budget = found
    cls
    locate 3,6 display "The annual budget for the Tailor Shop is determined for revenue in" display "total, and by category for expenses (eg.
personal, continuous, etc.)."  display "In order to determine whether or not revenue is within budget, the" display "budget is first divided
into market segments. Thus, any increase or" display "decrease in the expected revenues must be allocated to one or more of" display "these
revenue segments. If such an increase or decrease does occur," display "you will be asked to determine which segments are responsible for"
display "the change."  display " " display "  ";

Rule current_fringes_lt_lb If act_fringes_this_yr < (lb_fringes) and
  todo = budget_analysis Then personal_to_display = found
    under_lb_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_gt_ub If act_fringes_this_yr > (ub_fringes) and
  todo = budget_analysis Then personal_to_display = found
    over_ub_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_w_in_bounds If act_fringes_this_yr > = (lb_fringes) and
  act_fringes_this_yr < = (ub_fringes) Then personal_to_display = found
    w_in_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_salaries_lt_lb If act_salaries_this_yr < (lb_salaries) Then salaries_to_display = found
    under_lb_personal = salaries;

Rule current_salaries_gt_ub If act_salaries_this_yr > (ub_salaries) Then salaries_to_display = found
    over_ub_personal = salaries;
```

```
Rule current_salaries_w_in_bounds If act_salaries_this_yr > = (lb_salaries) and
  act_salaries_this_yr < = (ub_salaries) Then salaries_to_display = found
    w_in_personal = salaries;

Rule current_wages_lt_lb If act_wages_this_yr < (lb_wages) Then wages_to_display = found
    under_lb_personal = wages;

Rule current_wages_gt_ub If act_wages_this_yr > (ub_wages) Then wages_to_display = found
    over_ub_personal = wages;

Rule current_wages_w_in_bounds If act_wages_this_yr > = (lb_wages) and
  act_wages_this_yr < = (ub_wages) Then wages_to_display = found
    w_in_personal = wages;

Rule total_personal_lt_lb If act_total_personal_this_yr < (lb_total_personal) Then personal_total_to_display = found
    total_personal = under;

Rule total_personal_gt_ub If act_total_personal_this_yr > (ub_total_personal) Then personal_total_to_display = found
    total_personal = over;

Rule total_personal_w_in_bounds If act_total_personal_this_yr > = (lb_total_personal) and
  act_total_personal_this_yr < = (ub_total_personal) Then personal_total_to_display = found
    total_personal = within;

Rule display_total_personal_under If total_personal = under and
  under_lb_personal < > unknown Then actual_display_personal = found
    color = 14
    display ' '
    display "Total Personal expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is (are)
under budget:" display "{under_lb_personal} ¬"
    color = 15;

Rule display_total_personal_over If total_personal = over and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display ' '
    display "Total Personal expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is (are)
over budget:" display "{over_ub_personal} ¬"
    color = 15;

Rule display_total_personal_within If total_personal = within and
  under_lb_personal = unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 10
    display ' '
    display "Personal expenses are all within budget. ¬"
    color = 15;

Rule display_personal_within_w_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display ' '
    display "Total personal expenses are within budget. However, the following are" display "under budget," display "{under_lb_personal}"
display "and the following are over budget," display "{over_ub_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following are" pdisplay "under budget," pdisplay
"{under_lb_personal}" pdisplay "and the following are over budget," pdisplay "{over_ub_personal}"
    color = 15;

Rule display_personal_within_high_outliers If total_personal = within and
  under_lb_personal = unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display ' '
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "{over_ub_personal}"
    color = 15;

Rule display_personal_within_w_low_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 14
    display ' '
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "{under_lb_personal}"
    color = 15;
```

```
!!!!!!!!!!!!!!!!!! contract begins

Rule current_tele_lt_lb If act_tele_this_yr < (lb_tele) and
  todo = budget_analysis Then contract_to_display = found
    under_lb_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_teles_gt_ub If act_tele_this_yr > (ub_tele) and
  todo = budget_analysis Then contract_to_display = found
    over_ub_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_tele_w_in_bounds If act_tele_this_yr > = (lb_tele) and
  act_tele_this_yr < = (ub_tele) Then contract_to_display = found
    w_in_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_R_and_M_lt_lb If act_R_and_M_this_yr < (lb_R_and_M) Then R_and_M_to_display = found
    under_lb_contract = repair_and_maintenance;

Rule current_R_and_M_gt_ub If act_R_and_M_this_yr > (ub_R_and_M) Then R_and_M_to_display = found
    over_ub_contract = repair_and_maintenance;

Rule current_R_and_M_w_in_bounds If act_R_and_M_this_yr > = (lb_R_and_M) and
  act_R_and_M_this_yr < = (ub_R_and_M) Then R_and_M_to_display = found
    w_in_contract = repair_and_maintenance;

Rule current_travel_lt_lb If act_travel_this_yr < (lb_travel) Then travel_to_display = found
    under_lb_contract = travel;

Rule current_travel_gt_ub If act_travel_this_yr > (ub_travel) Then travel_to_display = found
    over_ub_contract = travel;

Rule current_travel_w_in_bounds If act_travel_this_yr > = (lb_travel) and
  act_travel_this_yr < = (ub_travel) Then travel_to_display = found
    w_in_contract = travel;

Rule current_other_contract_lt_lb If act_contract_other_this_yr < (lb_other_contract) Then other_contract_to_display = found
    under_lb_contract = other_contractual;

Rule current_other_contract_gt_ub If act_contract_other_this_yr > (ub_other_contract) Then other_contract_to_display = found
    over_ub_contract = other_contractual;

Rule other_contract_w_in_bounds If act_contract_other_this_yr > = (lb_other_contract) and
  act_contract_other_this_yr < = (ub_other_contract) Then other_contract_to_display = found
    w_in_contract = other_contractual;

Rule total_contract_lt_lb If act_total_contract_this_yr < (lb_total_contract) Then contract_total_to_display = found
    total_contract = under;

Rule total_contract_gt_ub If act_total_contract_this_yr > (ub_total_contract) Then contract_total_to_display = found
    total_contract = over;

Rule total_contract_w_in_bounds If act_total_contract_this_yr > = (lb_total_contract) and
  act_total_contract_this_yr < = (ub_total_contract) Then contract_total_to_display = found
    total_contract = within;

Rule display_total_contract_under If total_contract = under and
  under_lb_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "{under_lb_contract} ¬"
    color = 15;

Rule display_total_contract_over If total_contract = over and
  over_ub_contract < > unknown Then actual_display_contract = found
```

```
    color = 12
    display ' '
    display 'Total contractual expenses are over budget.  This is due to the fact' display 'that the following individual expense item(s) is
(are) over budget:' display '{over_ub_contract} ¬'
    color = 15;

Rule display_total_contract_within If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 10
    display ' '
    display 'Contractual expenses are all within budget. ¬'
    color = 15;

Rule display_contract_within_w_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display 'Total contractual expenses are within budget. However, the following are' display 'under budget,' display
'{under_lb_contract}' display 'and the following are over budget,' display '{over_ub_contract} ¬'
    color = 15;

Rule display_contract_within_high_outliers If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display ' '
    display 'Total contractual expenses are within budget. However, the following' display 'individual expense item(s) are over budget:'
display '{over_ub_contract} ¬'
    color = 15;

Rule display_contract_within_w_low_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 14
    display ' '
    display 'Total contractual expenses are within budget. However, the following' display 'individual expense item(s) are under budget:'
display '{under_lb_contract} ¬'
    color = 15;

!!!!!!!!!!!!!!contin starts


Rule current_elect_lt_lb If act_elect_this_yr < (lb_elect) and
  todo = budget_analysis Then contin_to_display = found
    under_lb_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_gt_ub If act_elect_this_yr > (ub_elect) and
  todo = budget_analysis Then contin_to_display = found
    over_ub_contract = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_w_in_bounds If act_elect_this_yr > = (lb_elect) and
  act_elect_this_yr < = (ub_elect) Then contin_to_display = found
    w_in_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find other_contin_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_w_and_s_lt_lb If act_w_and_s_this_yr < (lb_w_and_s) Then w_and_s_to_display = found
    under_lb_contin = water_and_sewer;

Rule current_w_and_s_gt_ub If act_w_and_s_this_yr > (ub_w_and_s) Then w_and_s_to_display = found
    over_ub_contin = water_and_sewer;
```

```
Rule current_w_and_s_w_in_bounds If act_w_and_s_this_yr > = (lb_w_and_s) and
  act_w_and_s_this_yr < = (ub_w_and_s) Then w_and_s_to_display = found
    w_in_contin = water_and_sewer;

Rule current_insure_lt_lb If act_insure_this_yr < (lb_insure) Then insure_to_display = found
    under_lb_contin = insurance;

Rule current_insure_gt_ub If act_insure_this_yr > (ub_insure) Then insure_to_display = found
    over_ub_contin = insurance;

Rule current_insure_w_in_bounds If act_insure_this_yr > = (lb_insure) and
  act_insure_this_yr < = (ub_insure) Then insure_to_display = found
    w_in_contin = travel;

Rule current_agency_lt_lb If act_agency_this_yr < (lb_agency) Then agency_to_display = found
    under_lb_contin = agency_charges;

Rule current_agency_gt_ub If act_agency_this_yr > (ub_agency) Then agency_to_display = found
    over_ub_contin = agency_charges;

Rule agency_w_in_bounds If act_agency_this_yr > = (lb_agency) and
  act_agency_this_yr < = (ub_agency) Then agency_to_display = found
    w_in_contin = agency;

Rule current_other_contin_lt_lb If act_comp_perp_this_yr < (lb_other_contin) Then other_contin_to_display = found
    under_lb_contin = other_continuous_charges;

Rule current_other_contin_gt_ub If act_comp_perp_this_yr > (ub_other_contin) Then other_contin_to_display = found
    over_ub_contin = computer_peripheral;

Rule other_contin_w_in_bounds If act_comp_perp_this_yr > = (lb_other_contin) and
  act_comp_perp_this_yr < = (ub_other_contin) Then other_contin_to_display = found
    w_in_contin = other;

Rule total_contin_lt_lb If act_total_contin_this_yr < (lb_total_contin) Then contin_total_to_display = found
    total_contin = under;

Rule total_contin_gt_ub If act_total_contin_this_yr > (ub_total_contin) Then contin_total_to_display = found
    total_contin = over;

Rule total_contin_w_in_bounds If act_total_contin_this_yr > = (lb_total_contin) and
  act_total_contin_this_yr < = (ub_total_contin) Then contin_total_to_display = found
    total_contin = within;

Rule display_total_contin_under If total_contin = under and
  under_lb_contin < > unknown Then actual_display_contin = found
    color = 14
    display ' '
    display "Total continuous expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "{under_lb_contin} ¬"
    color = 15;

Rule display_total_contin_over If total_contin = over and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "{over_ub_contin} ¬"
    color = 15;

Rule display_total_contin_within If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin = unknown Then actual_display_contin = found
    color = 10
    display "Continuous expenses are all within budget. ¬"
    color = 15;

Rule display_contin_within_w_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are within budget. However, the following are" display "under budget," display "{under_lb_contin}"
display "and the following are over budget," display "{over_ub_contin} ¬"
    color = 15;

Rule display_contin_within_high_outliers If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
```

```
    display ' '
    display "Total continuous expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "(over_ub_contin) ¬"
    color = 15;

Rule display_contin_within_w_low_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin = unknown Then actual_display_contin = found
    color = 14
    display ' '
    display "Total continuous expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "(under_lb_contin) ¬"
    color = 15;

!!!!!!!!!s & m begins

Rule current_repair_lt_lb If act_repair_this_yr < (lb_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    under_lb_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_gt_ub If act_repair_this_yr > (ub_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    over_ub_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_w_in_bounds If act_repair_this_yr > = (lb_repair) and
  act_repair_this_yr < = (ub_repair) Then s_and_m_to_display = found
    w_in_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_other_s_and_m_lt_lb If act_s_and_m_other_this_yr < (lb_other_s_and_m) Then other_s_and_m_to_display = found
    under_lb_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_M_gt_ub If act_s_and_m_other_this_yr > (ub_other_s_and_m) Then other_s_and_m_to_display = found
    over_ub_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_m_w_in_bounds If act_s_and_m_other_this_yr > = (lb_other_s_and_m) and
  act_s_and_m_other_this_yr < = (ub_other_s_and_m) Then other_s_and_m_to_display = found
    w_in_s_and_m = other_supplies_&_materials;

Rule total_s_and_m_lt_lb If act_total_s_and_m_this_yr < (lb_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = under;

Rule total_s_and_m_gt_ub If act_total_s_and_m_this_yr > (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = over;

Rule total_s_and_m_w_in_bounds If act_total_s_and_m_this_yr > = (lb_total_s_and_m) and
  act_total_s_and_m_this_yr < = (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = within;

Rule display_total_s_and_m_under If total_s_and_m = under and
  under_lb_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 14
    display ' '
    display "Total supplies & materials are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_s_and_m) ¬"
    color = 15;

Rule display_total_s_and_m_over If total_s_and_m = over and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display ' '
    display "Total supplies and materials are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "(over_ub_s_and_m) ¬"
    color = 15;

Rule display_total_s_and_m_within If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 10
    display ' '
    display "Supplies & materials are all within budget. ¬"
    color = 15;
```

```
Rule display_s_and_m_within_w_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display " "
    display "Total supplies and materials are within budget. However, the following are" display "under budget," display
"{under_lb_s_and_m" display "and the following are over budget," display "{over_ub_s_and_m} ¬"
    color = 15;

Rule display_s_and_m_within_high_outliers If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display " "
    display "Total supplies & materials are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_s_and_m} ¬"
    color = 15;

Rule display_s_and_m_within_w_low_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 14
    display " "
    display "Total supplies & materials are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_contin} ¬"
    color = 15;

!!!!!!!!! uniforms begins

Rule current_uniforms_lt_lb If act_uniforms_this_yr < (lb_uniforms) and
  todo = budget_analysis Then uniforms_to_display = found
    under_uniforms = yes
    color = 14
    percent = (((exp_uniforms - act_uniforms_this_yr)/exp_uniforms) * 100)
    format percent, 6.2
    display " "
    display "Expenses for uniforms so far this year are under budget by {percent}%. ¬"
    color = 15;

Rule current_uniforms_gt_ub If act_uniforms_this_yr > (ub_uniforms) and
  todo = budget_analysis Then uniforms_to_display = found
    over_uniforms = yes
     color = 12
     percent = (((act_uniforms_this_yr - exp_uniforms) / exp_uniforms) * 100)
    display " "
    format percent, 6.2
     display "Expenses for uniforms are over budget this year by {percent}%. ¬"
     color = 15;

Rule current_uniforms_w_in_bounds If act_uniforms_this_yr > = (lb_uniforms) and
  act_uniforms_this_yr < = (ub_uniforms) Then uniforms_to_display = found
    w_in_uniforms = yes
    color = 10
    display " "
    display "Expenses for uniforms are within the budgeted amount. ¬"
    color = 15;

Rule current_equip_lt_budget If act_equip_this_yr < (lb_equip) and
  todo = budget_analysis Then equip_to_display = found
    under_equip = yes
    color = 14
    percent = (((exp_equip - act_equip_this_yr)/exp_equip) * 100)
    left = (bud_equip_this_yr - act_equip_this_yr)
    format percent, 6.2
    display " "
    display "Expenses for equipment so far this year are under budget by {percent}%." display "In fact, there is ${left} left in the budget
for equipment. ¬"
    color = 15;

Rule current_equip_gt_ub If act_equips_this_yr > (ub_equip) and
  todo = budget_analysis Then equip_to_display = found
    over_equip = yes
     color = 12
     percent = (((act_equip_this_yr - exp_equip) / exp_equip) * 100)
    actual = (act_equip_this_yr - exp_equip)
    format percent, 6.2
    display " "
     display "Expenses for equipment are over budget this year by {percent}%, i.e., ${actual}. ¬"
     color = 15;
```

```
Rule current_equip_w_in_bounds If act_equip_this_yr > = (lb_equip) and
  act_equip_this_yr < = (ub_equip) Then equip_to_display = found
    w_in_equip = yes
    color = 10
    display " "
    display "Expenses for equipment is within the budgeted amount. ¬ "
    color = 15;

Rule budget_limits_ok If change_limits = no Then military_ll = (military_ll_b)
    military_ul = (military_ul_b)
    public_ll = (public_ll_b)
    public_ul = (public_ul_b)
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b)
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b)
    music_ll = (music_ll_b)
    music_ul = (music_ul_b)
    state_ll = (state_ll_b)
    state_ul = (state_ul_b)
    change_values = found;

Rule budget_limits_not_ok If change_limits = yes Then find which_rev_limits
    find mil_limits
    find public_limits
    find s_f_s_limits
    find interdept_limits
    find music_limits
    find state_limits
    change_values = found;

Rule budget_cost_limits_ok If change_limits_costs = no Then fringes_ll = (fringes_ll_b)
    salaries_ll = (salaries_ll_b)
    wages_ll = (wages_ll_b)
    total_personal_ll = (total_personal_ll_b)
    tele_ll = (tele_ll_b)
    R_and_M_ll = (R_and_M_ll_b)
    travel_ll = (travel_ll_b)
    other_contract_ll = (other_contract_ll_b)
    total_contract_ll = (total_contract_ll_b)
    repair_ll = (repair_ll_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    total_s_and_m_ll = (total_s_and_m_ll_b)
    equip_ll = (equip_ll_b)
    uniforms_ll = (uniforms_ll_b)
    elect_ll = (elect_ll_b)
    w_and_s_ll = (w_and_s_ll_b)
    insure_ll = (insure_ll_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    total_contin_ll = (total_contin_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ul = (salaries_ul_b)
    wages_ul = (wages_ul_b)
    total_personal_ul = (total_personal_ul_b)
    tele_ul = (tele_ul_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ul = (travel_ul_b)
    other_contract_ul = (other_contract_ul_b)
    total_contract_ul = (total_contract_ul_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ul = (other_s_and_m_ul_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    equip_ul = (equip_ul_b)
    uniforms_ul = (uniforms_ul_b)
    elect_ul = (elect_ul_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ul = (insure_ul_b)
    agency_ul = (agency_ul_b)
    other_contin_ul = (other_contin_ul_b)
    total_contin_ul = (total_contin_ul_b)
    change_values_costs = found;

Rule budget_cost_limits_not_ok If change_limits_costs = yes Then find which_cost_limits
    find equip_limits
    find uniforms_limits
    find personal_limits
    find contract_limits
    find s_and_m_limits
```

```
    find contin_limits
    change_values_costs = found;

Rule go_get_rev_budget_data If todo = budget_analysis Then wks budget_rev, b3..c3, \vpp\playbud
    rev_budget = found
    budget_rev_now = (budget_rev[1])
    budget_rev_past = (budget_rev[2])
    diff = (budget_rev_now - budget_rev_past)
    find rev_diff;

Rule rev_budget_same If diff = 0 Then mil_exp_inc = 0
    public_exp_inc = 0
    s_f_s_exp_inc = 0
    interdept_exp_inc = 0
    music_exp_inc = 0
    state_exp_inc = 0
    display "the difference in budgeted revenue is 0!¬" ! delete later!!!!!!!
    rev_diff = found;

Rule rev_budget_higher If diff > 0 Then display "The amount budgeted for revenue this year has increased from the "
    display "previous year by ${diff}. Which market segments are responsible for "
    display "contributing more this year to total revenue? Please make certain that your"
    find resp_rev_mkt_segments  ! statement - determines which segments
                                ! are expected to contribute more this year
    rev_diff = found
    find mil_higher? ! leads to a series of rules which calculate
                     ! changes in expectations
    find check_math;

Rule rev_budget_lower If diff < 0 Then diff = (@abs(diff))
    display "The amount budgeted for revenue this year has decreased from the "
    display "previous year by ${diff}. Which market segments are responsible for"
    display "contributing less this year to total revenue? Please make certain that your"
    find resp_rev_mkt_segments_l  ! statement - determines which segments
                                  ! are expected to contribute less this year
    diff = (0 - diff)
    rev_diff = found
    find mil_lower? ! leads to a series of rules which calculate
                    ! changes in expectations
    find check_math;

Rule military_exp_higher If resp_rev_mkt_segments = military Then find mil_exp_inc_h
    mil_exp_inc = (mil_exp_inc_h)
    mil_higher? = found
    find public_higher?;

Rule military_exp_not_higher If resp_rev_mkt_segments < > military Then mil_exp_inc = 0
    mil_higher? = found
    find public_higher?;

Rule military_exp_lower If resp_rev_mkt_segments_l = military Then find mil_exp_inc_l
    mil_exp_inc = (0 - mil_exp_inc_l)
    mil_lower? = found
    find public_lower?;

Rule military_exp_not_lower If resp_rev_mkt_segments_l < > military Then mil_exp_inc = 0
    mil_lower? = found
    find public_lower?;

Rule public_exp_higher If resp_rev_mkt_segments = public Then find public_exp_inc_h
    public_exp_inc = (public_exp_inc_h)
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_not_higher If resp_rev_mkt_segments < > public Then public_exp_inc = 0
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_lower If resp_rev_mkt_segments_l = public Then find public_exp_inc_l
    public_exp_inc = (0 - public_exp_inc_l)
    public_lower? = found
    find s_f_s_lower?;

Rule public_exp_not_lower If resp_rev_mkt_segments_l < > lower Then public_exp_inc = 0
    public_lower? = found
    find s_f_s_lower?;

Rule s_f_s_exp_higher If resp_rev_mkt_segments = stu_fac_staff Then find s_f_s_exp_inc_h
    s_f_s_exp_inc = (s_f_s_exp_inc_h)
    s_f_s_higher? = found
```

```
    find interdept_higher?;

Rule s_f_s_exp_not_higher If resp_rev_mkt_segments < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_lower If resp_rev_mkt_segments_1 = stu_fac_staff Then find s_f_s_exp_inc_l
    s_f_s_exp_inc = (0 - s_f_s_exp_inc_l)
    s_f_s_lower? = found
    find interdept_lower?;

Rule s_f_s_exp_not_lower If resp_rev_mkt_segments_1 < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_lower? = found
    find interdept_lower?;

Rule interdept_exp_higher If resp_rev_mkt_segments = interdepartmental Then find interdept_exp_inc_h
    interdept_exp_inc = (interdept_exp_inc_h)
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_not_higher If resp_rev_mkt_segments < > interdepartmental Then interdept_exp_inc = 0
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_lower If resp_rev_mkt_segments_1 = interdepartmental Then find interdept_exp_inc_l
    interdept_exp_inc = (0 - interdept_exp_inc_l)
    interdept_lower? = found
    find music_lower?;

Rule interdept_exp_not_lower If resp_rev_mkt_segments_1 < > interdepartmental Then interdept_exp_inc = 0
    interdept_lower? = found
    find music_lower?;

Rule music_exp_higher If resp_rev_mkt_segments = music_dept Then find music_exp_inc_h
    music_exp_inc = (music_exp_inc_h)
    music_higher? = found
    find state_higher?;

Rule music_exp_not_higher If resp_rev_mkt_segments < > music_dept Then music_exp_inc = 0
    music_higher? = found
    find state_higher?;

Rule music_exp_lower If resp_rev_mkt_segments_1 = music_dept Then find music_exp_inc_l
    music_exp_inc = (0 - music_exp_inc_l)
    music_lower? = found
    find state_lower?;

Rule music_exp_not_lower If resp_rev_mkt_segments_1 < > music_dept Then music_exp_inc = 0
    music_lower? = found
    find state_lower?;

Rule state_exp_higher If resp_rev_mkt_segments = state_related Then find state_exp_inc_h
    state_exp_inc = (state_exp_inc_h)
     n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;

Rule state_exp_not_higher If resp_rev_mkt_segments < > state_related Then state_exp_inc = 0
    n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;

Rule state_exp_lower If resp_rev_mkt_segments_1 = state_related Then find state_exp_inc_l
    state_exp_inc = (0 - state_exp_inc_l)
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diff1 = (@abs(diff));

Rule state_exp_not_lower If resp_rev_mkt_segments_1 < > state_related Then state_exp_inc = 0
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diff1 = (@abs(diff));

Rule math_is_ok If diff1 = (n) Then check_math = done;

Rule math_not_ok If diff1 < > (n) Then display "The increments you have given do not add up to the total increment in the"
    display "budget. Therefore, let's start this part over."
    display "Press any key to continue.¬"
```

```
    display ""
    display ""
    reset rev_budget
    reset rev_diff
    reset mil_higher?
    reset public_higher?
    reset s_f_s_higher?
    reset interdept_higher?
    reset music_higher?
    reset state_higher?
    reset mil_lower?
    reset public_lower?
    reset s_f_s_lower?
    reset interdept_lower?
    reset music_lower?
    reset state_lower?
    reset mil_exp_inc_h
    reset public_exp_inc_h
    reset s_f_s_exp_inc_h
    reset interdept_exp_inc_h
    reset music_exp_inc_h
    reset state_exp_inc_h
    reset mil_exp_inc_l
    reset public_exp_inc_l
    reset s_f_s_exp_inc_l
    reset interdept_exp_inc_l
    reset music_exp_inc_l
    reset state_exp_inc_l
    reset mil_exp_inc
    reset public_exp_inc
    reset s_f_s_exp_inc
    reset interdept_exp_inc
    reset music_exp_inc
    reset state_exp_inc
    reset resp_rev_mkt_segments
    reset resp_rev-mkt_segments_l
    reset farse
    reset display_clause
    reset change_limits
    reset change_values
    check_math = done
    reset check_math
    find rev_diff;

Rule find_military_limits If which_rev_limits = military Then display "What percentage below expected should the lower limit be for
military revenue?"
    find military_ll
    display "What percentage above expected should the upper limit be for military revenue?"
    find military_ul
    mil_limits = found;

Rule dont_find_military_limits If which_rev_limits < > military Then mil_limits = found
    military_ll = (military_ll_b)
    military_ul = (military_ul_b);

Rule find_public_limits If which_rev_limits = public Then display "What percentage below expected should the lower limit be for revenue
from the public? Please do not use decimals."
    find public_ll
    display "What percentage above expected should the upper limit be for revenue from the public? Please do not use decimals."
    find public_ul
    public_limits = found;

Rule dont_find_public_limits If which_rev_limits < > public Then public_limits = found
    public_ll = (public_ll_b)
    public_ul = (public_ul_b);

Rule find_s_f_s_limits If which_rev_limits = stu_fac_staff Then display "What percentage below expected should the lower limit be for
revenue from students, faculty, and staff? Please do not use decimals."
    find s_f_s_ll
    display "What percentage above expected should the upper limit be for revenue from students, faculty, and staff? Please do not use
decimals."
    find s_f_s_ul
    s_f_s_limits = found;

Rule dont_find_s_f_s_limits If which_rev_limits < > stu_fac_staff Then s_f_s_limits = found
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b);

Rule find_interdept_limits If which_rev_limits = interdepartmental Then display "What percentage below expected should the lower limit
be for interdepartmental revenue? Please do not use decimals."
```

```
    find interdept_ll
    display "What percentage above expected should the upper limit be for interdepartmental revenue? Please do not use decimals."
    find interdept_ul
    interdept_limits = found;

Rule dont_find_interdept_limits If which_rev_limits < > interdepartmental Then interdept_limits = found
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b);

Rule find_music_limits If which_rev_limits = music_dept Then display "What percentage below expected should the lower limit be for
music department revenue? Please do not use decimals."
    find music_ll
    display "What percentage above expected should the upper limit be for music department revenue? Please do not use decimals."
    find music_ul
    music_limits = found;

Rule dont_find_music_limits If which_rev_limits < > music_dept Then music_limits = found
    music_ll = (music_ll_b)
    music_ul = (music_ul_b);

Rule find_state_limits If which_rev_limits = state_related Then display "What percentage below expected should the lower limit be for state
related revenue? Please do not use decimals."
    find state_ll
    display "What percentage above expected should the upper limit be for state related revenue? Please do not use decimals."
    find state_ul
    state_limits = found;

Rule dont_find_state_limits If which_rev_limits < > state_related Then state_limits = found
    state_ll = (state_ll_b)
    state_ul = (state_ul_b);

Rule find_equip_limits If which_cost_limits = equipment Then display "What percentage below expected should the lower limit be for
equipment purchases? Please do not use decimals."
    find equip_ll
    display "What percentage above expected should the upper limit be for equipment purchases? Please do not use decimals."
    find equip_ul
    equip_limits = found;

Rule dont_find_equip_limits If which_cost_limits < > equipment Then equip_limits = found
    equip_ll = (equip_ll_b)
    equip_ul = (equip_ul_b);

Rule find_uniform_limits If which_cost_limits = uniforms Then display "What percentage below expected should the lower limit be for
uniform purchases? Please do not use decimals."
    find uniforms_ll
    display "What percentage above expected should the upper limit be for uniform purchases? Please do not use decimals."
    find uniforms_ul
    uniforms_limits = found;

Rule dont_find_uniform_limits If which_cost_limits < > uniforms Then uniforms_limits = found
    uniforms_ll = (uniforms_ll_b)
    uniforms_ul = (uniforms_ul_b);

Rule find_personal_limits If which_cost_limits = personal Then display "What percentage below expected should the lower limit be for
personal expenses? Please do not use decimals."
    find total_personal_ll
    display "What percentage above expected should the upper limit be for personal expenses? Please do not use decimals."
    find total_personal_ul
    personal_limits = found
    find finish_personal_limits;

Rule dont_find_personal_limits If which_cost_limits < > personal Then personal_limits = found
    total_personal_ll = (total_personal_ll_b)
    total_personal_ul = (total_personal_ul_b)
    fringes_ll = (fringes_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ll = (salaries_ll_b)
    salaries_ul = (salaries_ul_b)
    wages_ll = (wages_ll_b)
    wages_ul = (wages_ul_b);

Rule make_all_personal_limits_same   ! simplifying assumption If todo = budget_analysis            ! within any category, the upper
                                     ! and lower limits considered to Then fringes_ll = (total_personal_ll)  ! be acceptable are the same.
    fringes_ul = (total_personal_ul)  ! It was felt that placing one
    salaries_ll = (total_personal_ll) ! set of limits on salaries and
    salaries_ul = (total_personal_ul) ! another on wages, for example,
    wages_ll = (total_personal_ll)    ! would be highly unlikely
    wages_ul = (total_personal_ul)
    finish_personal_limits = done;
```

```
Rule find_contract_limits If which_cost_limits = contractual Then display "What percentage below expected should the lower limit be for
contractual expenses? Please do not use decimals."
    find total_contract_ll
    display "What percentage above expected should the upper limit be for contractual expenses? Please do not use decimals."
    find total_contract_ul
    contract_limits = found
    find finish_contract_limits;

Rule dont_find_contract_limits If which_cost_limits < > contractual Then contract_limits = found
    total_contract_ll = (total_contract_ll_b)
    total_contract_ul = (total_contract_ul_b)
    tele_ll = (tele_ll_b)
    tele_ul = (tele_ul_b)
    R_and_M_ll = (R_and_M_ll_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ll = (travel_ll_b)
    travel_ul = (travel_ul_b)
    other_contract_ll = (other_contract_ll_b)
    other_contract_ul = (other_contract_ul_b);

Rule make_all_contract_limits_same If todo = budget_analysis Then tele_ll = (total_contract_ll)
    tele_ul = (total_contract_ul)
    R_and_M_ll = (total_contract_ll)
    R_and_M_ul = (total_contract_ul)
    travel_ll = (total_contract_ll)
    travel_ul = (total_contract_ul)
    other_contract_ll = (total_contract_ll)
    other_contract_ul = (total_contract_ul)
    finish_contract_limits = done;

Rule find_s_and_m_limits If which_cost_limits = supplies_materials Then display "What percentage below expected should the lower limit
be for supplies & materials? Please do not use decimals."
    find total_s_and_m_ll
    display "What percentage above expected should the upper limit be for supplies & materials? Please do not use decimals."
    find total_s_and_m_ul
    s_and_m_limits = found
    find finish_s_and_m_limits;

Rule dont_find_s_and_m_limits If which_cost_limits < > supplies_materials Then s_and_m_limits = found
    total_s_and_m_ll = (total_s_and_m_ll_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    repair_ll = (repair_ll_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    other_s_and_m_ul = (other_s_and_m_ul_b);

Rule make_all_s_and_m_limits_same If todo = budget_analysis Then repair_ll = (total_s_and_m_ll)
    repair_ul = (total_s_and_m_ul)
    other_s_and_m_ll = (total_s_and_m_ll)
    other_s_and_m_ul = (total_s_and_m_ul)
    finish_s_and_m_limits = done;

Rule find_contin_limits If which_cost_limits = continuous Then display "What percentage below expected should the lower limit be for
continuous expenses? Please do not use decimals."
    find total_contin_ll
    display "What percentage above expected should the upper limit be for continuous expenses? Please do not use decimals."
    find total_contin_ul
    contin_limits = found
    find finish_contin_limits;

Rule dont_find_contin_limits If which_cost_limits < > continuous Then contin_limits = found
    total_contin_ll = (total_contin_ll_b)
    total_contin_ul = (total_contin_ul_b)
    elect_ll = (elect_ll_b)
    elect_ul = (elect_ul_b)
    w_and_s_ll = (w_and_s_ll_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ll = (insure_ll_b)
    insure_ul = (insure_ul_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    other_contin_ul = (other_contin_ul_b)
    agency_ul = (agency_ul_b);

Rule make_all_contin_limits_same If todo = budget_analysis Then elect_ll = (total_contin_ll)
    elect_ul = (total_contin_ul)
    w_and_s_ll = (total_contin_ll)
    w_and_s_ul = (total_contin_ul)
    insure_ll = (total_contin_ll)
    insure_ul = (total_contin_ul)
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    agency_ll = (total_contin_ll)
    other_contin_ll = (total_contin_ll)
    agency_ul = (total_contin_ul)
    other_contin_ul = (total_contin_ul)
    finish_contin_limits = done;

Rule calc_expects_&_bounds_revs If todo = budget_analysis Then exp_inc[1] = (public_exp_inc)
    exp_inc[2] = (s_f_s_exp_inc)
    exp_inc[3] = (interdept_exp_inc)
    exp_inc[4] = (music_exp_inc)
    exp_inc[5] = (state_exp_inc)
    ll[1] = (public_ll)
    ul[1] = (public_ul)
    ll[2] = (s_f_s_ll)
    ul[2] = (s_f_s_ul)
    ll[3] = (interdept_ll)
    ul[3] = (interdept_ul)
    ll[4] = (music_ll)
    ul[4] = (music_ul)
    ll[5] = (state_ll)
    ul[5] = (state_ul)
    wks mil_rev_this_yr, b12,\vpp\playis
    wks mil_rev_last_yr, n12,\vpp\playis
    wks other_rev_last_yr, n17..n21,\vpp\playis
    wks other_rev_this_yr, b17..b21,\vpp\playis
    mil_rev_exp = (mil_rev_last_yr +((mil_rev_last_yr/budget_rev[2])*mil_exp_inc))
    lb_mil = (mil_rev_exp * (1 - (military_ll/100)))
    ub_mil = (mil_rev_exp * (1 + (military_ul/100)))
    x = 1
    whiletrue x < 6  then
      ex[x] = (other_rev_last_yr[x] + ((other_rev_last_yr[x]/budget_rev[2])*exp_inc[x]))
      lb[x] = (ex[x] * (1 - (ll[x] / 100)))
      ub[x] = (ex[x] * (1 + (ul[x] / 100)))
      x = (x + 1)
    end
    expectations = found;

Rule calc_expects_and_bounds_costs If todo = budget_analysis Then wks bud_equip_this_yr, b5,\vpp\playbud
    wks bud_equip_last_yr, c5,\vpp\playbud
    wks bud_personal_this_yr, b7..b10,\vpp\playbud
    wks bud_personal_last_yr, c7..c10,\vpp\playbud
    bud_fringes_this_yr = (bud_personal_this_yr[1])
    bud_salaries_this_yr = (bud_personal_this_yr[2])
    bud_wages_this_yr = (bud_personal_this_yr[3])
    bud_total_personal_this_yr = (bud_personal_this_yr[4])
    bud_fringes_last_yr = (bud_personal_last_yr[1])
    bud_salaries_last_yr = (bud_personal_last_yr[2])
    bud_wages_last_yr = (bud_personal_last_yr[3])
    bud_total_personal_last_yr = (bud_personal_last_yr[4])
    wks bud_contract_this_yr, b12..b16,\vpp\playbud
    wks bud_contract_last_yr, c12..c16,\vpp\playbud
    bud_tele_this_yr = (bud_contract_this_yr[1])
    bud_R_and_M_this_yr = (bud_contract_this_yr[2])
    bud_travel_this_yr = (bud_contract_this_yr[3])
    bud_contract_other_this_yr = (bud_contract_this_yr[4])
    bud_total_contract_this_yr = (bud_contract_this_yr[5])
    bud_tele_last_yr = (bud_contract_last_yr[1])
    bud_R_and_M_last_yr = (bud_contract_last_yr[2])
    bud_travel_last_yr = (bud_contract_last_yr[3])
    bud_contract_other_last_yr = (bud_contract_last_yr[4])
    bud_total_contract_last_yr = (bud_contract_last_yr[5])
    wks bud_s_and_m_this_yr, b18..b20,\vpp\playbud
    wks bud_s_and_m_last_yr, c18..c20,\vpp\playbud
    bud_repair_this_yr = (bud_s_and_m_this_yr[1])
    bud_s_and_m_other_this_yr = (bud_s_and_m_this_yr[2])
    bud_total_s_and_m_this_yr = (bud_s_and_m_this_yr[3])
    bud_repair_last_yr = (bud_s_and_m_last_yr[1])
    bud_s_and_m_other_last_yr = (bud_s_and_m_last_yr[2])
    bud_total_s_and_m_last_yr = (bud_s_and_m_last_yr[3])
    wks bud_contin_this_yr, b22..b27,\vpp\playbud
    wks bud_contin_last_yr, c22..c27,\vpp\playbud
    bud_elect_this_yr = (bud_contin_this_yr[1])
    bud_w_and_s_this_yr = (bud_contin_this_yr[2])
    bud_agency_this_yr = (bud_contin_this_yr[3])
    bud_insure_this_yr = (bud_contin_this_yr[4])
    bud_contin_other_this_yr = (bud_contin_this_yr[5])
    bud_total_contin_this_yr = (bud_contin_this_yr[6])
    bud_elect_last_yr = (bud_contin_last_yr[1])
    bud_w_and_s_last_yr = (bud_contin_last_yr[2])
    bud_agency_last_yr = (bud_contin_last_yr[3])
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bud_insure_last_yr = (bud_contin_last_yr[4])
bud_contin_other_last_yr = (bud_contin_last_yr[5])
bud_total_contin_last_yr = (bud_contin_last_yr[6])
wks bud_uniforms_this_yr, b29,\vpp\playbud
wks bud_uniforms_last_yr, c29,\vpp\playbud
wks act_personal_this_yr, b26..b34,\vpp\playis
wks act_personal_last_yr, n26..n34,\vpp\playis
act_fringes_this_yr_a = (act_personal_this_yr[1] + act_personal_this_yr[2] + act_personal_this_yr[3])
act_fringes_this_yr_b = (act_personal_this_yr[4] + act_personal_this_yr[5])
act_fringes_this_yr = (act_fringes_this_yr_a + act_fringes_this_yr_b)
act_salaries_this_yr = (act_personal_this_yr[6])
act_wages_this_yr = (act_personal_this_yr[7] + act_personal_this_yr[8])
act_total_personal_this_yr = (act_personal_this_yr[9])
act_fringes_last_yr_a = (act_personal_last_yr[1] + act_personal_last_yr[2] + act_personal_last_yr[3])
act_fringes_last_yr_b = (act_personal_last_yr[4] + act_personal_last_yr[5])
act_fringes_last_yr = (act_fringes_last_yr_a + act_fringes_last_yr_b)
act_salaries_last_yr = (act_personal_last_yr[6])
act_wages_last_yr = (act_personal_last_yr[7] + act_personal_last_yr[8])
act_total_personal_last_yr = (act_personal_last_yr[9])
wks act_contract_this_yr, b36..b45,\vpp\playis
wks act_contract_last_yr, n36..n45,\vpp\playis
act_tele_this_yr = (act_contract_this_yr[1])
act_R_and_M_this_yr = (act_contract_this_yr[2])
act_travel_this_yr = (act_contract_this_yr[9])
act_contract_other_this_yr_a = (act_contract_this_yr[3] + act_contract_this_yr[4] + act_contract_this_yr[5])
act_contract_other_this_yr_b = (act_contract_this_yr[6] + act_contract_this_yr[7] + act_contract_this_yr[8])
act_contract_other_this_yr = (act_contract_other_this_yr_a + act_contract_other_this_yr_b)
act_total_contract_this_yr = (act_contract_this_yr[10])
act_tele_last_yr = (act_contract_last_yr[1])
act_R_and_M_last_yr = (act_contract_last_yr[2])
act_travel_last_yr = (act_contract_last_yr[9])
act_contract_other_last_yr_a = (act_contract_last_yr[3] + act_contract_last_yr[4] + act_contract_last_yr[5])
act_contract_other_last_yr_b = (act_contract_last_yr[6] + act_contract_last_yr[7] + act_contract_last_yr[8])
act_contract_other_last_yr = (act_contract_other_last_yr_a + act_contract_other_last_yr_b)
act_total_contract_last_yr = (act_contract_last_yr[10])
wks act_s_and_m_this_yr, b47..b52,\vpp\playis
wks act_s_and_m_last_yr, n47..n52,\vpp\playis
act_repair_this_yr = (act_s_and_m_this_yr[4] + act_s_and_m_this_yr[5])
act_s_and_m_other_this_yr = (act_s_and_m_this_yr[1] + act_s_and_m_this_yr[2] + act_s_and_m_this_yr[3])
act_total_s_and_m_this_yr = (act_s_and_m_this_yr[6])
act_repair_last_yr = (act_s_and_m_last_yr[4] + act_s_and_m_last_yr[5])
act_s_and_m_other_last_yr = (act_s_and_m_last_yr[1] + act_s_and_m_last_yr[2] + act_s_and_m_last_yr[3])
act_total_s_and_m_last_yr = (act_s_and_m_last_yr[6])
wks act_contin_this_yr, b54..b60,\vpp\playis
wks act_contin_last_yr, n54..n60,\vpp\playis
act_elect_this_yr = (act_contin_this_yr[1])
act_w_and_s_this_yr = (act_contin_this_yr[2])
act_insure_this_yr = (act_contin_this_yr[3] + act_contin_this_yr[6])
act_agency_this_yr = (act_contin_this_yr[4])
act_comp_perp_this_yr = (act_contin_this_yr[5])
act_total_contin_this_yr = (act_contin_this_yr[7])
act_elect_last_yr = (act_contin_last_yr[1])
act_w_and_s_last_yr = (act_contin_last_yr[2])
act_insure_last_yr = (act_contin_last_yr[3] + act_contin_last_yr[6])
act_agency_last_yr = (act_contin_last_yr[4])
act_comp_perp_last_yr = (act_contin_last_yr[5])
act_total_contin_last_yr = (act_contin_last_yr[7])
wks act_equip_this_yr, b61,\vpp\playis
wks act_equip_last_yr, n61,\vpp\playis
wks act_uniforms_this_yr, b13,\vpp\playis
wks act_uniforms_last_yr, n13,\vpp\playis
exp_equip = ((act_equip_last_yr / bud_equip_last_yr) * bud_equip_this_yr)
exp_fringes = ((act_fringes_last_yr / bud_fringes_last_yr) * bud_fringes_this_yr)
exp_salaries = ((act_salaries_last_yr / bud_salaries_last_yr) * bud_salaries_this_yr)
exp_wages = ((act_wages_last_yr / bud_wages_last_yr) * bud_wages_this_yr)
exp_total_personal = ((act_total_personal_last_yr / bud_total_personal_last_yr) * bud_total_personal_this_yr)
exp_tele = ((act_tele_last_yr / bud_tele_last_yr) * bud_tele_this_yr)
exp_R_and_M = ((act_R_and_M_last_yr / bud_R_and_M_last_yr) * bud_R_and_M_this_yr)
exp_travel = ((act_travel_last_yr / bud_travel_last_yr) * bud_travel_this_yr)
exp_contract_other = ((act_contract_other_last_yr / bud_contract_other_last_yr) * bud_contract_other_this_yr)
exp_total_contract = ((act_total_contract_last_yr / bud_total_contract_last_yr) * bud_total_contract_this_yr)
exp_repair = ((act_repair_last_yr / bud_repair_last_yr) * bud_repair_this_yr)
exp_s_and_m_other = ((act_s_and_m_other_last_yr / bud_s_and_m_other_last_yr) * bud_s_and_m_other_this_yr)
exp_total_s_and_m = ((act_total_s_and_m_last_yr / bud_total_s_and_m_last_yr) * bud_total_s_and_m_this_yr)
exp_elect = ((act_elect_last_yr / bud_elect_last_yr) * bud_elect_this_yr)
exp_w_and_s = ((act_w_and_s_last_yr / bud_w_and_s_last_yr) * bud_w_and_s_this_yr)
exp_agency = ((act_agency_last_yr / bud_agency_last_yr) * bud_agency_this_yr)
exp_other_contin = ((act_comp_perp_last_yr / bud_contin_other_last_yr) * bud_contin_other_this_yr)
exp_insure = ((act_insure_last_yr / bud_insure_last_yr) * bud_insure_this_yr)
exp_total_contin = ((act_total_contin_last_yr / bud_total_contin_last_yr) * bud_total_contin_this_yr)
```

```
    exp_uniforms = ((act_uniforms_last_yr / bud_uniforms_last_yr) * bud_uniforms_this_yr)
    lb_fringes = (exp_fringes * (1 - (fringes_ll/100)))
    ub_fringes = (exp_fringes * (1 + (fringes_ul/100)))
    lb_salaries = (exp_salaries * (1 - (salaries_ll/100)))
    ub_salaries = (exp_salaries * (1 + (salaries_ul/100)))
    lb_wages = (exp_wages * (1 - (wages_ll/100)))
    ub_wages = (exp_wages * (1 + (wages_ul/100)))
    lb_total_personal = (exp_total_personal * (1 - (total_personal_ll/100)))
    ub_total_personal = (exp_total_personal * (1 + (total_personal_ul/100)))
    lb_tele = (exp_tele * (1 - (tele_ll/100)))
    ub_tele = (exp_tele * (1 + (tele_ul/100)))
    lb_R_and_M = (exp_R_and_M * (1 - (R_and_M_ll/100)))
    ub_R_and_M = (exp_R_and_M * (1 + (R_and_M_ul/100)))
    lb_travel = (exp_travel * (1 - (travel_ll/100)))
    ub_travel = (exp_travel * (1 + (travel_ul/100)))
    lb_other_contract = (exp_contract_other * (1 - (other_contract_ll/100)))
    ub_other_contract = (exp_contract_other * (1 + (other_contract_ul/100)))
    lb_total_contract = (exp_total_contract * (1 - (total_contract_ll/100)))
    ub_total_contract = (exp_total_contract * (1 + (total_contract_ul/100)))
    lb_repair = (exp_repair * (1 - (repair_ll/100)))
    ub_repair = (exp_repair * (1 + (repair_ul/100)))
    lb_other_s_and_m = (exp_s_and_m_other * (1 - (other_s_and_m_ll/100)))
    ub_other_s_and_m = (exp_s_and_m_other * (1 + (other_s_and_m_ul/100)))
    lb_total_s_and_m = (exp_total_s_and_m * (1 - (total_s_and_m_ll/100)))
    ub_total_s_and_m = (exp_total_s_and_m * (1 + (total_s_and_m_ul/100)))
    lb_equip = (exp_equip * (1 - (equip_ll/100)))
    ub_equip = (exp_equip * (1 + (equip_ul/100)))
    lb_uniforms = (exp_uniforms * (1 - (uniforms_ll/100)))
    ub_uniforms = (exp_uniforms * (1 + (uniforms_ul/100)))
    lb_elect = (exp_elect * (1 - (elect_ll/100)))
    ub_elect = (exp_elect * (1 + (elect_ul/100)))
    lb_w_and_s = (exp_w_and_s * (1 - (w_and_s_ll/100)))
    ub_w_and_s = (exp_w_and_s * (1 + (w_and_s_ul/100)))
    lb_insure = (exp_insure * (1 - (insure_ll/100)))
    ub_insure = (exp_insure * (1 + (insure_ul/100)))
    lb_agency = (exp_agency * (1 - (agency_ll/100)))
    lb_other_contin = (exp_other_contin * (1 - (other_contin_ll/100)))
    ub_agency = (exp_agency * (1 + (agency_ul/100)))
    ub_other_contin = (exp_other_contin * (1 + (other_contin_ul/100)))
    lb_total_contin = (exp_total_contin * (1 - (total_contin_ll/100)))
    ub_total_contin = (exp_total_contin * (1 + (total_contin_ul/100)))
    cost_expectations = found;


Rule current_public_lt_lb If other_rev_this_yr[1] < (lb[1]) Then public_rev_to_display = under
    find public_display;

Rule current_public_gt_ub If other_rev_this_yr[1] > (ub[1]) Then public_rev_to_display = over
    find public_display;

Rule current_public_w_in_bounds If other_rev_this_yr[1] > = (lb[1]) and
  other_rev_this_yr[1] < = (ub[1]) Then public_rev_to_display = within
    within_budget = public;


Rule display_public_under If public_rev_to_display = under Then percent = (((ex[1] - other_rev_this_yr[1]) / ex[1]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is (percent)% less than expected.¬"
    display " "
    color = 15
    public_display = done;

Rule display_public_over If public_rev_to_display = over Then percent = (((other_rev_this_yr[1] - ex[1]) / ex[1]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    color = 15
    public_display = done;

Rule current_s_f_s_lt_lb If other_rev_this_yr[2] < (lb[2]) Then s_f_s_rev_to_display = under
    find s_f_s_display;

Rule current_s_f_s_gt_ub If other_rev_this_yr[2] > (ub[2]) Then s_f_s_rev_to_display = over
    find s_f_s_display;

Rule current_s_f_s_w_in_bounds If other_rev_this_yr[2] > = (lb[2]) and
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  other_rev_this_yr[2] < = (ub[2]) Then s_f_s_rev_to_display = within
    within_budget = stu_fac_staff;

Rule display_s_f_s_under If s_f_s_rev_to_display = under Then percent = (((ex[2] - other_rev_this_yr[2]) / ex[2]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% less than expected.¬"
    display " "
    color = 15
    s_f_s_display = done;

Rule display_s_f_s_over If s_f_s_rev_to_display = over Then percent = (((other_rev_this_yr[2] - ex[2]) / ex[2]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% more than expected.¬"
    display " "
    color = 15
    s_f_s_display = done;

Rule current_interdept_lt_lb If other_rev_this_yr[3] < (lb[3]) Then interdept_rev_to_display = under
    find interdept_display;

Rule current_interdept_gt_ub If other_rev_this_yr[3] > (ub[3]) Then interdept_rev_to_display = over
    find interdept_display;

Rule current_interdept_w_in_bounds If other_rev_this_yr[3] > = (lb[3]) and
  other_rev_this_yr[3] < = (ub[3]) Then interdept_rev_to_display = within
    within_budget = interdepartmental;

Rule display_public_under If interdept_rev_to_display = under Then percent = (((ex[3] - other_rev_this_yr[3]) / ex[3]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from other departments so far"
    display "this year is (percent)% less than expected.¬"
    display " "
    color = 15
    interdept_display = done;

Rule interdept_public_over If interdept_rev_to_display = over Then percent = (((other_rev_this_yr[3] - ex[3]) / ex[3]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from other departments so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    color = 15
    interdept_display = done;

Rule music_public_lt_lb If other_rev_this_yr[4] < (lb[4]) Then music_rev_to_display = under
    find music_display;

Rule current_music_gt_ub If other_rev_this_yr[4] > (ub[4]) Then music_rev_to_display = over
    find music_display;

Rule current_music_w_in_bounds If other_rev_this_yr[4] > = (lb[4]) and
  other_rev_this_yr[4] < = (ub[4]) Then music_rev_to_display = within
    within_budget = music;

Rule display_music_under If music_rev_to_display = under Then percent = (((ex[4] - other_rev_this_yr[4]) / ex[4]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is (percent)% less than expected.¬"
    display " "
    color = 15
    music_display = done;

Rule display_music_over If music_rev_to_display = over Then percent = (((other_rev_this_yr[4] - ex[4]) / ex[4]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    color = 15
    music_display = done;

Rule current_state_lt_lb If other_rev_this_yr[5] < (lb[5]) Then state_rev_to_display = under
    find state_display;
```

```
Rule current_state_gt_ub If other_rev_this_yr[5] > (ub[5]) Then state_rev_to_display = over
    find state_display;

Rule current_state_w_in_bounds If other_rev_this_yr[5] > = (lb[5]) and
  other_rev_this_yr[5] < = (ub[5]) Then state_rev_to_display = within
    within_budget = state;

Rule display_state_under If state_rev_to_display = under Then percent = (((ex[5] - other_rev_this_yr[5]) / ex[5]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from state related activities so far"
    display "this year is {percent}% less than expected.¬"
    display " "
    color = 15
    state_display = done;

Rule display_state_over If state_rev_to_display = over Then percent = (((other_rev_this_yr[5] - ex[5]) / ex[5]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from state related activities so far"
    display "this year is {percent}% more than expected.¬"
    display " "
    color = 15
    state_display = done;

Rule current_mil_lt_lb If mil_rev_this_yr < (lb_mil) Then mil_rev_to_display = under
    find mil_display;

Rule current_mil_gt_ub If mil_rev_this_yr > (ub_mil) Then mil_rev_to_display = over
    find mil_display;

Rule current_mil_w_in_bounds If mil_rev_this_yr > = (lb_mil) and
  mil_rev_this_yr < = (ub_mil) Then mil_rev_to_display = within
    within_budget = the_corps;

Rule display_mil_under If mil_rev_to_display = under Then percent = (((mil_rev_exp - mil_rev_this_yr) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 12
    display " "
    display "The revenue collected from the corps so far"
    display "this year is {percent}% less than expected.¬"
    display " "
    color = 15
    mil_display = done;

Rule display_mil_over If mil_rev_to_display = over Then percent = (((mil_rev_this_yr - mil_rev_exp) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 10
    display " "
    display "The revenue collected from the corps so far"
    display "this year is {percent}% more than expected.¬"
    display " "
    color = 15
    mil_display = done;

Rule none_w_in_budget If within_budget = unknown Then within_rev_to_display = found;

Rule display_those_w_in_budget If todo = budget_analysis Then within_rev_to_display = found
    display " "
    color = 14
    display "The following revenue categories are within budget:"
      display "{within_budget}"
    color = 15
    display "   ¬";


!statements block

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis;

ask change_limits:"Would you like to change any of these ranges for the revenue categories?"; choices change_limits: no, yes;

ask change_limits_costs:"Would you like to change any of these ranges for the expense categories?"; choices change_limits_costs: no,yes;

ask which_rev_limits: "Which revenue limits would you like to change?"; choices which_rev_limits: military, public, stu_fac_staff,
interdepartmental,music_dept, state_related;

ask which_cost_limits: "Which expense category limits would you like to change?"; choices which_cost_limits: equipment, uniforms, per-
sonal, contractual, supplies_materials, continuous;
```

```
ask military_ll: "Please do not use decimals."; ask military_ul: "Please do not use decimals.";

range military_ll: 1,100; range military_ul: 1,100;

ask s_f_s_ul: ""; ask s_f_s_ll: "";

range s_f_s_ll: 1,100; range s_f_s_ul: 1,100;

ask public_ul: ""; ask public_ll: "";

range public_ll: 1,100; range public_ul: 1,100;

ask interdept_ul: ""; ask interdept_ll: "";

range interdept_ll: 1,100; range interdept_ul: 1,100;

ask music_ul: ""; ask music_ll: "";

range music_ll: 1,100; range music_ul: 1,100;

ask state_ul: ""; ask state_ll: "";

range state_ll: 1,100; range state_ul: 1,100;

ask equip_ll: ""; ask equip_ul: "";

range equip_ll: 1,100; range equip_ul: 1,100;

ask uniforms_ll: ""; ask uniforms_ul: "";

range uniforms_ll: 1,100; range uniforms_ul: 1,100;

ask total_personal_ll: ""; ask total_personal_ul: "";

range total_personal_ll: 1,100; range total_personal_ul: 1,100;

ask total_contract_ll: ""; ask total_contract_ul: "";

range total_contract_ll: 1,100; range total_contract_ul: 1,100;

ask total_s_and_m_ll: ""; ask total_s_and_m_ul: "";

range total_s_and_m_ll: 1,100; range total_s_and_m_ul: 1,100;

ask total_contin_ll: ""; ask total_contin_ul: "";

range total_contin_ll: 1,100; range total_contin_ul: 1,100;

ask resp_rev_mkt_segments: "input adds up to ${diff}."; choices resp_rev_mkt_segments: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;

ask resp_rev_mkt_segments_l: "input adds up to ${diff}."; choices resp_rev_mkt_segments_l: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;

ask mil_exp_inc_h: "How much is military revenue expected to increase?"; range mil_exp_inc_h: 0,1000000;

ask mil_exp_inc_l: "How much is military revenue expected to decrease?"; range mil_exp_inc_l: 0,1000000;

ask public_exp_inc_h: "How much is public revenue expected to increase?"; range public_exp_inc_h: 0,1000000;

ask s_f_s_exp_inc_h: "How much is student/faculty/staff revenue expected to increase?"; range s_f_s_exp_inc_h: 0,1000000;

ask interdept_exp_inc_h: "How much is interdepartmental revenue expected to increase?"; range interdept_exp_inc_h: 0,1000000;

ask music_exp_inc_h: "How much is music department revenue expected to increase?"; range music_exp_inc_h: 0,1000000;

ask state_exp_inc_h: "How much is state related revenue expected to increase?"; range state_exp_inc_h: 0,1000000;

ask public_exp_inc_l: "How much is public revenue expected to decrease?"; range public_exp_inc_l: 0,1000000;

ask s_f_s_exp_inc_l: "How much is student/faculty/staff revenue expected to decrease?"; range s_f_s_exp_inc_l: 0,1000000;

ask interdept_exp_inc_l: "How much is interdepartmental revenue expected to decrease?"; range interdept_exp_inc_l: 0,1000000;

ask music_exp_inc_l: "How much is music department revenue expected to decrease?"; range music_exp_inc_l: 0,1000000;
```

```
ask state_exp_inc_l: "How much is state related revenue expected to decrease?"; range state_exp_inc_l: 0,1000000;


plural:within_budget, over_budget, under_budget, which_rev_limits, resp_rev_mkt_segments, resp_rev_mkt_segments_l; plural:exp_inc, ll,
ul,lb,ub,ex,other_rev_last_yr,bud_personal; plural:bud_contract, bud_s_and_m, bud_contin_this_yr,act_personal, act_contract;
plural:act_s_and_m, act_contin, which_cost_limits,under_lb_personal; plural:over_ub_personal, w_in_personal,
over_ub_contract,under_lb_contract; plural:w_in_contract,over_ub_contin, under_lb_contin, w_in_contin;
plural:w_in_s_and_m,over_ub_s_and_m, under_lb_s_and_m;

bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 todo = trend_statements find trend_display find get_data locate 18,25 display "Press any key to continue¬" !find
which_stmt cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end ;

Rule trend_display If todo = trend_statements Then color = 11
    trend_display = found
    locate 2,30 display "TREND STATEMENTS" locate 5,6 display "Trend statements are the financial statements of several years," dis-
play "expressed as percentages of one of those years. For purposes of this" display "analysis, the base year chosen is the first year in the
series. For each" display "year, the dollar value of each item is divided by the dollar value of the" display "corresponding item in the base
year. This results in a value which is in" display "terms of the percentage of the base year. From these statements, trends" display "over
time can be seen. For the statements which follow, any trend of more" display "than 5% increase per year in expenses or 5% decrease per
year in revenues" display "is displayed in red. Likewise, any trend of more than 5% increase per " display "year in revenue or 5% decrease
per year in cost is displayed in yellow." display "Processing is currently in progress, you will be instructed when to" display "continue.";

Rule get_necessary_data If get_data = unknown Then get_data = found
    wks bs_this,b1..b14,\vpp\playabbs
    wks bs_last,c1..c14,\vpp\playabbs
    wks bs_2_ago,d1..d14,\vpp\playabbs
    wks is_this,b1..b76,\vpp\playabis
    wks is_last,c1..c76,\vpp\playabis
    wks is_2_ago,d1..d76,\vpp\playabis
    wks uniforms,b10..d10,\vpp\playcbis
    wks act_equip,b55..d55,\vpp\playcbis
    wks cbis_oper_exp,b56..d56,\vpp\playcbis
    wks cbis_net_income,b57..d57,\vpp\playcbis
    cash_oper_exp_this = (cbis_oper_exp[1])
    cash_oper_exp_last = (cbis_oper_exp[2])
    cash_oper_exp_2 = (cbis_oper_exp[3])
    cash_net_income_this = (cbis_net_income[1])
    cash_net_income_last = (cbis_net_income[2])
    cash_net_income_2 = (cbis_net_income[3])
    t_cash_exp_this = (cash_oper_exp_this + act_unif_this)
    t_cash_exp_last = (cash_oper_exp_last + act_unif_last)
    t_cash_exp_2 = (cash_oper_exp_2 + act_unif_2)
    act_unif_this = (uniforms[1])
    act_unif_last = (uniforms[2])
    act_unif_2 = (uniforms[3])
    act_equip_this = (act_equip[1])
    act_equip_last = (act_equip[2])
    act_equip_2 = (act_equip[3])
    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    reserves_this = (bs_this[13])
    reserves_last = (bs_last[13])
    reserves_2 = (bs_2_ago[13])

    t_assets_this = (bs_this[9])
    t_assets_last = (bs_last[9])
    t_assets_2 = (bs_2_ago[9])
    net_income = (is_this[65])
    net_income_last = (is_last[65])
    net_income_2 = (is_2_ago[65])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])
    t_mil_rev = (is_this[9])
    mil_rev_last = (is_last[9])
    mil_rev_2 = (is_2_ago[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    cost_uniforms_last = (is_last[15])
    cost_uniforms_2 = (is_2_ago[15])
    total_oper_exp_last = (is_last[64])
```

```
    total_oper_exp_2 = (is_2_ago[64])
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)
    t_other_rev = (is_this[24])
    other_rev_last = (is_last[24])
    other_rev_2 = (is_2_ago[24])
    t_rev_this = (t_mil_rev + t_other_rev)
    t_rev_last = (mil_rev_last + other_rev_last)
    t_rev_2 = (mil_rev_2 + other_rev_2)
    t_personal = (is_this[36])
    personal_last = (is_last[36])
    personal_2 = (is_2_ago[36])
    contract_this = (is_this[47])
    contract_last = (is_last[47])
    contract_2 = (is_2_ago[47])
    s_&_m_this = (is_this[54])
    s_&_m_last = (is_last[54])
    s_&_m_2 = (is_2_ago[54])
    contin_this = (is_this[62])
    contin_last = (is_last[62])
    contin_2 = (is_2_ago[62])
    deprec_this = (is_this[63])
    deprec_last = (is_last[63])
    deprec_2 = (is_2_ago[63])
    public_rev_this = (is_this[19])
    s_f_s_rev_this = (is_this[20])
    interdept_rev_this = (is_this[21])
    music_rev_this = (is_this[22])
    state_rev_this = (is_this[23])
    public_rev_last = (is_last[19])
    s_f_s_rev_last = (is_last[20])
    interdept_rev_last = (is_last[21])
    music_rev_last = (is_last[22])
    state_rev_last = (is_last[23])
    public_rev_2 = (is_2_ago[19])
    s_f_s_rev_2 = (is_2_ago[20])
    interdept_rev_2 = (is_2_ago[21])
    music_rev_2 = (is_2_ago[22])
    state_rev_2 = (is_2_ago[23])
    corps_cost_this = (is_this[68])
    public_cost_this = (is_this[70])
    s_f_s_cost_this = (is_this[71])
    interdept_cost_this = (is_this[72])
    music_cost_this = (is_this[73])
    state_cost_this = (is_this[74])
    corps_cost_last = (is_last[68])
    public_cost_last = (is_last[70])
    s_f_s_cost_last = (is_last[71])
    interdept_cost_last = (is_last[72])
    music_cost_last = (is_last[73])
    state_cost_last = (is_last[74])
    corps_cost_2 = (is_2_ago[68])
    public_cost_2 = (is_2_ago[70])
    s_f_s_cost_2 = (is_2_ago[71])
    interdept_cost_2 = (is_2_ago[72])
    music_cost_2 = (is_2_ago[73])
    state_cost_2 = (is_2_ago[74])
    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago
    reset uniforms
    reset act_equip;

Rule display_for_which_stmt If todo = trend_statements Then cls
    color = 11
    locate 3,15
    display "Select the number corresponding to the trend"
    locate 4,15
    display "statements which would like to see."
    locate 7,20
    display "1  accrual based income statements"
    locate 9,20
    display "2  cash based income statements"
    locate 11,20
    display "3  balance sheets"
    locate 13,20
    display "4  market segment revenues and expenses"
```

```
    locate 15,20
    display "5  exit to main menu"
    find stmt_number
    which_stmt = found
    find what_next;

Rule do_abis If stmt_number = 1 then which_stmt = abis
    what_next = abis
    cls
    color = 11
    locate 0,8 display "TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" locate 2,60 display "{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Cost of Uniforms Issued" locate 13,6 display "Personal" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Depreciation" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find abis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find abis_deprec
    find abis_t_exp
    find abis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset abis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset abis_deprec
    reset abis_t_exp
    reset abis_ni;

Rule do_cbis If stmt_number = 2 then which_stmt = cbis
    what_next = cbis
    cls
    color = 11
    locate 0,10 display "TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" locate 2,60 display "{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Uniforms Purchases" locate 13,6 display "Personal" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Equipment" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find cbis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find cbis_equip
    find cbis_t_exp
    find cbis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
```

```
    reset abis_t_rev
    reset cbis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset cbis_equip
    reset cbis_t_exp
    reset cbis_ni;

Rule do_bs If stmt_number = 3 Then which_stmt = bs
    what_next = bs
    cls
    color = 11
    locate 2,23 display "TREND STATEMENTS FOR BALANCE SHEETS" locate 4,65 display "{current_year}" locate 4,55 display
"{last_year}" locate 4,45 display "{year_2_ago}" locate 6,3 display "Current Assets" locate 7,6 display "Inventory" locate 8,3 display "Long
Term Assets" locate 9,6 display "Equipment" locate 10,9 display "Total Assets" locate 12,3 display "Liabilities & Capital" locate 13,6 dis-
play "Cash Basis Loan from " locate 14,8 display "other Auxiliaries" locate 15,6 display "Equity -- Reserves" locate 16,9 display "Total
Liabilities & Captital"
    find bs_inventory
    find bs_equipment
    find bs_total_assets
    find bs_due_from
    find bs_reserves
    reset bs_inventory
    reset bs_equipment
    reset bs_total_assets
    reset bs_due_from
    reset bs_reserves;

Rule do_mkt_seg If stmt_number = 4 then which_stmt = mkt_seg
    what_next = mkt_seg
    cls
    color = 11
    locate 0,12 display "TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenues" locate 5,6 display
"Corps" locate 6,6 display "Public" locate 7,6 display "Students/Faculty/Staff" locate 8,6 display "Interdepartmental" locate 9,6 display
"Music Department" locate 10,6 display "State Related " locate 12,3 display "Expenses" locate 14,6 display "Corps" locate 15,6 display
"Public" locate 16,6 display "Students/Faculty/Staff" locate 17,6 display "Interdepartmental" locate 18,6 display "Music Department" locate
19,6 display "State Related"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find seg_corps_cost
    find seg_public_cost
    find seg_s_f_s_cost
    find seg_interdept_cost
    find seg_music_cost
    find seg_state_cost
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset seg_corps_cost
    reset seg_public_cost
    reset seg_s_f_s_cost
    reset seg_interdept_cost
    reset seg_music_cost
    reset seg_state_cost
    find rev_minus_exp_display;

Rule do_mkt_seg If stmt_number = 4 then rev_minus_exp_display = found
    cls
    color = 11
    locate 3,30 display "TREND STATEMENTS FOR" locate 4,21 display "MARKET SEGMENT REVENUES MINUS EXPENSES"
locate 7,56 display "{current_year}" locate 7,46 display "{last_year}" locate 7,36 display "{year_2_ago}" locate 9,6 display "Corps" locate
10,6 display "Public" locate 11,6 display "Students/Faculty/Staff" locate 12,6 display "Interdepartmental" locate 13,6 display "Music De-
partment" locate 14,6 display "State Related "
    find corps_diff
    find public_diff
    find s_f_s_diff
    find interdept_diff
    find music_diff
    find state_diff
    reset corps_diff
```

```
    reset pub_diff
    reset s_f_s_diff
    reset interdept_diff
    reset music_diff
    reset state_diff
    find display_for_neg;

Rule exit_this_kbs If stmt_number = 5 Then which_stmt = doesnt_matter
    what_next = return
    color = 15
    chain npts;

Rule display_abis_corps If todo = trend_statements Then  abis_corps = found
    trend_mil_rev_last = (mil_rev_last / mil_rev_2)
    trend_mil_rev_this = (t_mil_rev / mil_rev_2)
    x = (trend_mil_rev_last)
    y = (trend_mil_rev_this)
    find rev_color
    locate 4,60
    format trend_mil_rev_this, 5.2
    display "(trend_mil_rev_this)"
    locate 4,50
    format trend_mil_rev_last, 5.2
    display "(trend_mil_rev_last)"
    locate 4,40
    display "1.00"
    reset rev_color;

Rule display_abis_public If todo = trend_statements Then  abis_pub = found
    trend_pub_rev_last = (public_rev_last / public_rev_2)
    trend_pub_rev_this = (public_rev_this / public_rev_2)
    x = (trend_pub_rev_last)
    y = (trend_pub_rev_this)
    find rev_color
    locate 5,60
    format trend_pub_rev_this, 5.2
    display "(trend_pub_rev_this)"
    locate 5,50
    format trend_pub_rev_last, 5.2
    display "(trend_pub_rev_last)"
    locate 5,40
    display "1.00"
    reset rev_color;

Rule display_abis_s_f_s If todo = trend_statements Then  abis_s_f_s = found
    trend_s_f_s_rev_last = (s_f_s_rev_last / s_f_s_rev_2)
    trend_s_f_s_rev_this = (s_f_s_rev_this / s_f_s_rev_2)
    x = (trend_s_f_s_rev_last)
    y = (trend_s_f_s_rev_this)
    find rev_color
    locate 6,60
    format trend_s_f_s_rev_this, 5.2
    display "(trend_s_f_s_rev_this)"
    locate 6,50
    format trend_s_f_s_rev_last, 5.2
    display "(trend_s_f_s_rev_last)"
    locate 6,40
    display "1.00"
    reset rev_color;

Rule display_abis_interdept If todo = trend_statements Then  abis_interdept = found
    trend_interdept_rev_last = (interdept_rev_last / interdept_rev_2)
    trend_interdept_rev_this = (interdept_rev_this / interdept_rev_2)
    x = (trend_interdept_rev_last)
    y = (trend_interdept_rev_this)
    find rev_color
    locate 7,60
    format trend_interdept_rev_this, 5.2
    display "(trend_interdept_rev_this)"
    locate 7,50
    format trend_interdept_rev_last, 5.2
    display "(trend_interdept_rev_last)"
    locate 7,40
    display "1.00"
    reset rev_color;

Rule display_abis_music If todo = trend_statements Then  abis_music = found
    trend_music_rev_last = (music_rev_last / music_rev_2)
    trend_music_rev_this = (music_rev_this / music_rev_2)
    x = (trend_music_rev_last)
```

```
    y = (trend_music_rev_this)
    find rev_color
    locate 8,60
    format trend_music_rev_this, 5.2
    display "{trend_music_rev_this}"
    locate 8,50
    format trend_music_rev_last, 5.2
    display "{trend_music_rev_last}"
    locate 8,40
    display "1.00"
    reset rev_color;

Rule display_abis_state If todo = trend_statements Then abis_state = found
    trend_state_rev_last = (state_rev_last / state_rev_2)
    trend_state_rev_this = (state_rev_this / state_rev_2)
    x = (trend_state_rev_last)
    y = (trend_state_rev_this)
    find rev_color
    locate 9,60
    format trend_state_rev_this, 5.2
    display "{trend_state_rev_this}"
    locate 9,50
    format trend_state_rev_last, 5.2
    display "{trend_state_rev_last}"
    locate 9,40
    display "1.00"
    reset rev_color;

Rule display_abis_t_rev If todo = trend_statements Then abis_t_rev = found
    trend_t_rev_last = (t_rev_last / t_rev_2)
    trend_t_rev_this = (t_rev_this / t_rev_2)
    x = (trend_t_rev_last)
    y = (trend_t_rev_this)
    find rev_color
    locate 10,60
    format trend_t_rev_this, 5.2
    display "{trend_t_rev_this}"
    locate 10,50
    format trend_t_rev_last, 5.2
    display "{trend_t_rev_last}"
    locate 10,40
    display "1.00"
    reset rev_color;

Rule display_abis_cost_uniforms_issued If todo = trend_statements Then abis_uniforms = found
    trend_uniforms_last = (cost_uniforms_last / cost_uniforms_2)
    trend_uniforms_this = (cost_uniforms_this / cost_uniforms_2)
    x = (trend_uniforms_last)
    y = (trend_uniforms_this)
    find cost_color
    locate 12,60
    format trend_uniforms_this, 5.2
    display "{trend_uniforms_this}"
    locate 12,50
    format trend_uniforms_last, 5.2
    display "{trend_uniforms_last}"
    locate 12,40
    display "1.00"
    reset cost_color;

Rule display_cbis_cost_uniforms_issued If stmt_number = 2 Then cbis_uniforms = found
    trend_uniforms_last_c = (act_unif_last / act_unif_2)
    trend_uniforms_this_c = (act_unif_this / act_unif_2)
    x = (trend_uniforms_last_c)
    y = (trend_uniforms_this_c)
    find cost_color
    locate 12,60
    format trend_uniforms_this_c, 5.2
    display "{trend_uniforms_this_c}"
    locate 12,50
    format trend_uniforms_last_c, 5.2
    display "{trend_uniforms_last_c}"
    locate 12,40
    display "1.00"
    reset cost_color;

Rule display_abis_personal If todo = trend_statements Then abis_personal = found
    trend_personal_last = (personal_last / personal_2)
    trend_personal_this = (t_personal / personal_2)
    x = (trend_personal_last)
```

```
    y = (trend_personal_this)
    find cost_color
    locate 13,60
    format trend_personal_this, 5.2
    display "(trend_personal_this)"
    locate 13,50
    format trend_personal_last, 5.2
    display "(trend_personal_last)"
    locate 13,40
    display "1.00"
    reset cost_color;

Rule display_abis_contractual If todo = trend_statements Then  abis_contract = found
    trend_contract_last = (contract_last / contract_2)
    trend_contract_this = (contract_this / contract_2)
    x = (trend_contract_last)
    y = (trend_contract_this)
    find cost_color
    locate 14,60
    format trend_contract_this, 5.2
    display "(trend_contract_this)"
    locate 14,50
    format trend_contract_last, 5.2
    display "(trend_contract_last)"
    locate 14,40
    display "1.00"
    reset cost_color;

Rule display_abis_s_&_m If todo = trend_statements Then  abis_s_&_m = found
    trend_s_&_m_last = (s_&_m_last / s_&_m_2)
    trend_s_&_m_this = (s_&_m_this / s_&_m_2)
    x = (trend_s_&_m_last)
    y = (trend_s_&_m_this)
    find cost_color
    locate 15,60
    format trend_s_&_m_this, 5.2
    display "(trend_s_&_m_this)"
    locate 15,50
    format trend_s_&_m_last, 5.2
    display "(trend_s_&_m_last)"
    locate 15,40
    display "1.00"
    reset cost_color;

Rule display_abis_continuous If todo = trend_statements Then  abis_contin = found
    trend_contin_last = (contin_last / contin_2)
    trend_contin_this = (contin_this / contin_2)
    x = (trend_contin_last)
    y = (trend_contin_this)
    find cost_color
    locate 16,60
    format trend_contin_this, 5.2
    display "(trend_contin_this)"
    locate 16,50
    format trend_contin_last, 5.2
    display "(trend_contin_last)"
    locate 16,40
    display "1.00"
    reset cost_color;

Rule display_abis_depreciation If todo = trend_statements Then  abis_deprec = found
    trend_deprec_last = (deprec_last / deprec_2)
    trend_deprec_this = (deprec_this / deprec_2)
    x = (trend_deprec_last)
    y = (trend_deprec_this)
    find cost_color
    locate 17,60
    format trend_deprec_this, 5.2
    display "(trend_deprec_this)"
    locate 17,50
    format trend_deprec_last, 5.2
    display "(trend_deprec_last)"
    locate 17,40
    display "1.00"
    reset cost_color;

Rule display_cbis_equipment If todo = trend_statements Then  cbis_equip = found
    trend_equip_last = (act_equip_last / act_equip_2)
    trend_equip_this = (act_equip_this / act_equip_2)
    x = (trend_equip_last)
```

```
    y = (trend_equip_this)
    find cost_color
    locate 17,60
    format trend_equip_this, 5.2
    display "{trend_equip_this}"
    locate 17,50
    format trend_equip_last, 5.2
    display "{trend_equip_last}"
    locate 17,40
    display "1.00"
    reset cost_color;

Rule display_abis_t_expenses If todo = trend_statements Then abis_t_exp = found
    trend_t_expenses_last = (t_expenses_last / t_expenses_2)
    trend_t_expenses_this = (t_expenses / t_expenses_2)
    x = (trend_t_expenses_last)
    y = (trend_t_expenses_this)
    find cost_color
    locate 18,60
    format trend_t_expenses_this, 5.2
    display "{trend_t_expenses_this}"
    locate 18,50
    format trend_t_expenses_last, 5.2
    display "{trend_t_expenses_last}"
    locate 18,40
    display "1.00"
    reset cost_color;

Rule display_cbis_t_expenses If todo = trend_statements Then cbis_t_exp = found
    trend_t_expenses_last_c = (t_cash_exp_last / t_cash_exp_2)
    trend_t_expenses_this_c = (t_cash_exp_this / t_cash_exp_2)
    x = (trend_t_expenses_last_c)
    y = (trend_t_expenses_this_c)
    find cost_color
    locate 18,60
    format trend_t_expenses_this_c, 5.2
    display "{trend_t_expenses_this_c}"
    locate 18,50
    format trend_t_expenses_last_c, 5.2
    display "{trend_t_expenses_last_c}"
    locate 18,40
    display "1.00"
    reset cost_color;

Rule display_abis_net_income If todo = trend_statements Then abis_ni = found
    trend_net_income_last = (net_income_last / net_income_2)
    trend_net_income_this = (net_income / net_income_2)
    x = (trend_net_income_last)
    y = (trend_net_income_this)
    find rev_color
    locate 19,60
    format trend_net_income_this, 5.2
    display "{trend_net_income_this}"
    locate 19,50
    format trend_net_income_last, 5.2
    display "{trend_net_income_last}"
    find is_it_neg !     find neg_base
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00-"
    reset rev_color
    reset is_it_neg;

Rule display_that_ni_base_yr_neg

If net_income_2 < 0

Then neg_base = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
```

```
    locate 13,68
    display "negative";


Rule display_cbis_net_income If todo = trend_statements Then  cbis_ni = found
     trend_net_income_last_c = (cash_net_income_last / cash_net_income_2)
     trend_net_income_this_c = (cash_net_income_this / cash_net_income_2)
     x = (trend_net_income_last_c)
     y = (trend_net_income_this_c)
     find rev_color
     locate 19,60
     format trend_net_income_this_c, 5.2
     display "(trend_net_income_this_c)"
     locate 19,50
     format trend_net_income_last_c, 5.2
     display "(trend_net_income_last_c)"
     find is_it_neg_c
!    find neg_base_c
     locate 19,40
     reset rev_color
     find rev_color
     display "1.00¬"
     reset rev_color
     reset is_it_neg_c;

Rule display_that_ni_base_yr_neg

If cash_net_income_2 < 0

Then neg_base_c = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";

Rule is_net_income_negative If net_income < = 0 and
  net_income_last < = 0 and
  net_income_2 < = 0 and
  x > 1.05  and
  y > 1.1025 Then locate 8,68
    color = 15
    display "**  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction"
    locate 19,66
    display "***"
    color = 12                          !!2
     locate 19,60                       !!!this was all added
     format trend_net_income_this, 5.2
     display "(trend_net_income_this)"
     locate 19,50
     format trend_net_income_last, 5.2
     display "(trend_net_income_last)"
     locate 19,40
     display "1.00¬"                    !!
    is_it_neg = no;

Rule is_net_income_negative If cash_net_income_this < = 0 and
  cash_net_income_last < = 0 and
  cash_net_income_2 < = 0 and
  x > 1.05  and
  y > 1.1025 Then locate 8,68
```

```
    color = 15
    display "** note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction"
    locate 19,66
    display "**"
    color = 12
     locate 19,60
     format trend_net_income_this_c, 5.2
     display "(trend_net_income_this_c)"
     locate 19,50
     format trend_net_income_last_c, 5.2
     display "(trend_net_income_last_c)"
     locate 19,40
     display "1.00¬"
    is_it_neg_c = no;


Rule display_bs_inventory If todo = trend_statements Then bs_inventory = found
    trend_inv_rev_last = (last_yr_inventory / inv_2_ago)
    trend_inv_rev_this = (total_inv / inv_2_ago)
    x = (trend_inv_rev_last)
    y = (trend_inv_rev_this)
    find rev_color
    locate 7,65
    format trend_inv_rev_this, 5.2
    display "(trend_inv_rev_this)"
    locate 7,55
    format trend_inv_rev_last, 5.2
    display "(trend_inv_rev_last)"
    locate 7,45
    display "1.00"
    reset rev_color;

Rule display_bs_equipment If todo = trend_statements Then bs_equipment = found
    trend_equip_last = (last_yr_equip_value / equip_2_ago)
    trend_equip_this = (total_current_value / equip_2_ago)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find rev_color
    locate 9,65
    format trend_equip_this, 5.2
    display "(trend_equip_this)"
    locate 9,55
    format trend_equip_last, 5.2
    display "(trend_equip_last)"
    locate 9,45
    display "1.00"
    reset rev_color;

Rule display_bs_due_to_other_ae If todo = trend_statements Then bs_due_from = found
    trend_due_rev_last = (last_yr_due_to / due_to_2_ago)
    trend_due_rev_this = (new_due_to / due_to_2_ago)
    x = (trend_due_rev_last)
    y = (trend_due_rev_this)
    find cost_color
    locate 14,65
    format trend_due_rev_this, 5.2
    display "(trend_due_rev_this)"
    locate 14,55
    format trend_due_rev_last, 5.2
    display "(trend_due_rev_last)"
    locate 14,45
    display "1.00"
    reset cost_color;

Rule display_bs_reserves If todo = trend_statements Then bs_reserves = found
    trend_reserves_last = (reserves_last / reserves_2)
    trend_reserves_this = (reserves_this / reserves_2)
    x = (trend_reserves_last)
    y = (trend_reserves_this)
    find rev_color
```

```
    locate 15,65
    format trend_reserves_this, 5.2
    display "(trend_reserves_this)"
    locate 15,55
    format trend_reserves_last, 5.2
    display "(trend_reserves_last)"
    locate 15,45
    display "1.00¬"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    color = 11
    locate 10,65
    format trend_totals_this, 5.2
    display "(trend_totals_this)"
    locate 10,55
    format trend_totals_last, 5.2
    display "(trend_totals_last)"
    locate 10,45
    display "1.00"
    locate 16,65
    format trend_totals_this, 5.2
    display "(trend_totals_this)"
    locate 16,55
    format trend_totals_last, 5.2
    display "(trend_totals_last)"
    locate 16,45
    display "1.00";

Rule display_seg_corps_cost If todo = trend_statements Then seg_corps_cost = found
    trend_seg_corps_cost_last = (corps_cost_last / corps_cost_2)
    trend_seg_corps_cost_this = (corps_cost_this / corps_cost_2)
    x = (trend_seg_corps_cost_last)
    y = (trend_seg_corps_cost_this)
    find cost_color
    locate 14,60
    format trend_seg_corps_cost_this, 5.2
    display "(trend_seg_corps_cost_this)"
    locate 14,50
    format trend_seg_corps_cost_last, 5.2
    display "(trend_seg_corps_cost_last)"
    locate 14,40
    display "1.00"
    reset cost_color;

Rule display_seg_public_cost If todo = trend_statements Then seg_public_cost = found
    trend_seg_public_cost_last = (public_cost_last / public_cost_2)
    trend_seg_public_cost_this = (public_cost_this / public_cost_2)
    x = (trend_seg_public_cost_last)
    y = (trend_seg_public_cost_this)
    find cost_color
    locate 15,60
    format trend_seg_public_cost_this, 5.2
    display "(trend_seg_public_cost_this)"
    locate 15,50
    format trend_seg_public_cost_last, 5.2
    display "(trend_seg_public_cost_last)"
    locate 15,40
    display "1.00"
    reset cost_color;

Rule display_seg_s_f_s_cost If todo = trend_statements Then seg_s_f_s_cost = found
    trend_seg_s_f_s_cost_last = (s_f_s_cost_last / s_f_s_cost_2)
    trend_seg_s_f_s_cost_this = (s_f_s_cost_this / s_f_s_cost_2)
    x = (trend_seg_s_f_s_cost_last)
    y = (trend_seg_s_f_s_cost_this)
    find cost_color
    locate 16,60
    format trend_seg_s_f_s_cost_this, 5.2
    display "(trend_seg_s_f_s_cost_this)"
    locate 16,50
    format trend_seg_s_f_s_cost_last, 5.2
    display "(trend_seg_s_f_s_cost_last)"
    locate 16,40
    display "1.00"
    reset cost_color;
```

```
Rule display_seg_interdept_cost If todo = trend_statements Then seg_interdept_cost = found
    trend_seg_interdept_cost_last = (interdept_cost_last / interdept_cost_2)
    trend_seg_interdept_cost_this = (interdept_cost_this / interdept_cost_2)
    x = (trend_seg_interdept_cost_last)
    y = (trend_seg_interdept_cost_this)
    find cost_color
    locate 17,60
    format trend_seg_interdept_cost_this, 5.2
    display "{trend_seg_interdept_cost_this}"
    locate 17,50
    format trend_seg_interdept_cost_last, 5.2
    display "{trend_seg_interdept_cost_last}"
    locate 17,40
    display "1.00"
    reset cost_color;

Rule display_seg_music_cost If todo = trend_statements Then seg_music_cost = found
    trend_seg_music_cost_last = (music_cost_last / music_cost_2)
    trend_seg_music_cost_this = (music_cost_this / music_cost_2)
    x = (trend_seg_music_cost_last)
    y = (trend_seg_music_cost_this)
    find cost_color
    locate 18,60
    format trend_seg_music_cost_this, 5.2
    display "{trend_seg_music_cost_this}"
    locate 18,50
    format trend_seg_music_cost_last, 5.2
    display "{trend_seg_music_cost_last}"
    locate 18,40
    display "1.00"
    reset cost_color;

Rule display_seg_state_cost If todo = trend_statements Then seg_state_cost = found
    trend_seg_state_cost_last = (state_cost_last / state_cost_2)
    trend_seg_state_cost_this = (state_cost_this / state_cost_2)
    x = (trend_seg_state_cost_last)
    y = (trend_seg_state_cost_this)
    find cost_color
    locate 19,60
    format trend_seg_state_cost_this, 5.2
    display "{trend_seg_state_cost_this}"
    locate 19,50
    format trend_seg_state_cost_last, 5.2
    display "{trend_seg_state_cost_last}"
    locate 19,40
    display "1.00¬"
    reset cost_color;

Rule display_corps_diff If todo = trend_statements Then corps_diff = found
    corps_diff_this = (t_mil_rev - corps_cost_this)
    corps_diff_last = (mil_rev_last - corps_cost_last)
    corps_diff_2 = (mil_rev_2 - corps_cost_2)
    trend_corps_diff_last = (corps_diff_last / corps_diff_2)
    trend_corps_diff_this = (corps_diff_this / corps_diff_2)
    x = (trend_corps_diff_last)
    y = (trend_corps_diff_this)
    find rev_color
    a = (corps_diff_this)
    b = (corps_diff_last)
    c = (corps_diff_2)
    find neg?
    locate 9,56
    format trend_corps_diff_this, 5.2
    display "{trend_corps_diff_this}"
    locate 9,46
    format trend_corps_diff_last, 5.2
    display "{trend_corps_diff_last}"
    locate 9,36
    display "1.00"
    reset rev_color
    locate 9,62
    display "{neg?}"
    reset neg?;

Rule display_public_diff If todo = trend_statements Then public_diff = found
    public_diff_this = (public_rev_this - public_cost_this)
    public_diff_last = (public_rev_last - public_cost_last)
    public_diff_2 = (public_rev_2 - public_cost_2)
    trend_public_diff_last = (public_diff_last / public_diff_2)
```

```
    trend_public_diff_this = (public_diff_this / public_diff_2)
    x = (trend_public_diff_last)
    y = (trend_public_diff_this)
    find rev_color
    a = (public_diff_this)
    b = (public_diff_last)
    c = (public_diff_2)
    find neg?
    locate 10,56
    format trend_public_diff_this, 5.2
    display "(trend_public_diff_this)"
    locate 10,46
    format trend_public_diff_last, 5.2
    display "(trend_public_diff_last)"
    locate 10,36
    display "1.00"
    reset rev_color
    locate 10,62
    display "(neg?)"
    reset neg?;

Rule display_s_f_s_diff If todo = trend_statements Then s_f_s_diff = found
    s_f_s_diff_this = (s_f_s_rev_this - s_f_s_cost_this)
    s_f_s_diff_last = (s_f_s_rev_last - s_f_s_cost_last)
    s_f_s_diff_2 = (s_f_s_rev_2 - s_f_s_cost_2)
    trend_s_f_s_diff_last = (s_f_s_diff_last / s_f_s_diff_2)
    trend_s_f_s_diff_this = (s_f_s_diff_this / s_f_s_diff_2)
    x = (trend_s_f_s_diff_last)
    y = (trend_s_f_s_diff_this)
    find rev_color
    a = (s_f_s_diff_this)
    b = (s_f_s_diff_last)
    c = (s_f_s_diff_2)
    find neg?
    locate 11,56
    format trend_s_f_s_diff_this, 5.2
    display "(trend_s_f_s_diff_this)"
    locate 11,46
    format trend_s_f_s_diff_last, 5.2
    display "(trend_s_f_s_diff_last)"
    locate 11,36
    display "1.00"
    reset rev_color
    locate 11,62
    display "(neg?)"
    reset neg?;

Rule display_interdept_diff If todo = trend_statements Then interdept_diff = found
    interdept_diff_this = (interdept_rev_this - interdept_cost_this)
    interdept_diff_last = (interdept_rev_last - interdept_cost_last)
    interdept_diff_2 = (interdept_rev_2 - interdept_cost_2)
    trend_interdept_diff_last = (interdept_diff_last / interdept_diff_2)
    trend_interdept_diff_this = (interdept_diff_this / interdept_diff_2)
    x = (trend_interdept_diff_last)
    y = (trend_interdept_diff_this)
    find rev_color
    a = (interdept_diff_this)
    b = (interdept_diff_last)
    c = (interdept_diff_2)
    find neg?
    locate 12,56
    format trend_interdept_diff_this, 5.2
    display "(trend_interdept_diff_this)"
    locate 12,46
    format trend_interdept_diff_last, 5.2
    display "(trend_interdept_diff_last)"
    locate 12,36
    display "1.00"
    reset rev_color
    locate 12,62
    display "(neg?)"
    reset neg?;

Rule display_music_diff If todo = trend_statements Then music_diff = found
    music_diff_this = (music_rev_this - music_cost_this)
    music_diff_last = (music_rev_last - music_cost_last)
    music_diff_2 = (music_rev_2 - music_cost_2)
    trend_music_diff_last = (music_diff_last / music_diff_2)
    trend_music_diff_this = (music_diff_this / music_diff_2)
    x = (trend_music_diff_last)
```

```
    y = (trend_music_diff_this)
    find rev_color
    a = (music_diff_this)
    b = (music_diff_last)
    c = (music_diff_2)
    find neg?
    locate 13,56
    format trend_music_diff_this, 5.2
    display "(trend_music_diff_this)"
    locate 13,46
    format trend_music_diff_last, 5.2
    display "(trend_music_diff_last)"
    locate 13,36
    display "1.00"
    reset rev_color
    locate 13,62
    display "(neg?)"
    reset neg?;

Rule display_state_diff If todo = trend_statements Then  state_diff = found
    state_diff_this = (state_rev_this - state_cost_this)
    state_diff_last = (state_rev_last - state_cost_last)
    state_diff_2 = (state_rev_2 - state_cost_2)
    trend_state_diff_last = (state_diff_last / state_diff_2)
    trend_state_diff_this = (state_diff_this / state_diff_2)
    x = (trend_state_diff_last)
    y = (trend_state_diff_this)
    find rev_color
    a = (state_diff_this)
    b = (state_diff_last)
    c = (state_diff_2)
    find neg?
    locate 14,56
    format trend_state_diff_this, 5.2
    display "(trend_state_diff_this)"
    locate 14,46
    format trend_state_diff_last, 5.2
    display "(trend_state_diff_last)"
    locate 14,36
    display "1.00"
    reset rev_color
    locate 14,62
    display "(neg?)"
    reset neg?;

Rule is_it_negative If a < = 0 and
  b < = 0 and
  c < = 0 and
  x > 1.05  and
  y > 1.1025 Then neg? = **
    color = 12;

Rule put_**_explanation_on_display If todo = trend_statements Then display_for_neg = found
    locate 8,68
    color = 15
    display "**  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction ¬";

Rule color_exp_inc_rev If x > = 1.05 and
  y > = 1.1025 Then rev_color = found
    color = 14;

Rule color_exp_dec_rev If x < = .95 and
  y < = .9025 Then rev_color = found
    color = 12 else color = 11;

Rule color_exp_inc_cost If x > = 1.05 and
  y > = 1.1025 Then cost_color = found
    color = 12;

Rule color_exp_dec_cost If x < = .95 and
```

```
  y < = .9025 Then cost_color = found
    color = 14 else color = 11;

! Statement Block

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 todo = ratio_analysis
  find farse ;

!rules block

rule start_ratio_analysis If todo = ratio_analysis Then farse = found
    wks date,b1,\vpp\playabis
    display "The most recent data is for the year ending June {date}."
    pdisplay "The most recent data is for the year ending June {date}."
    find continue_r
    pdisplay " "
    pdisplay "Is this the most current year end?"
    pdisplay " "
    pdisplay "yes          no"
    pdisplay " "
    pdisplay "{continue_r}"
    find update_r
    display " "
    display "Press any key to continue.¬"
    display " "
    find current_ratio_display
    savefacts ratdata
    chain pratio5;


Rule continue_on_dont_update If continue_r = yes Then update_r = found
    display "The system is currently retrieving the data necessary to perform ratio"
    display "analysis.  You will be instructed when to continue."
    wks ca,b13..d16,\vpp\playca
    ca_weight_this = (ca[1])
    ca_weight_last = (ca[2])
    ca_weight_2 = (ca[3])
    ca_ave_this = (ca[4])
    ca_ave_last = (ca[5])
    ca_ave_2 = (ca[6])
    corps_comp_this = (ca[7])
    corps_comp_last = (ca[8])
    corps_comp_2 = (ca[9])
    t_num_cadets_this = (ca[10])
    t_num_cadets_last = (ca[11])
    t_num_cadets_2 = (ca[12])
    reset ca
    wks bs_this,b1..b14,\vpp\playabbs
    wks bs_last,c1..c14,\vpp\playabbs
    wks bs_2_ago,d1..d14,\vpp\playabbs
    wks t_assets_3,e9,\vpp\playabbs
    wks inv_3_ago,e7,\vpp\playabbs
    wks is_this,b1..b85,\vpp\playabis
    wks is_last,c1..c85,\vpp\playabis
    wks is_2_ago,d1..d85,\vpp\playabis
    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    net_income = (is_this[65])
    net_income_last = (is_last[65])
    net_income_2 = (is_2_ago[65])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])
    gross_profit = (is_this[16])
    gross_profit_last = (is_last[16])
    gross_profit_2 = (is_2_ago[16])
    t_mil_rev = (is_this[9])
    mil_rev_last = (is_last[9])
    mil_rev_2 = (is_2_ago[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    cost_uniforms_last = (is_last[15])
    cost_uniforms_2 = (is_2_ago[15])
```

```
    total_oper_exp_last = (is_last[64])
    total_oper_exp_2 = (is_2_ago[64])
    t_other_rev = (is_this[24])
    other_rev_last = (is_last[24])
    other_rev_2 = (is_2_ago[24])
    t_personal = (is_this[36])
    personal_last = (is_last[36])
    corps_e_to_r_this = (is_this[79])
    public_e_to_r_this = (is_this[81])
    s_f_s_e_to_r_this = (is_this[82])
    interdept_e_to_r_this = (is_this[83])
    music_e_to_r_this = (is_this[84])
    state_e_to_r_this = (is_this[85])
    corps_e_to_r_last = (is_last[79])
    public_e_to_r_last = (is_last[81])
    s_f_s_e_to_r_last = (is_last[82])
    interdept_e_to_r_last = (is_last[83])
    music_e_to_r_last = (is_last[84])
    state_e_to_r_last = (is_last[85])
    corps_e_to_r_2 = (is_2_ago[79])
    public_e_to_r_2 = (is_2_ago[81])
    s_f_s_e_to_r_2 = (is_2_ago[82])
    interdept_e_to_r_2 = (is_2_ago[83])
    music_e_to_r_2 = (is_2_ago[84])
    state_e_to_r_2 = (is_2_ago[85])

    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago;


Rule continue_on_update_first If continue_r = no Then update_r = found
    display "Please be patient as the accrual statements must be calculated and this takes"
    display "a little time.  It also requires a little information which you will be asked"
    display "to supply."
    display ""
    pdisplay ""
    pdisplay "Please be patient as the accrual statements must be calculated and this takes"
    pdisplay "a little time.  It also requires a little information which you will be asked"
    pdisplay "to supply."
    pdisplay ""
    wks mil_rev,aa7..aa12,\vpp\playis
    t_mil_rev = (mil_rev[6])
    wks cgs,aa13,\vpp\playis
    wks other_rev,aa17..aa22,\vpp\playis
    t_other_rev = (other_rev[6])
    public_rev = (other_rev[1])
    s_f_s_rev = (other_rev[2])
    interdept_rev = (other_rev[3])
    music_rev = (other_rev[4])
    state_rev = (other_rev[5])
    wks personal,aa26..aa34,\vpp\playis
    t_personal = (personal[9])
    wks contractual,aa36..aa45,\vpp\playis
    t_contract = (contractual[10])
    wks s_and_m,aa47..aa52,\vpp\playis
    t_s_and_m = (s_and_m[6])
    wks continuous,aa54..aa60,\vpp\playis
    t_contin = (continuous[7])
    wks equip,aa61,\vpp\playis
    wks direct_costs,aa66..aa72,\vpp\playis
    d_costs_corps = (direct_costs[1])
    d_costs_public = (direct_costs[3])
    d_costs_s_f_s = (direct_costs[4])
    d_costs_interdept = (direct_costs[5])
    d_costs_music = (direct_costs[6])
    d_costs_state = (direct_costs[7])
    wks indirect_costs,aa74,\vpp\playis
    wks bs_info,b1..b14,\vpp\playabbs
    wks t_assets_3,d9,\vpp\playabbs
    wks inv_3_ago,d7,\vpp\playabbs
    last_yr_inventory = (bs_info[7])
    last_yr_equip_value = (bs_info[8])
    last_yr_due_to = (bs_info[12])
    last_yr_reserves = (bs_info[13])
    wks dth_info,d1..d14,\vpp\playabbs
```

```
pwks dth_info,e1..e14,\vpp\playabbs
reset dth_info
wks cth_info,c1..c14,\vpp\playabbs
pwks cth_info,d1..d14,\vpp\playabbs
inv_2_ago = (cth_info[7])
due_to_2_ago = (cth_info[12])
equip_2_ago = (cth_info[8])
reset cth_info
pwks bs_info,c1..c14,\vpp\playabbs
reset bs_info
wks dth_info,d1..d85,\vpp\playabis
pwks dth_info,e1..e85,\vpp\playabis
reset dth_info
wks cth_info,c1..c85,\vpp\playabis
pwks cth_info,d1..d85,\vpp\playabis
net_income_2 = (cth_info[65])
gross_profit_2 = (cth_info[16])
mil_rev_2 = (cth_info[9])
cost_uniforms_2 = (cth_info[15])
total_oper_exp_2 = (cth_info[64])
other_rev_2 = (cth_info[24])
corps_e_to_r_2 = (cth_info[79])
public_e_to_r_2 = (cth_info[81])
s_f_s_e_to_r_2 = (cth_info[82])
interdept_e_to_r_2 = (cth_info[83])
music_e_to_r_2 = (cth_info[84])
state_e_to_r_2 = (cth_info[85])
reset cth_info
wks bth_info,b1..b85,\vpp\playabis
pwks bth_info,c1..c85,\vpp\playabis
corps_e_to_r_last = (bth_info[79])
public_e_to_r_last = (bth_info[81])
s_f_s_e_to_r_last = (bth_info[82])
interdept_e_to_r_last = (bth_info[83])
music_e_to_r_last = (bth_info[84])
state_e_to_r_last = (bth_info[85])
net_income_last = (bth_info[65])
gross_profit_last = (bth_info[16])
mil_rev_last = (bth_info[9])
cost_uniforms_last = (bth_info[15])
total_oper_exp_last = (bth_info[64])
other_rev_last = (bth_info[24])
personal_last = (bth_info[36])
reset bth_info
wks cth,c1..c16,\vpp\playca
pwks cth,d1..d16,\vpp\playca
wks bth,b1..b16,\vpp\playca
pwks bth,c1..c16,\vpp\playca
corps_e_to_r_this = (d_costs_corps / t_mil_rev)
public_e_to_r_this = (d_costs_public / public_rev)
s_f_s_e_to_r_this = (d_costs_s_f_s / s_f_s_rev)
interdept_e_to_r_this = (d_costs_interdept / interdept_rev)
music_e_to_r_this = (d_costs_music / music_rev)
state_e_to_r_this = (d_costs_state / state_rev)
ca_weight_last = (bth[13])
ca_weight_2 = (cth[13])
ca_ave_last = (bth[14])
ca_ave_2 = (cth[14])
corps_comp_last = (bth[15])
corps_comp_2 = (cth[15])
t_num_cadets_last = (bth[16])
t_num_cadets_2 = (cth[16])
current_year = (date + 1)
last_year = (current_year - 1)
year_2_ago = (current_year - 2)
pwks current_year,b1,\vpp\playabis
pwks cuent_year,b1,\vpp\playabbs
display "To do this analysis, the value of ending inventory is needed for June {current_year}."
pdisplay " "
pdisplay "To do this analysis, the value of ending inventory is needed for June {current_year}."
pdisplay " "
find inventory_ques
pdisplay "Can you separate the value of ending inventory into issued and unissued?"
pdisplay " "
pdisplay "yes       no"
pdisplay " "
pdisplay "{inventory_ques}"
find inventory_value
find new_equip_value
find ca_update
```

```
    find update_abis
    find new_reserves;

Rule inventory_value_found If inventory_ques = yes Then inventory_value = found
    find issued_inv
    pdisplay " "
    pdisplay "What is the value of issued inventory?"
    pdisplay " "
    find unissued_inv
    pdisplay " "
    pdisplay "{issued_inv}"
    pdisplay " "
    pdisplay "What is the value of unissued inventory?"
    pdisplay " "
    pdisplay " "
    pdisplay "{unissued_inv}"
    display " "
    display "Please wait a moment.  You will be instructed when to continue."
    display " "
    put_inventory[1] = (issued_inv)
    put_inventory[2] = (unissued_inv)
    total_inv = (issued_inv + unissued_inv)
    pwks put_inventory, b5..b6,\vpp\playabbs
    inv_for_is = (issued_inv + unissued_inv)
    pwks total_inv,b14,\vpp\playabis;


Rule inventory_value_found If inventory_ques = no Then inventory_value = found
    find total_inv
    pdisplay " "
    pdisplay "Then, what is the value of total inventory?"
    pdisplay " "
    pdisplay "{total_inv}"
    pdisplay " "
    display " "
    display "Please wait a moment.  You will be instructed when to continue."
    display " "
    pwks total_inv,b7,\vpp\playabbs
    pwks total_inv,b14,\vpp\playabis;

Rule equip_purchases_no If equip = 0 Then new_equip_value = found;

Rule equip_purchases_yes If equip > 0 Then new_equip_value = found
    find the_display
    find equip_number
    pdisplay " "
    pdisplay "How many pieces of equipment does this include?"
    pdisplay " "
    pdisplay "{equip_number}"
    pdisplay " "
    z = (equip_number)
    whiletrue z > 0 then
      find equip_name
      pdisplay " "
      pdisplay "Give an appropriate title to a piece, using underscores to connect words."
      pdisplay " "
      pdisplay "{equip_name}"
      pdisplay " "
      new_equip[1] = (equip_name)
      find cost
      pdisplay " "
      pdisplay "How much did the {equip_name} cost?"
      pdisplay " "
      pdisplay "{cost}"
      pdisplay " "
      find purchase_month
      pdisplay " "
      pdisplay "Please enter the number for the month in which the {equip_name} was"
      pdisplay "purchased.  Use 1 for January, 2 for February, ....12 for December."
      pdisplay " "
      pdisplay "{purchase_month}"
      pdisplay " "
      find purchase_year
      find useful_life
      pdisplay " "
      pdisplay "How many years is the {equip_name} expected to last?"
      pdisplay " "
      pdisplay "{useful_life}"
      pdisplay " "
     display " "
```

```
    display "Please wait a few moments.  You will be instructed when to continue."
    display " "
     new_equip[2] = (cost)
     new_equip[3] = (purchase_month)
     new_equip[4] = (purchase_year)
     new_equip[5] = (useful_life)
     find to_put
     z = (z - 1)
     reset equip_name
     reset cost
     reset purchase_month
     reset purchase_year
     reset useful_life
     reset to_put
     reset new_equip
    end
    find total_equip_value;

Rule find_the_display If todo = ratio_analysis Then the_display = found
    display "Equipment purchases during the year have totalled ${equip}."
    display " "
    display "After each prompt, please give the applicable information for each piece of"
    display "equipment separately."
    pdisplay " "
    pdisplay "Equipment purchases during the year have totalled ${equip}."
    pdisplay " "
    pdisplay "After each prompt, please give the applicable information for each piece of"
    pdisplay "equipment separately."
    pdisplay " ";


Rule find_current_values If todo = ratio_analysis Then total_equip_value = found
    wks vbl,a4..e25,\vpp\playequi

    y = 1
    x = (vbl[y])
    total_current_value = 0
    total_depreciation = 0

! this next loop calculates the depreciation and current value for each ! piece of equipment, and assigns those with positive values (i.e., those
! which aren't paid off) to an array to later be summed.
    whiletrue vbl[y] < > unknown then
     reset if_neg
     reset year_to_use
     y2 = (y + 1)
     y3 = (y + 2)
     y4 = (y + 3)
     y5 = (y + 4)
     dep_cost = (vbl[y2])
     month = (vbl[y3])
     yr = (vbl[y4])
     life = (vbl[y5])
     find year_to_use
     depr = (dep_cost / life)
     current_value = (dep_cost - (depr * (current_year + 1 - year_te)))
     find if_neg
     y = (y + 5)
     x = (vbl[y])
    end
    pwks total_current_value,b8,\vpp\playabbs
    pwks total_depreciation,b63,\vpp\playabis;

Rule purchase_year_of_equip If purchase_month < = 6 Then purchase_year = (current_year);

Rule purchase_year_of_equip If purchase_month > 6 Then purchase_year = (date);

Rule look_for_empty_equip_rows If todo = ratio_analysis Then wks empty?,a11..a25,\vpp\playequi
    to_put = found
    find put_it
    reset put_it;

Rule put_equip_in_empty_row If empty?[1] = unknown Then pwks new_equip,a11..e11,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[2] = unknown Then pwks new_equip,a12..e12,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[3] = unknown Then pwks new_equip,a13..e13,\vpp\playequi
    put_it = found;
```

```
Rule put_equip_in_empty_row If empty?[4] = unknown Then pwks new_equip,a14..e14,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[5] = unknown Then pwks new_equip,a15..e15,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[6] = unknown Then pwks new_equip,a16..e16,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[7] = unknown Then pwks new_equip,a17..e17,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[8] = unknown Then pwks new_equip,a18..e18,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[9] = unknown Then pwks new_equip,a19..e19,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[10] = unknown Then pwks new_equip,a20..e20,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[11] = unknown Then pwks new_equip,a21..e21,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[12] = unknown Then pwks new_equip,a22..e22,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[13] = unknown Then pwks new_equip,a23..e23,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[14] = unknown Then pwks new_equip,a24..e24,\vpp\playequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[15] = unknown Then pwks new_equip,a25..e25,\vpp\playequi
    put_it = found;

Rule year_to_use If month < = 6 Then year_to_use = (yr);

Rule year_to_use If month > 6 Then year_to_use = (yr + 1);

Rule if_neg If current_value < = 0 Then if_neg = found;

 Rule if_neg If current_value > 0 Then total_current_value = (total_current_value + current_value)
    total_depreciation = (total_depreciation + depr)
    if_neg = found;

Rule ca_update If todo = ratio_analysis Then ca_update = found
    display "Now a little information regarding the number of members in the corps and" display "commutation allowances is needed.
Please answer the questions after the prompts." display " "
   display "How many freshmen were enrolled in the corps of cadets during the year ending"

    pdisplay "Now a little information regarding the number of members in the corps and" pdisplay "commutation allowances is needed.
Please answer the questions after the prompts." pdisplay " "
   pdisplay "How many freshmen were enrolled in the corps of cadets during the year ending"
   pdisplay "June {current_year}?"
   pdisplay " "
   find num_fresh
   pdisplay "{num_fresh}"
   pdisplay " "
   find num_soph
   pdisplay "How many sophomores?"
   pdisplay " "
   pdisplay "{num_soph}"
   pdisplay " "
   find num_jun
   pdisplay "How many juniors?"
   pdisplay " "
   pdisplay "{num_jun}"
   pdisplay " "
   find num_sen
   pdisplay "How many seniors?"
   pdisplay " "
   pdisplay "{num_sen}"
   pdisplay " "
   corps_num[1] = (num_fresh)
   corps_num[2] = (num_soph)
   corps_num[3] = (num_jun)
   corps_num[4] = (num_sen)
   display "How much was the commutation allowance for freshmen during the year ending"
```

```
    pdisplay " "
    pdisplay "How much was the commutation allowance for freshmen during the year ending"
    pdisplay "June {current_year}?"
    pdisplay " "
    find ca_fresh
    pdisplay " "
    pdisplay "{ca_fresh}"
    pdisplay " "
    pdisplay "How much was it for sophomores?"
    pdisplay " "
    find ca_soph
    pdisplay "{ca_soph}"
    pdisplay " "
    pdisplay "How much was it for juniors?"
    pdisplay " "
    find ca_jun
    pdisplay "{ca_jun}"
    pdisplay " "
    pdisplay "How much was it for seniors?"
    pdisplay " "
    find ca_sen
    pdisplay "{ca_sen}"
    pdisplay " "
    corps_ca[1] = (ca_fresh)
    corps_ca[2] = (ca_soph)
    corps_ca[3] = (ca_jun)
    corps_ca[4] = (ca_sen)
    corps_comp_this1 = ((num_fresh*1) + (num_soph*2) + (num_jun*3) + (num_sen * 4))
    t_num_cadets_this = (num_fresh + num_soph + num_jun + num_sen)
    corps_comp_this = (corps_comp_this1 / t_num_cadets_this)
    pwks current_year,b1,\vpp\playca
    pwks corps_num,b8..b11,\vpp\playca
    pwks corps_ca,b3..b6,\vpp\playca
    ca_weight_this1 = ((num_fresh * ca_fresh) + (num_soph * ca_soph) + (num_jun * ca_jun) + (num_sen * ca_sen))
    ca_weight_this = (ca_weight_this1 / (num_fresh + num_soph + num_jun + num_sen))
    ca_ave_this = ((ca_fresh + ca_soph + ca_jun + ca_sen) / 4);

Rule update_abis If todo = ratio_analysis Then update_abis = found
    pwks mil_rev,b4..b8,\vpp\playabis
    pwks last_yr_inventory,b12,\vpp\playabis
    pwks cgs,b13,\vpp\playabis
    pwks inv_for_is,b14,\vpp\playabis
    pwks other_rev,b19..b24,\vpp\playabis
    pwks personal,b28..b36,\vpp\playabis
    pwks contractual,b38..b47,\vpp\playabis
    pwks s_and_m,b49..b54,\vpp\playabis
    pwks continuous,b56..b62,\vpp\playabis
    pwks direct_costs,b68..b74,\vpp\playabis
    pwks indirect_costs,b76,\vpp\playabis;

Rule find_reserves If todo = ratio_analysis Then net_income_1 = (t_mil_rev - last_yr_inventory - cgs + total_inv + t_other_rev)
    net_income = (net_income_1 - t_personal - t_contract - t_s_and_m - t_contin - total_depreciation)
    gross_profit = (t_mil_rev - last_yr_inventory - cgs + total_inv)
    t_expenses1 = (last_yr_inventory + cgs - total_inv + t_personal + t_contract)
    t_expenses = (t_expenses1 + t_s_and_m + t_contin + total_depreciation)
    cost_uniforms_this = (last_yr_inventory + cgs - total_inv)
    wks equip,aa61,\vpp\playis
    new_reserves = (last_yr_reserves + net_income)
    new_due_to = (total_inv + total_current_value - new_reserves)
    pwks new_reserves,b13,\vpp\playabbs;

Rule calculate_current_ratios If todo = ratio_analysis Then current_ratio = (total_inv / new_due_to)
    current_ratio_last = (last_yr_inventory / last_yr_due_to)
    current_ratio_2 = (inv_2_ago / due_to_2_ago);

Rule calculate_ROAs If todo = ratio_analysis Then ROA = (net_income / ((total_inv + total_current_value + last_yr_inventory +
last_yr_equip_value)/2))
    ROA_last = (net_income_last / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago)/2))
    ROA_2 = (net_income_2 / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_gross_profit_ratios If todo = ratio_analysis Then gross_profit_ratio = (gross_profit / t_mil_rev)
    gross_profit_ratio_last = (gross_profit_last / mil_rev_last)
    gross_profit_ratio_2 = (gross_profit_2 / mil_rev_2);

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios If todo = ratio_analysis Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
```

```
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2))
    t_asset_turn_display = found;

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2))
    inv_turn_display = found;

Rule display_for_current_ratio If current_ratio < > unknown Then cls
    color = 11
    locate 2,30
    display "CURRENT RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,45
    format current_ratio, 5.3
    display "{current_ratio}"
    locate 8,35
    format current_ratio_last, 5.3
    display "{current_ratio_last}"
    locate 8,25
    format current_ratio_2, 5.3
    display "{current_ratio_2}"
    pdisplay " "
    pdisplay " "
    pdisplay "                    CURRENT RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                {c}     {b}     {a}"
    pdisplay " "
    pdisplay " "
    a = (current_ratio)
    b = (current_ratio_last)
    c = (current_ratio_2)
    pdisplay "                {c}     {b}     {a}"

    current_ratio_display = found
    find current_ratio_analysis;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio is a measure of the organization's ability to" display "meet its short_term financial obligations
as they fall due. A ratio " display "of 1.25 or better is considered 'acceptable' for the Tailor Shop. " locate 15,6 display "As can be seen
above, the current situation is not good. The" display "ratio is below its acceptable level for the most recent year, and also," display "is has
been declining for the past several years. This means that" display "other auxiliary enterprises are financing an increasing proportion of"
display "the Tailor Shop's operating expenses. ¬" pdisplay " " pdisplay " " pdisplay "  The current ratio is a measure of the organization's
ability to" pdisplay "meet its short_term financial obligations as they fall due. A ratio " pdisplay "of 1.25 or better is considered 'acceptable'
for the Tailor Shop. " pdisplay " " pdisplay "  As can be seen above, the current situation is not good. The" pdisplay "ratio is below its
acceptable level for the most recent year, and also," pdisplay "is has been declining for the past several years. This means that" pdisplay
"other auxiliary enterprises are financing an increasing proportion of" pdisplay "the Tailor Shop's operating expenses."
current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to
be satisfactory. However," display "it is declining over time which indicates that the other auxiliary " display "enterprises are financing an
increasing proportion of the Tailor " display "Shop's operating expenses. ¬" pdisplay " " pdisplay " " pdisplay "The current ratio was de-
signed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For "
pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present
current ratio exceeds the predefined" pdisplay "acceptable level, and thus is considered to be satisfactory. However," pdisplay "it is de-
clining over time which indicates that the other auxiliary " pdisplay "enterprises are financing an increasing proportion of the Tailor "
pdisplay "Shop's operating expenses."

    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
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current_ratio > = 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the current situation looks very good. Not only" display "does the current ratio exceed the acceptable level, but is is also " display "increasing over time. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the current situation looks very good. Not only" pdisplay "does the current ratio exceed the acceptable level, but is is also " pdisplay "increasing over time."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present situation appears promising. " display "Although the current ratio has not yet reached its acceptable level," display "it is moving in the right direction. Therefore, there is no need" display "for concern. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present situation appears promising. " pdisplay "Although the current ratio has not yet reached its acceptable level," pdisplay "it is moving in the right direction. Therefore, there is no need" pdisplay "for concern."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "The figures above show cause for concern. Not only is the current" display "ratio below its acceptable level, but it has also decreased over the" display "past year. This decrease however, does not exhibit a trend over time. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "The figures above show cause for concern. Not only is the current" pdisplay "ratio below its acceptable level, but it has also decreased over the" pdisplay "past year. This decrease however, does not exhibit a trend over time."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to be satisfactory. There has" display "been a decline in the ratio over the past year, however, there appears" display "to be no trend in this direction. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present current ratio exceeds the predefined" pdisplay "acceptable level, and thus is considered to be satisfactory. There has" pdisplay "been a decline in the ratio over the past year, however, there appears" pdisplay "to be no trend in this direction."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio falls below the " display "predefined acceptable level, which is generally considered to be" display "unsatisfactory. However, it has improved over the past year. " display "Therefore, the situation should be closely monitored to make " display "certain that it continues to move in the right direction. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present current ratio falls below the " pdisplay "predefined acceptable level, which is generally considered to be" pdisplay "unsatisfactory. However, it has improved over the past year. " pdisplay "Therefore, the situation should be closely monitored to make " pdisplay "certain that it continues to move in the right direction."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to be satisfactory. " display "Furthermore, it has increased over the past year leaving little " display "cause for concern. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present current ratio exceeds the predefined" pdisplay "acceptable level, and thus is considered to be satisfactory. " pdisplay "Furthermore, it has increased over the past year leaving little " pdisplay "cause for concern."
    current_ratio_analysis = found;
```

```
! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
   ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. You will be instructed when to
continue." display " " loadfacts ratdata display "Press any key to examine the return on assets ratios.¬" display " " find ROA_display
savefacts ratdata chain pratio4

;

!rules block

Rule calculate_ROAs If todo = ratio_analysis Then ROA = (net_income / ((total_inv + total_current_value + last_yr_inventory +
last_yr_equip_value)/2))
    ROA_last = (net_income_last / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago)/2))
    ROA_2 = (net_income_2 / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule ROA_display IF ROA < > unknown Then ROA_display = found
    cls
    color = 11
    locate 2,27
    display "RETURN ON ASSETS"
    locate 5,6 display "The Return on Assets ratio (ROA) is designed to measure how much" display "income is produced for each dollar
of total assets held. In a profit" display "oriented organization, a high ROA is desirable. Since the primary" display "responsibility of the
Tailor Shop is to provide a service, rather than" display "produce a profit, it does not necessarily strive for a high ROA. Rather," display
"it should target a specific ROA. If net income is to be used only to" display "replace old equipment, than an ROA of around .004 is de-
sirable. On the" display "other hand, if net income is also used to repay the amount borrowed from" display "other auxiliaries (say over a
10 year period), then an ROA of around .08" display "is desirable. In any case, the ROA should not be negative as a negative" display
"ROA indicates a net loss on the operations."
    locate 18,20 display "Press any key to see the ROA analysis¬"

    locate 2,27
    pdisplay " "
    pdisplay " "
    pdisplay "                    RETURN ON ASSETS"
    pdisplay " "
    pdisplay " " pdisplay "    The Return on Assets ratio (ROA) is designed to measure how much" pdisplay "income is produced for each
dollar of total assets held. In a profit" pdisplay "oriented organization, a high ROA is desirable. Since the primary" pdisplay "responsi-
bility of the Tailor Shop is to provide a service, rather than" pdisplay "produce a profit, it does not necessarily strive for a high ROA.
Rather," pdisplay "it should target a specific ROA. If net income is to be used only to" pdisplay "replace old equipment, than an ROA
of around .004 is desirable. On the" pdisplay "other hand, if net income is also used to repay the amount borrowed from" pdisplay "other
auxiliaries (say over a 10 year period), then an ROA of around .08" pdisplay "is desirable. In any case, the ROA should not be negative
as a negative" pdisplay "ROA indicates a net loss on the operations." pdisplay " " display "                    Press any key to see the ROA
analysis"
    find rest_of_display_ROA;

Rule display_for_ROA If ROA < > unknown Then rest_of_display_ROA = found
    cls
    color = 11
    locate 2,29
    display "RETURN ON ASSETS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format ROA, 5.3
    display "{ROA}"
    locate 8,34
    format ROA_last, 5.3
    display "{ROA_last}"
    locate 8,24
    format ROA_2, 5.3
    display "{ROA_2}"
    pdisplay " "
    pdisplay " "
    pdisplay "                    RETURN ON ASSETS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                {c}      {b}      {a}"
    pdisplay " "
    pdisplay " "
    a = (ROA)
```

```
    b = (ROA_last)
    c = (ROA_2)
    pdisplay "                    (c)      (b)      (a)"
    find ROA_analysis;

Rule analyze_ROA_0_a If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The ROA" display "is negative and doesn't apear to be
improving. Thus, the Tailor Shop is" display "operating in the red and has to depend on other auxiliary enterprises to" display "help pay
its operating expenses.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. The ROA" pdisplay
"is negative and doesn't apear to be improving. Thus, the Tailor Shop is" pdisplay "operating in the red and has to depend on other aux-
iliary enterprises to" pdisplay "help pay its operating expenses.";


Rule analyze_ROA_0_b If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.004 and
  ROA > = 0 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The small" display "size of the ROA indicates that al-
though income is positive, it is not large" display "enough to cover expected demand for equipment replacements. Furthermore," display
"the situation does not appear to be improving.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not
good. The small" pdisplay "size of the ROA indicates that although income is positive, it is not large" pdisplay "enough to cover expected
demand for equipment replacements. Furthermore," pdisplay "the situation does not appear to be improving.";

Rule analyze_ROA_0_c If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.09 and
  ROA > = .004 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level. This indicates
that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display "being de-
creased.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an ac-
ceptable level. This indicates that reserves for future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries
are" pdisplay "being decreased.";

Rule analyze_ROA_0_d If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only
high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display
"the amount owed to other auxiliary enterprises. It should be noted however," display "that it is possible that the the Tailor Shop will be
accused of gouging " display "its customers since the ROA is so high." pdisplay " " pdisplay " " pdisplay "As can be seen above, the present
situation is quite good. The ROA" pdisplay "indicates that income is not only high enough to cover expected demand for" pdisplay
"equipment replacement, but can also contribute substantially to decreasing" pdisplay "the amount owed to other auxiliary enterprises. It
should be noted however," pdisplay "that it is possible that the the Tailor Shop will be accused of gouging " pdisplay "its customers since
the ROA is so high.";

Rule analyze_ROA_1_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by (mil_dec)% over the past
year. Meanwhile, costs incurred for" display "salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is
quite bad. Not only" pdisplay "is the ROA negative, but it is decreasing over time. A glance at the income" pdisplay "statements will give
a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total re-
venue)" pdisplay "has decreased by (mil_dec)% over the past year. Meanwhile, costs incurred for" pdisplay "salaries and fringe benefits
(which generally make up around 60% of total" pdisplay "costs) have increased by (personal_inc)% over the past year.";

Rule analyze_ROA_1_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
```

```
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by (mil_dec)% over the past
year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the ROA neg-
ative, but it is decreasing over time. A glance at the income" pdisplay "statements will give a good indication of why this is happening.
Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has decreased by (mil_dec)%
over the past year.";

Rule analyze_ROA_1_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Costs" display
"incurred for salaries and fringe benefits (which generally make up around" display "60 % of total costs) have increased by
(personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not
only" pdisplay "is the ROA negative, but it is decreasing over time. A glance at the income" pdisplay "statements will give a good indi-
cation of why this is happening. Costs" pdisplay "incurred for salaries and fringe benefits (which generally make up around" pdisplay "60
% of total costs) have increased by (personal_inc)% over the past year.";

Rule analyze_ROA_2_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display
"(mil_dec)% over the past year. Meanwhile, costs incurred for salaries and" display "fringe benefits (which generally make up around 60%
of total costs) have" display "increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above,
the present situation is not good. Although" pdisplay "the ROA is positive, it is decreasing over time. Furthermore, its small size" pdisplay
"indicates that the present rate of income is not enough to cover expected" pdisplay "demand for equipment replacements. A glance at the
income statements will" pdisplay "give a good indication of why this is happening. Revenue from the corps" pdisplay "(which typically
constitutes more than 75% of total revenue) has decreased by" pdisplay "(mil_dec)% over the past year. Meanwhile, costs incurred for
salaries and" pdisplay "fringe benefits (which generally make up around 60% of total costs) have" pdisplay "increased by (personal_inc)%
over the past year.";

Rule analyze_ROA_2_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display
"(mil_dec)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although"
pdisplay "the ROA is positive, it is decreasing over time. Furthermore, its small size" pdisplay "indicates that the present rate of income
is not enough to cover expected" pdisplay "demand for equipment replacements. A glance at the income statements will" pdisplay "give a
good indication of why this is happening. Revenue from the corps" pdisplay "(which typically constitutes more than 75% of total revenue)
has decreased by" pdisplay "(mil_dec)% over the past year.";

Rule analyze_ROA_2_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
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```
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the ROA positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is
not good. Although" pdisplay "is the ROA positive, it is decreasing over time. Furthermore, its small size" pdisplay "indicates that the
present rate of income is not enough to cover expected" pdisplay "demand for equipment replacements. A glance at the income statements
will" pdisplay "give a good indication of why this is happening. Meanwhile, costs incurred" pdisplay "for salaries and fringe benefits (which
generally make up around 60% of total" pdisplay "costs) have increased by (personal_inc)% over the past year.";

Rule analyze_ROA_3_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically" display "constitutes 75% of total re-
venue) has decreased by (mil_dec)% over the past" display "year. Meanwhile, costs incurred for salaries and fringe benefits (which" dis-
play "generally make up around 60% of total costs) have increased by (personal_inc)%" display " over the past year.¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates
that reserves for future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being de-
creased. A word of caution however is in order. Note that the" pdisplay "ratio is decreasing over time. A glance at the income statements
will show" pdisplay "why this is happening. The revenue from the corps (which typically" pdisplay "constitutes 75% of total revenue) has
decreased by (mil_dec)% over the past" pdisplay "year. Meanwhile, costs incurred for salaries and fringe benefits (which" pdisplay "gen-
erally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay " over the past year.";

Rule analyze_ROA_3_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically " display "constitures 75% of total re-
venue) has decreased by (mil_dec)% over ths past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation
is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for future equipment" pdisplay "purchases are being
built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of caution however is in order. Note that the" pdisplay
"ratio is decreasing over time. A glance at the income statements will show" pdisplay "why this is happening. The revenue from the corps
(which typically " pdisplay "constitures 75% of total revenue) has decreased by (mil_dec)% over ths past year.";


Rule analyze_ROA_3_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. Costs incurred for salaries and fringe benefits " display "(which generally make up
around 60% of total costs) have increased by (personal_inc)%" display "over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can
be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for future
equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of caution
however, is in order. Note that the" pdisplay "ratio is decreasing over time. A glance at the income statements will show" pdisplay "why
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this is happening. Costs incurred for salaries and fringe benefits " pdisplay "(which generally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";

Rule analyze_ROA_4 If ROA < (ROA_last) and
ROA_last < (ROA_2) and
ROA >= 0.09 Then ROA_analysis = found
locate 11,6
color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display "the amount owed to other auxiliary enterprises. There are a couple of things" display "to note here however. First, the ROA is so high that the Tailor Shop might" display "be accused of gouging its customers. And second, the ROA is decreasing" display "over time . This may signal that income is decreasing, or it may signal" display "a concerted effort on the part of management to bring down prices to an" display "'acceptable' level.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite good. The ROA" pdisplay "indicates that income is not only high enough to cover expected demand for" pdisplay "equipment replacement, but can also contribute substantially to decreasing" pdisplay "the amount owed to other auxiliary enterprises. There are a couple of things" pdisplay "to note here however. First, the ROA is so high that the Tailor Shop might" pdisplay "be accused of gouging its customers. And second, the ROA is decreasing" pdisplay "over time . This may signal that income is decreasing, or it may signal" pdisplay "a concerted effort on the part of management to bring down prices to an" pdisplay "'acceptable' level.";

Rule analyze_ROA_5 If ROA > (ROA_last) and
ROA_last > (ROA_2) and
ROA < 0 Then ROA_analysis = found
locate 11,6
color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that expenses exceed income. This means that the" display "Tailor Shop has to depend on the other auxiliaries to cover its operating" display "expenses. On a positive note, the ROA is increasing over time, indicating " display "that improvements are being made.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The ROA is" pdisplay "negative which indicates that expenses exceed income. This means that the" pdisplay "Tailor Shop has to depend on the other auxiliaries to cover its operating" pdisplay "expenses. On a positive note, the ROA is increasing over time, indicating " pdisplay "that improvements are being made.";

Rule analyze_ROA_6 If ROA > (ROA_last) and
ROA_last > (ROA_2) and
ROA >= 0 and
ROA <.004 Then ROA_analysis = found
locate 11,6
color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low, it is improving over time. At this point, it" display "is not earning enough to cover all of expected demand for equipment" display "replacement. However, if the current trend continues, they should be " display "able to do so in the future.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is improving. " pdisplay "Although the ROA is quite low, it is improving over time. At this point, it" pdisplay "is not earning enough to cover all of expected demand for equipment" pdisplay "replacement. However, if the current trend continues, they should be " pdisplay "able to do so in the future.";

Rule analyze_ROA_7 If ROA > (ROA_last) and
ROA_last > (ROA_2) and
ROA >= .004 and
ROA <.09 Then ROA_analysis = found
locate 11,6
color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving over time, but it falls in a very good region." display "An ROA in this region indicates that net income is sufficient to cover" display "expected demand for equipment replacement, and also to pay back some of the" display "debt owed to the other auxiliary enterprises.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is the ROA improving over time, but it falls in a very good region." pdisplay "An ROA in this region indicates that net income is sufficient to cover" pdisplay "expected demand for equipment replacement, and also to pay back some of the" pdisplay "debt owed to the other auxiliary enterprises.";

Rule analyze_ROA_8 If ROA > (ROA_last) and
ROA_last > (ROA_2) and
ROA >= .09 Then ROA_analysis = found
locate 11,6
color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving over time, but it indicates that a substantial " display "dent can be made in its debt to other auxiliary enterprices. On the" display "negative side, an ROA of this magnitude indicates that revenues greatly" display "exceed expenses which could be considered price gouging.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is the ROA improving over time, but it indicates that a substantial " pdisplay "dent can be made in its debt to other auxiliary enterprices. On the" pdisplay "negative side, an ROA of this magnitude indicates that revenues greatly" pdisplay "exceed expenses which could be considered price gouging.";

Rule analyze_ROA_9_a If ROA < (ROA_last) and
ROA_last > (ROA_2) and
ROA < 0 and
t_mil_rev < (mil_rev_last) and
t_personal > (personal_last) Then ROA_analysis = found
locate 11,6
color = 12
find mil_dec

```
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
has decreased over the past year. A glance at the" display "income statements will give a good indication of why this is happening." display
"Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by (mil_dec)%. Meanwhile,
costs incurred for salaries" display "and fringe benefits (which generally make up around 60% of total costs) have" display "increased by
(personal_inc)%. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the
ROA negative, but has decreased over the past year. A glance at the" pdisplay "income statements will give a good indication of why this
is happening." pdisplay "Revenue from the corps (which typically constitutes more than 75% of total" pdisplay "revenue) has decreased
by (mil_dec)%. Meanwhile, costs incurred for salaries" pdisplay "and fringe benefits (which generally make up around 60% of total costs)
have" pdisplay "increased by (personal_inc)%.";

Rule analyze_ROA_9_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by (mil_dec)%. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the ROA negative, but
it has decreased over the past year. A glance at" pdisplay "the income statements will give a good indication of why this is happening."
pdisplay "Revenue from the corps (which typically constitutes more than 75% of total" pdisplay "revenue) has decreased by (mil_dec)%.";

Rule analyze_ROA_9_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of total costs) have increased by
(personal_inc)% over the past" display "year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad.
Not only" pdisplay "is the ROA negative, but it has decreased over the past year. A glance at" pdisplay "the income statements will give
a good indication of why this is happening." pdisplay "Costs incurred for salaries and fringe benefits (which generally make up" pdisplay
"around 60% of total costs) have increased by (personal_inc)% over the past" pdisplay "year.";

Rule analyze_ROA_10_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%. Meanwhile, costs incurred for salaries and" display "fringe benefits (whidh generally make up around 60% of total costs)
have" display "increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present
situation is not good. Although" pdisplay "the ROA is positive, it has decreased over the past year. Furthermore, its" pdisplay "small size
indicates that the present rate of income is not enough to cover" pdisplay "expected demand for equipment replacements. A glance at the
income" pdisplay "statements will give a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically
constitutes more than 75% of total revenue)" pdisplay "has decreased by (mil_dec)%. Meanwhile, costs incurred for salaries and" pdisplay
"fringe benefits (whidh generally make up around 60% of total costs) have" pdisplay "increased by (personal_inc)% over the past year.";

Rule analyze_ROA_10_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
```

```
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although" pdisplay "the ROA
is positive, it has decreased over the past year. Furthermore, its" pdisplay "small size indicates that the present rate of income is not enough
to cover" pdisplay "expected demand for equipment replacements. A glance at the income" pdisplay "statements will give a good indication
of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has
decreased by (mil_dec)%.";

Rule analyze_ROA_10_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Costs " display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of total costs) have
increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not
good. Although" pdisplay "the ROA is positive, it has decreased over the past year. Furthermore, its" pdisplay "small size indicates that
the present rate of income is not enough to cover" pdisplay "expected demand for equipment replacements. A glance at the income"
pdisplay "statements will give a good indication of why this is happening. Costs " pdisplay "incurred for salaries and fringe benefits (which
generally make up around 60%" pdisplay "of total costs) have increased by (personal_inc)% over the past year.";

Rule analyze_ROA_11_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically constitues 75% of total
revenue) has decreased by (mil_dec)% over" display "the past year. Meanwhile, costs incurred for salaries and fringe benefits" display
"(which generally make up around 60% of total costs) have increased by (personal_inc)%" display "over the past year.¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates
that reserves for future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being de-
creased. A word of caution however is in order. Note that the" pdisplay "ratio has decreased over the past year. A glance at the income
statements" pdisplay "will show why this is happening. The revenue from the corps (which" pdisplay "typically constitues 75% of total re-
venue) has decreased by (mil_dec)% over" pdisplay "the past year. Meanwhile, costs incurred for salaries and fringe benefits" pdisplay
"(which generally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";

Rule analyze_ROA_11_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically consitutues 75% of
total revenue) has decreased by (mil_dec)% over" display "the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the
present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for future equipment" pdisplay
```

"purchases are being built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of caution however, is in order. Note that the" pdisplay "ratio has decreased over the past year. A glance at the income statements" pdisplay "will show why this is happening. The revenue from the corps (which" pdisplay "typically consititues 75% of total revenue) has decreased by (mil_dec)% over" pdisplay "the past year.";

```
Rule analyze_ROA_11_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. Costs incurred for salaries and fringe" display "benefits (which generally
make up around 60% of total costs), have increased" display "by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay
"As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for
future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of
caution however is in order. Note that the" pdisplay "ratio has decreased over the past year. A glance at the income statements" pdisplay
"will show why this is happening. Costs incurred for salaries and fringe" pdisplay "benefits (which generally make up around 60% of total
costs), have increased" pdisplay "by (personal_inc)% over the past year.";

Rule analyze_ROA_12 If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The ROA is very high, which in-
dicates that a substantial dent can be made" display "in its debt to other auxiliary enterprises. Notice that the ROA has" display "decreased
over the past year. This may indicate a decline in income, or" display "it may indicate a concerted effort on the part of management to
bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into. ¬" pdisplay " " pdisplay " "
pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "The ROA is very high, which indicates that a
substantial dent can be made" pdisplay "in its debt to other auxiliary enterprises. Notice that the ROA has" pdisplay "decreased over the
past year. This may indicate a decline in income, or" pdisplay "it may indicate a concerted effort on the part of management to bring"
pdisplay "prices more in line with costs. If the former case is true, it should be" pdisplay "looked into.";

Rule analyze_ROA_13 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that net
income is also negative. This means that" display "the Tailor Shop is depending on the other auxiliaries to cover some of" display "its op-
erating expenses. On a positive note, the ROA has improved over the" display "past year indicating that improvements are being made. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The ROA is" pdisplay "negative which indicates
that net income is also negative. This means that" pdisplay "the Tailor Shop is depending on the other auxiliaries to cover some of"
pdisplay "its operating expenses. On a positive note, the ROA has improved over the" pdisplay "past year indicating that improvements
are being made.";

Rule analyze_ROA_14 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0 and
  ROA <.004 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it has improved over the past year. At this" display "point, it is not earning enough to cover all of expected demand for equipment" display
"replacement. However, if the current trend continues, they should be able to" display "do so in the future. ¬" pdisplay " " pdisplay " "
pdisplay "As can be seen above, the situation at the Tailor Shop is improving. " pdisplay "Although the ROA is quite low, it has improved
over the past year. At this" pdisplay "point, it is not earning enough to cover all of expected demand for equipment" pdisplay "replacement.
However, if the current trend continues, they should be able to" pdisplay "do so in the future.";

Rule analyze_ROA_15 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .004 and
  ROA <.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The ROA falls within a very good
region indicating that net income is" display "sufficient to cover expected demand and also pay back some of the debt owed" display "to
other auxiliary enterprises. It should be noted however, that the ROA" display "has fallen over the past year. This indicates decreasing
earnings, and should" display "be checked into. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop
is not bad. " pdisplay "The ROA falls within a very good region indicating that net income is" pdisplay "sufficient to cover expected de-
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mand and also pay back some of the debt owed" pdisplay "to other auxiliary enterprises. It should be noted however, that the ROA"
pdisplay "has fallen over the past year. This indicates decreasing earnings, and should" pdisplay "be checked into.";


Rule analyze_ROA_16 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the ROA improved
over the past year, but it also indicates that" display "a substantial dent can be made in their debt to other auxiliary enterprices." display
"On the negative side, an ROA of this magnitude indicates that revenues" display "greatly exceed expenses which could be considered price
gouging. ¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only
has the ROA improved over the past year, but it also indicates that" pdisplay "a substantial dent can be made in their debt to other auxiliary
enterprices." pdisplay "On the negative side, an ROA of this magnitude indicates that revenues" pdisplay "greatly exceed expenses which
could be considered price gouging.";


Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule gross_profit_display IF gross_profit_ratio < > unknown Then cls
    color = 11
    locate 4,17
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 7,6 display "The Gross Profit Ratio was designed to measure the percentage of" display "each sales dollar remaining after the
cost of goods sold (cost of uniforms" display "issued) has been covered. In other words, this ratio indicates how much of" display "each
sales dollar is available to cover operating expenses. If operating" display "expenses are not being met, prices can be raised, or expenses
lowered, and" display "an increased gross profit ratio will result. For the Tailor Shop, this is" display "a good figure to watch to determine
what is happening with commutation" display "allowances, inventory, and 'bags' issued to cadets. ¬ " cls locate 3,1 display "In the Tailor
Shop's situation, a change in the gross profit could" display "indicate;" locate 6,6 display "- a change in commutation allowances," locate
7,6 display "- a change in the 'mix' of cadets (i.e., freshmen vs." locate 8,8 display "sophomores vs. juniors vs. seniors)," locate 9,6 display
"- a change in the cost of uniforms," locate 10,6 display "- a change in the number of uniform items per 'bag' or" locate 11,8 display "in
their quality, or" locate 12,6 display "- an undervaluation or overvaluation in inventory." display " " display "With the above in mind, our
'expert' will perform its analysis. However," display "determining changes in the cost of individual uniform items or in their" display
"quality is beyond the scope of this system. Therefore, if one of these" display "has changed significantly, it should be taken into consid-
eration while " display "viewing the following analysis."
    locate 20,8 display "Press any key to see the Gross Profit Ratio analysis ¬ "
    gross_profit_ratio_display = found
    find rest_of_display_gross_profit;

Rule display_for_GPR If gross_profit_ratio < > unknown Then rest_of_display_gross_profit = found
    cls
    color = 11
    locate 2,18
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format gross_profit_ratio, 5.3
    display "{gross_profit_ratio}"
    locate 8,34
    format gross_profit_ratio_last, 5.3
    display "{gross_profit_ratio_last}"
    locate 8,24
    format gross_profit_ratio_2, 5.3
    display "{gross_profit_ratio_2}"
    gpr_2_% = (.05 * gross_profit_ratio_2)
    gpr_last_% = (.05 * gross_profit_ratio_last)
    inc_weight_this = ((ca_weight_this - ca_weight_last) / ca_weight_last)
    inc_weight_last = ((ca_weight_last - ca_weight_2) / ca_weight_2)
    inc_ave_this = ((ca_ave_this - ca_ave_last) / ca_ave_last)
    inc_ave_last = ((ca_ave_last - ca_ave_2) / ca_ave_2)
    dec_weight_this = ((ca_weight_last - ca_weight_this) / ca_weight_last)
    dec_weight_last = ((ca_weight_2 - ca_weight_last) / ca_weight_2)
    dec_ave_this = ((ca_ave_last - ca_ave_this) / ca_ave_last)
    dec_ave_last = ((ca_ave_2 - ca_ave_last) / ca_ave_2)
    inc_corps_comp_this = ((corps_comp_this - corps_comp_last) / corps_comp_last)
    inc_corps_comp_last = ((corps_comp_last - corps_comp_2) / corps_comp_2)
    inc_t_num_cadets_this = ((t_num_cadets_this - t_num_cadets_last) / t_num_cadets_last)
    inc_t_num_cadets_last = ((t_num_cadets_last - t_num_cadets_2) / t_num_cadets_2)
    dec_corps_comp_this = ((corps_comp_last - corps_comp_this) / corps_comp_last)
    dec_corps_comp_last = ((corps_comp_2 - corps_comp_last) / corps_comp_2)
    dec_t_num_cadets_this = ((t_num_cadets_last - t_num_cadets_this) / t_num_cadets_last)
    dec_t_num_cadets_last = ((t_num_cadets_2 - t_num_cadets_last) / t_num_cadets_2)
    uniform_cost_per_cadet_this = (cost_uniforms_this / t_num_cadets_this)
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    uniform_cost_per_cadet_last = (cost_uniforms_last / t_num_cadets_last)
    find gross_profit_ratio_analysis;

Rule gross_profit_analysis_1 If gross_profit_ratio_last < (gross_profit_ratio_2 + gpr_2_%) and
  gross_profit_ratio_last > = (gross_profit_ratio_2 - gpr_2_%) and
  gross_profit_ratio < (gross_profit_ratio_last + gpr_last_%) and
  gross_profit_ratio > = (gross_profit_ratio_last - gpr_last_%) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6 display "As can be seen above, the gross profit ratio is not changing" display "significantly. Unless management is intentionally trying to change it," display "this situation appears optimal."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "increased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05

Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have increased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have increased over the past year by {inc_ave_%}%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more favorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that average" display "commutation allowances have increased over the past year by {inc_ave_%}%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
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  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "dowhard trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "de-
creased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of
underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 *. 95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "dowwnard trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less fa-
vorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
```

```
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that average" display "commutation allowances have decreased over the past year by (dec_ave_%)%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display
"beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "in-
creased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of
upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued."
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
```

```
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display
"decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display
"have decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the pro-
portion of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances
have decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display
"ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less
favorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in in-
ventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
```

```
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display "beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv: "Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for February, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

B.12 PRATIO4

```
execute; runtime; endoff; actions

color = 15 todo = ratio_analysis display "The system has just entered a new knowledge base and files must be" display "loaded. You will
be instructed when to continue." display " " loadfacts ratdata display "Press any key to examine the gross profit ratios.¬" display " " find
gross_profit_ratio_display chain pratio3 ;

!rules block

Rule calculate_gross_profit_ratios If todo = ratio_analysis Then gross_profit_ratio = (gross_profit / t_mil_rev)
    gross_profit_ratio_last = (gross_profit_last / mil_rev_last)
    gross_profit_ratio_2 = (gross_profit_2 / mil_rev_2);


Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule gross_profit_display IF gross_profit_ratio < > unknown Then cls
    color = 11
    locate 4,17
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 7,6 display "The Gross Profit Ratio was designed to measure the percentage of" display "each sales dollar remaining after the
cost of goods sold (cost of uniforms" display "issued) has been covered. In other words, this ratio indicates how much of" display "each
sales dollar is available to cover operating expenses. If operating" display "expenses are not being met, prices can be raised, or expenses
lowered, and" display "an increased gross profit ratio will result. For the Tailor Shop, this is" display "a good figure to watch to determine
what is happening with commutation" display "allowances, inventory, and 'bags' issued to cadets.¬" cls locate 3,1 display "In the Tailor
Shop's situation, a change in the gross profit could" display "indicate;" locate 6,6 display "- a change in commutation allowances," locate
7,6 display "- a change in the 'mix' of cadets (i.e., freshmen vs." locate 8,8 display "sophomores vs. juniors vs. seniors)," locate 9,6 display
"- a change in the cost of uniforms," locate 10,6 display "- a change in the number of uniform items per 'bag' or" locate 11,8 display "in
their quality, or" locate 12,6 display "- an undervaluation or overvaluation in inventory." display " " display "With the above in mind, our
'expert' will perform its analysis. However," display "determining changes in the cost of individual uniform items or in their" display
"quality is beyond the scope of this system. Therefore, if one of these" display "has changed significantly, it should be taken into consid-
eration while " display "viewing the following analysis."
    locate 20,8 display "Press any key to see the Gross Profit Ratio analysis¬"


    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "                    GROSS PROFIT RATIO ON CADET UNIFORMS"
    pdisplay " "
    pdisplay " " pdisplay "      The Gross Profit Ratio was designed to measure the percentage of" pdisplay "each sales dollar remaining
after the cost of goods sold (cost of uniforms" pdisplay "issued) has been covered. In other words, this ratio indicates how much of"
pdisplay "each sales dollar is available to cover operating expenses. If operating" pdisplay "expenses are not being met, prices can be
raised, or expenses lowered, and" pdisplay "an increased gross profit ratio will result. For the Tailor Shop, this is" pdisplay "a good figure
to watch to determine what is happening with commutation" pdisplay "allowances, inventory, and 'bags' issued to cadets." pdisplay " "
pdisplay " " pdisplay " " pdisplay "In the Tailor Shop's situation, a change in the gross profit could" pdisplay "indicate;" pdisplay " "
pdisplay "      - a change in commutation allowances," pdisplay "      - a change in the 'mix' of cadets (i.e., freshmen vs." pdisplay "
sophomores vs. juniors vs. seniors)," pdisplay "      - a change in the cost of uniforms," pdisplay "      - a change in the number of uniform
items per 'bag' or" pdisplay "      in their quality, or" pdisplay "      - an undervaluation or overvaluation in inventory." pdisplay " "
pdisplay "With the above in mind, our 'expert' will perform its analysis. However," pdisplay "determining changes in the cost of individual
uniform items or in their" pdisplay "quality is beyond the scope of this system. Therefore, if one of these" pdisplay "has changed signif-
icantly, it should be taken into consideration while " pdisplay "viewing the following analysis." pdisplay " " pdisplay "      Press any key
to see the Gross Profit Ratio analysis"

    gross_profit_ratio_display = found
    find rest_of_display_gross_profit;

Rule display_for_GPR If gross_profit_ratio < > unknown Then rest_of_display_gross_profit = found
    cls
    color = 11
    locate 2,18
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format gross_profit_ratio, 5.3
    display "{gross_profit_ratio}"
    locate 8,34
    format gross_profit_ratio_last, 5.3
    display "{gross_profit_ratio_last}"
    locate 8,24
    format gross_profit_ratio_2, 5.3
```

```
display "{gross_profit_ratio_2}"

pdisplay " "
pdisplay " "
pdisplay " "
locate 2,18
pdisplay "                GROSS PROFIT RATIO ON CADET UNIFORMS"
pdisplay " "
pdisplay " "
locate 5,45
a = (current_year)
locate 5,35
b = (last_year)
locate 5,25
c = (year_2_ago)
pdisplay "                    (c)       (b)       (a)"
pdisplay " "
pdisplay " "
a = (gross_profit_ratio)
b = (gross_profit_ratio_last)
c = (gross_profit_ratio_2)
pdisplay "                    (c)       (b)       (a)"

gpr_2_% = (.05 * gross_profit_ratio_2)
gpr_last_% = (.05 * gross_profit_ratio_last)
inc_weight_this = ((ca_weight_this - ca_weight_last) / ca_weight_last)
inc_weight_last = ((ca_weight_last - ca_weight_2) / ca_weight_2)
inc_ave_this = ((ca_ave_this - ca_ave_last) / ca_ave_last)
inc_ave_last = ((ca_ave_last - ca_ave_2) / ca_ave_2)
dec_weight_this = ((ca_weight_last - ca_weight_this) / ca_weight_last)
dec_weight_last = ((ca_weight_2 - ca_weight_last) / ca_weight_2)
dec_ave_this = ((ca_ave_last - ca_ave_this) / ca_ave_last)
dec_ave_last = ((ca_ave_2 - ca_ave_last) / ca_ave_2)
inc_corps_comp_this = ((corps_comp_this - corps_comp_last) / corps_comp_last)
inc_corps_comp_last = ((corps_comp_last - corps_comp_2) / corps_comp_2)
inc_t_num_cadets_this = ((t_num_cadets_this - t_num_cadets_last) / t_num_cadets_last)
inc_t_num_cadets_last = ((t_num_cadets_last - t_num_cadets_2) / t_num_cadets_2)
dec_corps_comp_this = ((corps_comp_last - corps_comp_this) / corps_comp_last)
dec_corps_comp_last = ((corps_comp_2 - corps_comp_last) / corps_comp_2)
dec_t_num_cadets_this = ((t_num_cadets_last - t_num_cadets_this) / t_num_cadets_last)
dec_t_num_cadets_last = ((t_num_cadets_2 - t_num_cadets_last) / t_num_cadets_2)
uniform_cost_per_cadet_this = (cost_uniforms_this / t_num_cadets_this)
uniform_cost_per_cadet_last = (cost_uniforms_last / t_num_cadets_last)
find gross_profit_ratio_analysis;

Rule gross_profit_analysis_1 If gross_profit_ratio_last < (gross_profit_ratio_2 + gpr_2_%) and
  gross_profit_ratio_last > = (gross_profit_ratio_2 - gpr_2_%) and
  gross_profit_ratio < (gross_profit_ratio_last + gpr_last_%) and
  gross_profit_ratio > = (gross_profit_ratio_last - gpr_last_%) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6 display "As can be seen above, the gross profit ratio is not changing" display "significantly.  Unless management is intentionally trying to change it," display "this situation appears optimal."
    locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is not changing" pdisplay "significantly.  Unless management is intentionally trying to change it," pdisplay "this situation appears optimal."
pdisplay " " display "                    Press any key to continue";

Rule gross_profit_analysis_2_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend.  A determination of the cause reveals that several different" display "factors are causing this situation.  Average commutation allowances have" display "increased over the past year by {inc_ave_%}%.  Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased.  Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on a definite" pdisplay "upward trend.  A determination of the cause reveals that several different" pdisplay "factors are causing this situation.  Average commutation allowances have" pdisplay "increased over the past year by {inc_ave_%}%.  Meanwhile, the mix of cadets" pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased.  Furthermore, there has been a misvaluation in inventory" pdisplay "(either ending inventory has been overvalued or beginning inventory has been" pdisplay "undervalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_2_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
```

```
  inc_corps_comp_this > 0.05

Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situ-
ation. Average commutation allowances" pdisplay "have increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets"
pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_2_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situ-
ation. Average commutation" pdisplay "allowances have increased over the past year by (inc_ave_%)%." pdisplay "Furthermore, there
has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory has been" pdisplay
"undervalued.)" pdisplay " " pdisplay "                    Press any key to continue";

Rule gross_profit_analysis_2_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situ-
ation. The mix of cadets has become" pdisplay "more favorable, i.e., the proportion of upperclassmen in the corps has" pdisplay "increased.
Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory
has been" pdisplay "undervalued.)" pdisplay " " pdisplay "                    Press any key to continue¬";


Rule gross_profit_analysis_2_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
    locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is
on a definite" pdisplay "upward trend. A determination of the cause reveals that average" pdisplay "commutation allowances have in-
creased over the past year by (inc_ave_%)%." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_2_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that the mix of cadets" pdisplay "has become more favorable, i.e.,
the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "                    Press any key to continue";

Rule gross_profit_analysis_2_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
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  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory (either
ending inventory has been overvalued or" pdisplay "beginning inventory has been undervalued.)" pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_3_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downard trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "de-
creased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of
underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downard trend. A determination of the cause reveals that several different" pdisplay "factors are causing this situation.
Average commutation allowances have" pdisplay "decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" pdisplay
"has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased. Furthermore, there has been a
misvaluation in inventory" pdisplay "(either ending inventory has been undervalued or beginning inventory has been" pdisplay "overval-
ued.)" pdisplay " " pdisplay "                    Press any key to continue";

Rule gross_profit_analysis_3_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 *. 95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation allowances" pdisplay "have decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of
cadets" pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " "
pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_3_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation" pdisplay "allowances have decreased over the past year by (dec_ave_%)%." pdisplay "Furthermore,
there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning inventory has been"
pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_3_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less fa-
vorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
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locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on a definite" pdisplay "dowwnard trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situation. The mix of cadets has become" pdisplay "less favorable, i.e., the proportion of underclassmen in the corps has" pdisplay "increased. Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning inventory has been" pdisplay "overvalued.)" pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_3_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
color = 12
locate 11,6
dec_ave_% = (dec_ave_this * 100)
format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on a definite" pdisplay "downward trend. A determination of the cause reveals that average" pdisplay "commutation allowances have decreased over the past year by {dec_ave_%}%." pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_3_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
color = 12
locate 11,6
dec_ave_% = (dec_ave_this * 100)
format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps has increased."
locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on a definite" pdisplay "downward trend. A determination of the cause reveals that the mix of cadets" pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
color = 12
locate 11,6
dec_ave_% = (dec_ave_this * 100)
format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display "beginning inventory has been overvalued.)"
locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on a definite" pdisplay "downward trend. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory (either ending inventory has been undervalued or" pdisplay "beginning inventory has been overvalued.)" pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
inc_ave_this > 0.05 and
inc_corps_comp_this > 0.05 and
uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "increased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that several different" pdisplay "factors are causing this situation. Average commutation allowances have" pdisplay "increased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased. Furthermore, there has been a misvaluation in inventory" pdisplay "(either ending inventory has been overvalued or beginning inventory has been" pdisplay "undervalued.)" pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
inc_ave_this > 0.05 and
inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have

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increased over the past year by {inc_ave_%}%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation allowances" pdisplay "have increased over the past year by {inc_ave_%}%. Meanwhile, the mix of
cadets" pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " "
pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_4_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by {inc_ave_%}%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued."
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation" pdisplay "allowances have increased over the past year by {inc_ave_%}%." pdisplay "Furthermore, there
has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory has been" pdisplay
"undervalued." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_4_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. The mix of cadets has become" pdisplay "more favorable, i.e., the proportion of upperclassmen in the corps has" pdisplay "in-
creased. Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning
inventory has been" pdisplay "undervalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_4_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by {inc_ave_%}%."
    locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that average" pdisplay "commutation allowances have in-
creased over the past year by {inc_ave_%}%." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_4_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that the mix of cadets" pdisplay "has become more favorable,
i.e., the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "                    Press any key to
continue";


Rule gross_profit_analysis_4_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory
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(either ending inventory has been overvalued or" pdisplay "beginning inventory has been undervalued.)" pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_5_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display
"decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that several different" pdisplay "factors are causing this situ-
ation. Average commutation allowances have" pdisplay "decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets"
pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased. Furthermore, there has
been a misvaluation in inventory" pdisplay "(either ending inventory has been undervalued or beginning inventory has been" pdisplay
"overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display
"have decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the pro-
portion of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation allowances" pdisplay "have decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of
cadets" pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " "
pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances
have decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display
"ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation" pdisplay "allowances have decreased over the past year by (dec_ave_%)%." pdisplay "Furthermore,
there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning inventory has been"
pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less
favorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in in-
ventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. The mix of cadets has become" pdisplay "less favorable, i.e., the proportion of underclassmen in the corps has" pdisplay "in-
creased. Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning
inventory has been" pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
```

```
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
    locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that average" pdisplay "commutation allowances have de-
creased over the past year by {dec_ave_%}%." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display
"corps has increased."
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that the mix of cadets" pdisplay "has become less favorable,
i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "                    Press any key to
continue";

Rule gross_profit_analysis_5_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or"
display "beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory
(either ending inventory has been undervalued or" pdisplay "beginning inventory has been overvalued.)" pdisplay " " pdisplay "
Press any key to continue";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; runtime;

actions

color = 15 todo = ratio_analysis display "The system has just entered a new knowledge base and files must be" display "loaded. You will
be instructed when to continue." display " " find get_data display "Press any key to examine the expense to revenue ratios. ¬" display " "
find exp_to_rev_display find exp_to_rev_mkt_seg_display savefacts ratdata chain pratio2 ;


Rule get_necessary_data If get_data = unknown Then get_data = found
    wks ca,b13..d16,\vpp\playca
    ca_weight_this = (ca[1])
    ca_weight_last = (ca[2])
    ca_weight_2 = (ca[3])
    ca_ave_this = (ca[4])
    ca_ave_last = (ca[5])
    ca_ave_2 = (ca[6])
    corps_comp_this = (ca[7])
    corps_comp_last = (ca[8])
    corps_comp_2 = (ca[9])
    t_num_cadets_this = (ca[10])
    t_num_cadets_last = (ca[11])
    t_num_cadets_2 = (ca[12])
    reset ca
    wks bs_this,b1..b14,\vpp\playabbs
    wks bs_last,c1..c14,\vpp\playabbs
    wks bs_2_ago,d1..d14,\vpp\playabbs
    wks t_assets_3,e9,\vpp\playabbs
    wks inv_3_ago,e7,\vpp\playabbs
    wks is_this,b1..b85,\vpp\playabis
    wks is_last,c1..c85,\vpp\playabis
    wks is_2_ago,d1..d85,\vpp\playabis
    wks is_2_ago_a,d79..d85,\vpp\playabis
    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    net_income = (is_this[65])
    net_income_last = (is_last[65])
    net_income_2 = (is_2_ago[65])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])
    gross_profit = (is_this[16])
    gross_profit_last = (is_last[16])
    gross_profit_2 = (is_2_ago[16])
    t_mil_rev = (is_this[9])
    mil_rev_last = (is_last[9])
    mil_rev_2 = (is_2_ago[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    cost_uniforms_last = (is_last[15])
    cost_uniforms_2 = (is_2_ago[15])
    total_oper_exp_last = (is_last[64])
    total_oper_exp_2 = (is_2_ago[64])
    t_other_rev = (is_this[24])
    other_rev_last = (is_last[24])
    other_rev_2 = (is_2_ago[24])
    t_personal = (is_this[36])
    personal_last = (is_last[36])
    corps_e_to_r_this = (is_this[79])
    public_e_to_r_this = (is_this[81])
    s_f_s_e_to_r_this = (is_this[82])
    interdept_e_to_r_this = (is_this[83])
    music_e_to_r_this = (is_this[84])
    state_e_to_r_this = (is_this[85])
    corps_e_to_r_last = (is_last[79])
    public_e_to_r_last = (is_last[81])
    s_f_s_e_to_r_last = (is_last[82])
    interdept_e_to_r_last = (is_last[83])
    music_e_to_r_last = (is_last[84])
    state_e_to_r_last = (is_last[85])
```

```
    corps_e_to_r_2 = (is_2_ago_a[1])
    public_e_to_r_2 = (is_2_ago_a[3])
    s_f_s_e_to_r_2 = (is_2_ago_a[4])
    interdept_e_to_r_2 = (is_2_ago_a[5])
    music_e_to_r_2 = (is_2_ago_a[6])
    state_e_to_r_2 = (is_2_ago_a[7])
    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago;

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios

If todo = ratio_analysis

Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2));

Rule exp_to_rev_display IF exp_to_rev_ratio < > unknown Then exp_to_rev_display = found
    cls
    color = 11
    locate 2,27
    display "EXPENSE TO REVENUE RATIO"
    locate 4,6 display "The expense to revenue ratio was designed to measure how much of each" display "revenue dollar is consumed by
expenses. The primary responsibility of" display "the Tailor Shop is to provide a service, rather than to produce a" display "profit. How-
ever, given the level of service provided and the prices" display "charged, it should strive for a low expense to revenue ratio. If net" display
"income is to be used only to replace old equipment, then an expense to " display "revenue ratio of around .995 is desirable. On the other
hand, if net" display "income is also to be used to repay the amount borrowed from other" display "auxiliaries (say over a 10 year period),
then a ratio of around .93 is" display "desirable. In any case, the expense to revenue ratio should be less than" display "1, since a ratio
greater than 1 indicates that expenses exceed revenues."
    locate 19,13 display "Press any key to see the Expense to Revenue analysis¬"

    pdisplay " "
    pdisplay " "
    locate 2,27
    pdisplay "                    EXPENSE TO REVENUE RATIO"
    pdisplay " "
    locate 4,6 pdisplay "    The expense to revenue ratio was designed to measure how much of each" pdisplay "revenue dollar is consumed
by expenses. The primary responsibility of" pdisplay "the Tailor Shop is to provide a service, rather than to produce a" pdisplay "profit.
However, given the level of service provided and the prices" pdisplay "charged, it should strive for a low expense to revenue ratio. If net"
pdisplay "income is to be used only to replace old equipment, then an expense to " pdisplay "revenue ratio of around .995 is desirable.
On the other hand, if net" pdisplay "income is also to be used to repay the amount borrowed from other" pdisplay "auxiliaries (say over a
10 year period), then a ratio of around .93 is" pdisplay "desirable. In any case, the expense to revenue ratio should be less than" pdisplay
"1, since a ratio greater than 1 indicates that expenses exceed revenues." pdisplay " " pdisplay "                    Press any key to see the Expense
to Revenue analysis"

    find rest_of_display_e_to_r;

Rule display_for_exp_to_rev If exp_to_rev_ratio < > unknown Then rest_of_display_e_to_r = found
    cls
    color = 11
    locate 2,25
    display "EXPENSE TO REVENUE RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format exp_to_rev_ratio, 5.3
    display "{exp_to_rev_ratio}"
    locate 8,34
    format exp_to_rev_ratio_last, 5.3
    display "{exp_to_rev_ratio_last}"
    locate 8,24
    format exp_to_rev_ratio_2, 5.3
```

```
    display "{exp_to_rev_ratio_2}"

    pdisplay " "
    pdisplay " "
    locate 2,25
    pdisplay "                    EXPENSE TO REVENUE RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                    {c}      {b}      {a}"
    pdisplay " "
    pdisplay " "
    a = (exp_to_rev_ratio)
    b = (exp_to_rev_ratio_last)
    c = (exp_to_rev_ratio_2)
    pdisplay "                    {c}      {b}      {a}"

    find e_to_r_analysis;

Rule analyze_exp_to_rev_0_a If exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The expense" display "to revenue ratio is greater than 1
and does not apear to be improving. Thus," display "the Tailor Shop is operating in the red and counting on other auxiliary" display "en-
terprises to help pay its operating expenses. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad.
The expense" pdisplay "to revenue ratio is greater than 1 and does not apear to be improving. Thus," pdisplay "the Tailor Shop is operating
in the red and counting on other auxiliary" pdisplay "enterprises to help pay its operating expenses.";


Rule analyze_exp_to_rev_0_b If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The size" display "size of the expense to revenue ratio
indicates that although income is" display "positive, it is not large enough to cover expected demand for equipment" display "replacements.
Futhermore, the situation does not appear to be improving. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situ-
ation is not good. The size" pdisplay "size of the expense to revenue ratio indicates that although income is" pdisplay "positive, it is not
large enough to cover expected demand for equipment" pdisplay "replacements. Futhermore, the situation does not appear to be improv-
ing.";

Rule analyze_exp_to_rev_0_c If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_last * .999) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable
level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from" display "other auxiliaries
are being decreased. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay
"to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the
loans from" pdisplay "other auxiliaries are being decreased.";


Rule analyze_exp_to_rev_0_d If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last_last * .999) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "It should be noted however, that it is possible that the the
Tailor Shop will" display "be accused of gouging its customers since the ratio is so low. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen
above, the present situation is quite good. The expense" pdisplay "to revenue ratio indicates that income is not only high enough to cover"
pdisplay "expected demand for equipment replacement, but can also contribute" pdisplay "substantially to decreasing the amount owed to
other auxiliary enterprises." pdisplay "It should be noted however, that it is possible that the the Tailor Shop will" pdisplay "be accused
of gouging its customers since the ratio is so low.";


Rule analyze_exp_to_rev_ratio_1_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
```

```
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year." display "Meanwhile, costs incurred for salaries and fringe benefits (which generally" display "make up
around 60% of total costs) have increased by (personal_inc)% over" display "the past year.¬" pdisplay " " pdisplay " " pdisplay "As can
be seen above, the present situation is quite bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but it is increasing
over" pdisplay "time. A glance at the income statements will give a good indication of why" pdisplay "this is happening. Revenue from
the corps (which typically constitutes more" pdisplay "than 75% of total revenue) has decreased by (mil_dec)% over the past year."
pdisplay "Meanwhile, costs incurred for salaries and fringe benefits (which generally" pdisplay "make up around 60% of total costs) have
increased by (personal_inc)% over" pdisplay "the past year.";

Rule analyze_exp_to_rev_ratio_1_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only"
pdisplay "is the expense to revenue ratio greater than 1, but it is increasing over" pdisplay "time. A glance at the income statements will
give a good indication of why" pdisplay "this is happening. Revenue from the corps (which typically constitutes more" pdisplay "than 75%
of total revenue) has decreased by (mil_dec)% over the past year.";

Rule analyze_exp_to_rev_ratio_1_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Costs incurred for salaries and fringe benefits (which" display "generally make up around 60 % of total costs) have in-
creased by (personal_inc)%" display "over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation
is quite bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but it is increasing over" pdisplay "time. A glance at the
income statements will give a good indication of why" pdisplay "this is happening. Costs incurred for salaries and fringe benefits (which"
pdisplay "generally make up around 60 % of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";

Rule analyze_exp_to_rev_ratio_2_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by (mil_dec)% over the past year. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around
60% of total" display "costs) have increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen
above, the present situation is not good. Although" pdisplay "the expense to revenue ratio is less than 1, it is increasing over time."
pdisplay "Furthermore, its size indicates that the present rate of income is not enough" pdisplay "to cover expected demand for equipment
replacements. A glance at the income" pdisplay "statements will give a good indication of why this is happening. Revenue" pdisplay "from
the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has decreased by (mil_dec)% over the past year.
Meanwhile, costs incurred" pdisplay "for salaries and fringe benefits (which generally make up around 60% of total" pdisplay "costs) have
increased by (personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_2_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
```

```
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by (mil_dec)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although"
pdisplay "the expense to revenue ratio is less than 1, it is increasing over time." pdisplay "Furthermore, its size indicates that the present
rate of income is not enough" pdisplay "to cover expected demand for equipment replacements. A glance at the income" pdisplay "state-
ments will give a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75%
of total revenue)" pdisplay "has decreased by (mil_dec)% over the past year.";


Rule analyze_exp_to_rev_ratio_2_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statementw will give a good indication of why
this is happening. Meanwhile," display "costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of
total costs) have increased by (personal_inc)% over the past" display "year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above,
the present situation is not good. Although" pdisplay "is the expense to revenue ratio is less than 1, it is increasing over time." pdisplay
"Furthermore, its size indicates that the present rate of income is not enough" pdisplay "to cover expected demand for equipment replace-
ments. A glance at the income" pdisplay "statementw will give a good indication of why this is happening. Meanwhile," pdisplay "costs
incurred for salaries and fringe benefits (which generally make up" pdisplay "around 60% of total costs) have increased by (personal_inc)%
over the past" pdisplay "year.";


Rule analyze_exp_to_rev_ratio_3_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is increasing over time. A
glance at the income" display "statements will show why this is happening. The revenue from the corps" display "(which typically consti-
tutes 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. Meanwhile, costs incurred for salaries and fringe"
display "benefits (which generally make up around 60% of total costs) have increased" display "by (personal_inc)% over the past year.¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an
acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay
"auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio is increasing over time. A glance
at the income" pdisplay "statements will show why this is happening. The revenue from the corps" pdisplay "(which typically constitutes
75% of total revenue) has decreased by (mil_dec)%" pdisplay "over the past year. Meanwhile, costs incurred for salaries and fringe"
pdisplay "benefits (which generally make up around 60% of total costs) have increased" pdisplay "by (personal_inc)% over the past year.";


Rule analyze_exp_to_rev_ratio_3_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is decreasing over time. A
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glance at the income " display "statements will show why this is happening. The revenue from the corps" display "(which typically constitures 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. ¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio is decreasing over time. A glance at the income " pdisplay "statements will show why this is happening. The revenue from the corps" pdisplay "(which typically constitures 75% of total revenue) has decreased by (mil_dec)%" pdisplay "over the past year.";

Rule analyze_exp_to_rev_ratio_3_c **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
exp_to_rev_ratio > = 0.93 and
exp_to_rev_ratio < = .995 and
t_mil_rev > = (mil_rev_last) and
t_personal > (personal_last) **Then** e_to_r_analysis = found
locate 11,6
color = 14
find mil_dec
find personal_inc
format mil_dec, 4.1
format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" display "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio is decreasing over time. A glance at the income" display "statements will show why this is happening. Costs incurred for salaries and" display "fringe benefits (which generally make up around 60% of total costs) have" display "increased by (personal_inc)% over the past year. ¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however, is in order." pdisplay "Note that the ratio is decreasing over time. A glance at the income" pdisplay "statements will show why this is happening. Costs incurred for salaries and" pdisplay "fringe benefits (which generally make up around 60% of total costs) have" pdisplay "increased by (personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_4 **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
exp_to_rev_ratio < = 0.93 **Then** e_to_r_analysis = found
locate 11,6
color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substantially to decreasing the amount owed to other auxiliary enterprises." display "There are a couple of things to note here however. First, the expense to" display "revenue ratio is so low that the Tailor Shop might be accused of gouging" display "its customers. And second, the ratio is incraseing over time . This may" display "signal that income is decreasing, or it may signal a concerted effort on" display "the part of management to bring down prices to an 'acceptable' level. ¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite good. The expense" pdisplay "to revenue ratio indicates that income is not only high enough to cover" pdisplay "expected demand for equipment replacement, but can also contribute" pdisplay "substantially to decreasing the amount owed to other auxiliary enterprises." pdisplay "There are a couple of things to note here however. First, the expense to" pdisplay "revenue ratio is so low that the Tailor Shop might be accused of gouging" pdisplay "its customers. And second, the ratio is incraseing over time . This may" pdisplay "signal that income is decreasing, or it may signal a concerted effort on" pdisplay "the part of management to bring down prices to an 'acceptable' level.";

Rule analyze_exp_to_rev_ratio_5 **If** exp_to_rev_ratio < (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
exp_to_rev_ratio > 1 **Then** e_to_r_analysis = found
locate 11,6
color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1 which indicates that expenses exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries to cover its operating expenses. On a positive note, the ratio" display "is decreasing over time, indicating that improvements are being made. ¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The expense" pdisplay "to revenue ratio is greater than 1 which indicates that expenses exceed" pdisplay "revenues. This means that the Tailor Shop is depending on the other" pdisplay "auxiliaries to cover its operating expenses. On a positive note, the ratio" pdisplay "is decreasing over time, indicating that improvements are being made.";

Rule analyze_exp_to_rev_ratio_6 **If** exp_to_rev_ratio < (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
exp_to_rev_ratio < = 1 and
exp_to_rev_ratio >.995 **Then** e_to_r_analysis = found
locate 11,6
color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the expense to revenue ratio is barely less than 1, it is" display "improving over time. At this point, it is not earning enough to cover" display "all of expected demand for equipment replacement. However, if the current" display "trend continues, they should be able to do so in the future. ¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is improving. " pdisplay "Although the expense to revenue ratio is barely less than 1, it is" pdisplay "improving over time. At this point, it is not earning enough to cover" pdisplay "all of expected demand for equipment replacement. However, if the current" pdisplay "trend continues, they should be able to do so in the future.";

Rule analyze_exp_to_rev_ratio_7 **If** exp_to_rev_ratio < (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
exp_to_rev_ratio < = .995 and
exp_to_rev_ratio >.93 **Then** e_to_r_analysis = found
locate 11,6

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    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it falls" display "in a very good region. A ratio in this region indicates that net income is" display "sufficient
to cover expected demand for equipment replacement, and also to" display "pay back some of the debt owed to the other auxiliary enter-
prises.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is
the expense to revenue ratio improving over time, but it falls" pdisplay "in a very good region. A ratio in this region indicates that net in-
come is" pdisplay "sufficient to cover expected demand for equipment replacement, and also to" pdisplay "pay back some of the debt owed
to the other auxiliary enterprises.";


Rule analyze_exp_to_rev_ratio_8 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio <= .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it" display "indicates that a substantial dent can be made in its debt to other auxiliary" display "enterprises.
On the negative side, a ratio so small indicates that revenues" display "greatly exceed expenses which could be considered price gouging.¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is the expense
to revenue ratio improving over time, but it" pdisplay "indicates that a substantial dent can be made in its debt to other auxiliary" pdisplay
"enterprises. On the negative side, a ratio so small indicates that revenues" pdisplay "greatly exceed expenses which could be considered
price gouging.";


Rule analyze_exp_to_rev_ratio_9_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but has increased over the" display "past year. A glance at the income statements will give a good indication of" dis-
play "why this is happening. Revenue from the corps (which typically constitutes" display "more than 75% of total revenue) has decreased
by (mil_dec)%. Meanwhile, costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of
total costs) have increased by (personal_inc)%.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite
bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but has increased over the" pdisplay "past year. A glance at the
income statements will give a good indication of" pdisplay "why this is happening. Revenue from the corps (which typically constututes"
pdisplay "more than 75% of total revenue) has decreased by (mil_dec)%. Meanwhile, costs" pdisplay "incurred for salaries and fringe
benefits (which generally make up around 60%" pdisplay "of total costs) have increased by (personal_inc)%.";


Rule analyze_exp_to_rev_ratio_9_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal <= (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Revenue from the corps (which typically" display "constitutes more than 75% of total revenue) has decreased
by (mil_dec)%.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the
expense to revenue ratio greater than 1, but it has increased over" pdisplay "the past year. A glance at the income statements will give a
good indication" pdisplay "of why this is happening. Revenue from the corps (which typically" pdisplay "constitutes more than 75% of total
revenue) has decreased by (mil_dec)%.";


Rule analyze_exp_to_rev_ratio_9_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev >= (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Costs incurred for salaries and fringe benefits" display "(which generally make up around 60% of total costs)
have increased by (personal_inc)%" display "over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present
situation is quite bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but it has increased over" pdisplay "the past year.
A glance at the income statements will give a good indication" pdisplay "of why this is happening. Costs incurred for salaries and fringe
benefits" pdisplay "(which generally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";
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Rule analyze_exp_to_rev_ratio_10_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
is less than 1, it has increased over the past year." display "Furthermore, its size indicates that the present rate of income is not" display
"enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indication
of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has
decreased by (mil_dec)%. Meanwhile, costs incurred for salaries" display "and fringe benefits (whidh generally make up around 60% of
total costs) have" display "increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above,
the present situation is not good. Although" pdisplay "the expense to revenue is less than 1, it has increased over the past year." pdisplay
"Furthermore, its size indicates that the present rate of income is not" pdisplay "enough to cover expected demand for equipment replace-
ments. A glance at" pdisplay "the income statements will give a good indication of why this is happening." pdisplay "Revenue from the
corps (which typically constitutes more than 75% of total" pdisplay "revenue) has decreased by (mil_dec)%. Meanwhile, costs incurred
for salaries" pdisplay "and fringe benefits (whidh generally make up around 60% of total costs) have" pdisplay "increased by
(personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_10_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is" display
"not enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indi-
cation of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue)
has decreased by (mil_dec)%.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although"
pdisplay "the expense to revenue ratio is less than 1, it has increased over the past" pdisplay "year. Furthermore, its size indicates that the
present rate of income is" pdisplay "not enough to cover expected demand for equipment replacements. A glance at" pdisplay "the income
statements will give a good indication of why this is happening." pdisplay "Revenue from the corps (which typically constitutes more than
75% of total" pdisplay "revenue) has decreased by (mil_dec)%.";

Rule analyze_exp_to_rev_ratio_10_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is not" dis-
play "enough to cover expected demand for equipment replacements. A glance at the" display "income statements will give a good indi-
cation of why this is happening. Costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display
"of total costs) have increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the
present situation is not good. Although" pdisplay "the expense to revenue ratio is less than 1, it has increased over the past" pdisplay "year.
Furthermore, its size indicates that the present rate of income is not" pdisplay "enough to cover expected demand for equipment replace-
ments. A glance at the" pdisplay "income statements will give a good indication of why this is happening. Costs" pdisplay "incurred for
salaries and fringe benefits (which generally make up around 60%" pdisplay "of total costs) have increased by (personal_inc)% over the
past year.";

Rule analyze_exp_to_rev_ratio_11_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 14
   find mil_dec
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    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically
constitues 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. Meanwhile, costs incurred for salaries and
fringe" display "benefits (which generally make up around 60% of total costs) have increased by" display " (personal_inc)% over the past
year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio
is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other"
pdisplay "auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio has increased over the past
year. A glance at the" pdisplay "income statements will show why this is happening. The revenue from the" pdisplay "corps (which typi-
cally constitues 75% of total revenue) has decreased by (mil_dec)%" pdisplay "over the past year. Meanwhile, costs incurred for salaries
and fringe" pdisplay "benefits (which generally make up around 60% of total costs) have increased by" pdisplay " (personal_inc)% over the
past year.";


Rule analyze_exp_to_rev_ratio_11_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio >= 0.93 and
  exp_to_rev_ratio <= .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio has decreased over the past
year. A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically
consititues 75% of total revenue) has decreased by" display " (mil_dec)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can
be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that re-
serves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A
word of caution however, is in order." pdisplay "Note that the ratio has decreased over the past year. A glance at the" pdisplay "income
statements will show why this is happening. The revenue from the" pdisplay "corps (which typically consitutues 75% of total revenue) has
decreased by" pdisplay " (mil_dec)% over the past year.";


Rule analyze_exp_to_rev_ratio_11_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio >= 0.93 and
  exp_to_rev_ratio <= .995 and
  t_mil_rev >= (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening. Costs incurred for" display "salaries and fringe benefits
(which generally make up around 60% of total" display "costs), have increased by (personal_inc)% over the past year.¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable
level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxilia-
ries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio has increased over the past year. A glance
at the" pdisplay "income statements will show why this is happening. Costs incurred for" pdisplay "salaries and fringe benefits (which
generally make up around 60% of total" pdisplay "costs), have increased by (personal_inc)% over the past year.";


Rule analyze_exp_to_rev_ratio_12 If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio <= .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The expense to revenue ratio is
quite low, indicating that a substantial " display "dent can be made in its debt to other auxiliary enterprises. Notice that the" display "ratio
has ineased over the past year. This may indicate a decline in income," display "or it may indicate a concerted effort on the part of man-
agement to bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into.¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "The expense to revenue ratio is quite
low, indicating that a substantial " pdisplay "dent can be made in its debt to other auxiliary enterprises. Notice that the" pdisplay "ratio
has ineased over the past year. This may indicate a decline in income," pdisplay "or it may indicate a concerted effort on the part of
management to bring" pdisplay "prices more in line with costs. If the former case is true, it should be" pdisplay "looked into.";


Rule analyze_exp_to_rev_ratio_13 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
```

```
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1
which indicates that costs exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries to
cover some of its operating expenses. On a positive note," display "the ratio has decreased over the past year indicating that improvements"
display "are being made.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The expense"
pdisplay "to revenue ratio is greater than 1 which indicates that costs exceed" pdisplay "revenues. This means that the Tailor Shop is de-
pending on the other" pdisplay "auxiliaries to cover some of its operating expenses. On a positive note," pdisplay "the ratio has decreased
over the past year indicating that improvements" pdisplay "are being made.";


Rule analyze_exp_to_rev_ratio_14 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is not too bad. " display "Although the expense to revenue
ratio is barely less than 1, it has improved" display "over the past year. At this point, the Tailor Shop is not earning enough to" display
"cover all of expected demand for equipment replacement. However, if the" display "current trend continues, they should be able to do so
in the future.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is not too bad. " pdisplay "Al-
though the expense to revenue ratio is barely less than 1, it has improved" pdisplay "over the past year. At this point, the Tailor Shop is
not earning enough to" pdisplay "cover all of expected demand for equipment replacement. However, if the" pdisplay "current trend con-
tinues, they should be able to do so in the future.";


Rule analyze_exp_to_rev_ratio_15 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio >.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The expense to revenue ratio falls
within a very good region indicating" display "that net income is sufficient to cover expected demand and also pay back" display "some of
the debt owed to other auxiliary enterprises. It should be noted" display "however, that the ratio has increased over the past year. This
indicates" display "decreasing earnings, and should be checked into.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situ-
ation at the Tailor Shop is not bad. " pdisplay "The expense to revenue ratio falls within a very good region indicating" pdisplay "that net
income is sufficient to cover expected demand and also pay back" pdisplay "some of the debt owed to other auxiliary enterprises. It should
be noted" pdisplay "however, that the ratio has increased over the past year. This indicates" pdisplay "decreasing earnings, and should be
checked into.";


Rule analyze_exp_to_rev_ratio_16 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the expense to re-
venue ratio improved over the past year, but" display "it also indicates that a substantial dent can be made in their debt to other" display
"auxiliary enterprises. On the negative side, a ratio this small indicates" display "that revenues greatly exceed expenses which could be
considered price gouging.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. "
pdisplay "Not only has the expense to revenue ratio improved over the past year, but" pdisplay "it also indicates that a substantial dent can
be made in their debt to other" pdisplay "auxiliary enterprises. On the negative side, a ratio this small indicates" pdisplay "that revenues
greatly exceed expenses which could be considered price gouging.";


Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule exp_to_rev_mkt_seg_display IF corps_e_to_r_this < > unknown Then exp_to_rev_mkt_seg_display = found
    cls
    color = 11
    locate 3,27
    display "EXPENSE TO REVENUE RATIO"
    locate 5,30
    display "BY MARKET SEGMENT"
    locate 8,6 display "Expense to revenue ratios are also calculated for each market segment" display "of the Tailor Shop. These are very
useful as they show which market" display "segments are able to cover their individual expenses. It should be noted" display "however, that
overhead expenses are not included in any of these figures." display "Thus, if all segments showed a ratio of 1.0, the Tailor Shop would
not be" display "able to cover all of its expenses, due to overhead expenses not included" display "in the computations. Overhead expenses
for the Tailor Shop generally" display "constitute between 20% and 30% of total expenses, which is currently" display "between $30,000
and $60,000." locate 19,15 display "Press any key to see the Expense to Revenue ratios ¬"

    pdisplay " "
    pdisplay " "
    pdisplay " "
    locate 3,27
    pdisplay "                    EXPENSE TO REVENUE RATIO"
    pdisplay " "
    locate 5,30
    pdisplay "                      BY MARKET SEGMENT"
    pdisplay " "
```

```
    pdisplay " " pdisplay "      Expense to revenue ratios are also calculated for each market segment" pdisplay "of the Tailor Shop. These
are very useful as they show which market" pdisplay "segments are able to cover their individual expenses. It should be noted" pdisplay
"however, that overhead expenses are not included in any of these figures." pdisplay "Thus, if all segments showed a ratio of 1.0, the Tailor
Shop would not be" pdisplay "able to cover all of its expenses, due to overhead expenses not included" pdisplay "in the computations.
Overhead expenses for the Tailor Shop generally" pdisplay "constitute between 20% and 30% of total expenses, which is currently" pdisplay
"between $30,000 and $60,000." pdisplay " " pdisplay "                    Press any key to see the Expense to Revenue ratios"
    find rest_of_display_mkt_seg;

Rule display_for-mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_seg = found
    cls
    locate 2,25
    color = 11
    display "EXPENSE TO REVENUE RATIOS"
    locate 4,29
    display "BY MARKET SEGMENT"
    locate 7,12
    display "MARKET SEGMENT"
    locate 7,38
    display "(year_2_ago)"
    locate 7,48
    display "(last_year)"
    locate 7,58
    display "(current_year)"
    locate 9,12
    display "Corps"
    locate 10,12
    display "Public"
    locate 11,12
    display "Student/Faculty/Staff"
    locate 12,12
    display "Interdepartmental"
    locate 13,12
    display "Music Department"
    locate 14,12
    display "State Related"
    locate 17,20
    color = 12
    display "market segment not covering its expenses"
    locate 18,22
    color = 14
    display "market segment covering its expenses"
    locate 19,28
    color = 11
    display "* upward trend - not good"

    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "                    EXPENSE TO REVENUE RATIOS"
    pdisplay " "
    pdisplay "                      BY MARKET SEGMENT"
    pdisplay " "
    pdisplay " "
    a = (year_2_ago)
    b = (last_year)
    c = (current_year)
    pdisplay "          MARKET SEGMENT          (a)      (b)      (c)"
    pdisplay " "
    find rest_of_display_mkt_segs;

Rule display_for_mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_segs = found
    find corps_e_r_display_this
    find public_e_r_display_this
    find s_f_s_e_r_display_this
    find interdept_e_r_display_this
    find music_e_r_display_this
    find state_e_r_display_this
    find corps_e_r_display_last
    find public_e_r_display_last
    find s_f_s_e_r_display_last
    find interdept_e_r_display_last
    find music_e_r_display_last
    find state_e_r_display_last
    find corps_e_r_display_2
    find public_e_r_display_2
    find s_f_s_e_r_display_2
    find interdept_e_r_display_2
    find music_e_r_display_2
    find state_e_r_display_2
    find corps_star_display
```

```
    find public_star_display
    find s_f_s_star_display
    find interdept_star_display
    find music_star_display
    find state_star_display
    a = (corps_e_to_r_this)
    b = (corps_e_to_r_last)
    c = (corps_e_to_r_2)
    find p_corps_display
    a = (public_e_to_r_this)
    b = (public_e_to_r_last)
    c = (public_e_to_r_2)
    find p_public_display
    a = (s_f_s_e_to_r_this)
    b = (s_f_s_e_to_r_last)
    c = (s_f_s_e_to_r_2)
    find p_s_f_s_display
    a = (interdept_e_to_r_this)
    b = (interdept_e_to_r_last)
    c = (interdept_e_to_r_2)
    find p_interdept_display
    a = (music_e_to_r_this)
    b = (music_e_to_r_last)
    c = (music_e_to_r_2)
    find p_music_display
    a = (state_e_to_r_this)
    b = (state_e_to_r_last)
    c = (state_e_to_r_2)
    find p_state_display
    pdisplay ' '
    pdisplay ' '
    pdisplay '                    * upward trend - not good';

Rule pdisplay_corps_e_to_r

If a > (b) and
   b > (c) Then p_corps_display = found
     pdisplay '          Corps                {c}     {b}     {a}  *' else pdisplay '          Corps                {c}     {b}     {a}
';

Rule pdisplay_public_e_to_r

If a > (b) and
   b > (c) Then p_public_display = found
     pdisplay '          Public               {c}     {b}     {a}  *' else pdisplay '          Public               {c}     {b}     {a}
';

Rule pdisplay_s_f_s_e_to_r

If a > (b) and
   b > (c) Then p_s_f_s_display = found
     pdisplay '          Student/Faculty/Staff    {c}     {b}     {a}  *' else pdisplay '          Student/Faculty/Staff    {c}     {b}
{a} ';

Rule pdisplay_interdept_e_to_r

If a > (b) and
   b > (c) Then p_interdept_display = found
     pdisplay '          Interdepartmental        {c}     {b}     {a}  *' else pdisplay '          Interdepartmental        {c}     {b}
{a} ';

Rule pdisplay_music_e_to_r

If a > (b) and
   b > (c) Then p_music_display = found
     pdisplay '          Music Department         {c}     {b}     {a}  *' else pdisplay '          Music Department         {c}     {b}
{a} ';

Rule pdisplay_state_e_to_r

If a > (b) and
   b > (c) Then p_state_display = found
     pdisplay '          State Related            {c}     {b}     {a}  *' else pdisplay '          State Related            {c}     {b}     {a}
';

Rule corps_display_this If corps_e_to_r_this < = 1.0 Then color = 14
    locate 9,58
    format corps_e_to_r_this, 4.2
    display '(corps_e_to_r_this)'
```

```
    corps_e_r_display_this = found else color = 12
    locate 9,58
    format corps_e_to_r_this,4.2
    display "{corps_e_to_r_this}";

Rule public_display_this If public_e_to_r_this < = 1.0 Then color = 14
    locate 10,58
    format public_e_to_r_this, 4.2
    display "{public_e_to_r_this}"
    public_e_r_display_this = found else color = 12
    locate 10,58
    format public_e_to_r_this,4.2
    display "{public_e_to_r_this}";

Rule s_f_s_display_this If s_f_s_e_to_r_this < = 1.0 Then color = 14
    locate 11,58
    format s_f_s_e_to_r_this, 4.2
    display "{s_f_s_e_to_r_this}"
    s_f_s_e_r_display_this = found else color = 12
    locate 11,58
    format s_f_s_e_to_r_this,4.2
    display "{s_f_s_e_to_r_this}";

Rule interdept_display_this If interdept_e_to_r_this < = 1.0 Then color = 14
    locate 12,58
    format interdept_e_to_r_this, 4.2
    display "{interdept_e_to_r_this}"
    interdept_e_r_display_this = found else color = 12
    locate 12,58
    format interdept_e_to_r_this,4.2
    display "{interdept_e_to_r_this}";

Rule music_display_this If music_e_to_r_this < = 1.0 Then color = 14
    locate 13,58
    format music_e_to_r_this, 4.2
    display "{music_e_to_r_this}"
    music_e_r_display_this = found else color = 12
    locate 13,58
    format music_e_to_r_this,4.2
    display "{music_e_to_r_this}";

Rule state_display_this If state_e_to_r_this < = 1.0 Then color = 14
    locate 14,58
    format state_e_to_r_this, 4.2
    display "{state_e_to_r_this}"
    state_e_r_display_this = found else color = 12
    locate 14,58
    format state_e_to_r_this,4.2
    display "{state_e_to_r_this}";

Rule corps_display_last If corps_e_to_r_last < = 1.0 Then color = 14
    locate 9,48
    format corps_e_to_r_last, 4.2
    display "{corps_e_to_r_last}"
    corps_e_r_display_last = found else color = 12
    locate 9,48
    format corps_e_to_r_last,4.2
    display "{corps_e_to_r_last}";

Rule public_display_last If public_e_to_r_last < = 1.0 Then color = 14
    locate 10,48
    format public_e_to_r_last, 4.2
    display "{public_e_to_r_last}"
    public_e_r_display_last = found else color = 12
    locate 10,48
    format public_e_to_r_last,4.2
    display "{public_e_to_r_last}";

Rule s_f_s_display_last If s_f_s_e_to_r_last < = 1.0 Then color = 14
    locate 11,48
    format s_f_s_e_to_r_last, 4.2
    display "{s_f_s_e_to_r_last}"
    s_f_s_e_r_display_last = found else color = 12
    locate 11,48
    format s_f_s_e_to_r_last,4.2
    display "{s_f_s_e_to_r_this}";

Rule interdept_display_last If interdept_e_to_r_last < = 1.0 Then color = 14
    locate 12,48
    format interdept_e_to_r_last, 4.2
```

```
    display "(interdept_e_to_r_last)"
    interdept_e_r_display_last = found else color = 12
    locate 12,48
    format interdept_e_to_r_last,4.2
    display "(interdept_e_to_r_last)";

Rule music_display_last If music_e_to_r_last < = 1.0 Then color = 14
    locate 13,48
    format music_e_to_r_last, 4.2
    display "(music_e_to_r_last)"
    music_e_r_display_last = found else color = 12
    locate 13,48
    format music_e_to_r_last,4.2
    display "(music_e_to_r_last)";

Rule state_display_last If state_e_to_r_last < = 1.0 Then color = 14
    locate 14,48
    format state_e_to_r_last, 4.2
    display "(state_e_to_r_last)"
    state_e_r_display_last = found else color = 12
    locate 14,48
    format state_e_to_r_last,4.2
    display "(state_e_to_r_last)";

Rule corps_display_2 If corps_e_to_r_2 < = 1.0 Then color = 14
    locate 9,38
    format corps_e_to_r_2, 4.2
    display "(corps_e_to_r_2)"
    corps_e_r_display_2 = found else color = 12
    locate 9,38
    format corps_e_to_r_2,4.2
    display "(corps_e_to_r_2)";

Rule public_display_2 If public_e_to_r_2 < = 1.0 Then color = 14
    locate 10,38
    format public_e_to_r_2, 4.2
    display "(public_e_to_r_2)"
    public_e_r_display_2 = found else color = 12
    locate 10,38
    format public_e_to_r_2,4.2
    display "(public_e_to_r_2)";

Rule s_f_s_display_2 If s_f_s_e_to_r_2 < = 1.0 Then color = 14
    locate 11,38
    format s_f_s_e_to_r_2, 4.2
    display "(s_f_s_e_to_r_2)"
    s_f_s_e_r_display_2 = found else color = 12
    locate 11,38
    format s_f_s_e_to_r_2,4.2
    display "(s_f_s_e_to_r_2)";

Rule interdept_display_2 If interdept_e_to_r_2 < = 1.0 Then color = 14
    locate 12,38
    format interdept_e_to_r_2, 4.2
    display "(interdept_e_to_r_2)"
    interdept_e_r_display_2 = found else color = 12
    locate 12,38
    format interdept_e_to_r_2,4.2
    display "(interdept_e_to_r_2)";

Rule music_display_2 If music_e_to_r_2 < = 1.0 Then color = 14
    locate 13,38
    format music_e_to_r_2, 4.2
    display "(music_e_to_r_2)"
    music_e_r_display_2 = found else color = 12
    locate 13,38
    format music_e_to_r_2,4.2
    display "(music_e_to_r_2)";

Rule state_display_2 If state_e_to_r_2 < = 1.0 Then color = 14
    locate 14,38
    format state_e_to_r_2, 4.2
    display "(state_e_to_r_2)"
    state_e_r_display_2 = found else color = 12
    locate 14,38
    format state_e_to_r_2,4.2
    display "(state_e_to_r_2)";

Rule star_corps_display If corps_e_to_r_this > = (corps_e_to_r_last) and
  corps_e_to_r_last > = (corps_e_to_r_2) Then corps_star_display = found
```

```
    color = 11
    locate 9,64
    display "*";

Rule star_public_display If public_e_to_r_this > = (public_e_to_r_last) and
  public_e_to_r_last > = (public_e_to_r_2) Then public_star_display = found
    color = 11
    locate 10,64
    display "*";

Rule star_s_f_s_display If s_f_s_e_to_r_this > = (s_f_s_e_to_r_last) and
  s_f_s_e_to_r_last > = (s_f_s_e_to_r_2) Then s_f_s_star_display = found
    color = 11
    locate 11,64
    display "*";

Rule star_interdept_display If interdept_e_to_r_this > = (interdept_e_to_r_last) and
  interdept_e_to_r_last > = (interdept_e_to_r_2) Then interdept_star_display = found
    color = 11
    locate 12,64
    display "*";

Rule star_music_display If music_e_to_r_this > = (music_e_to_r_last) and
  music_e_to_r_last > = (music_e_to_r_2) Then music_star_display = found
    color = 11
    locate 13,64
    display "*";

Rule star_state_display If state_e_to_r_this > = (state_e_to_r_last) and
  state_e_to_r_last > = (state_e_to_r_2) Then state_star_display = found
    color = 11
    locate 14,64
    display "* ¬" else locate 19,77
    display "  ¬";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the (equip_name) cost?";

ask purchase_month: "Please enter the number for the month in which the (equip_name) was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the (equip_name) expected to last?";

ask num_fresh: "June (current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June (current_year)?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; runtime;

actions

todo = ratio_analysis color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. You will be instructed when to continue." display " " loadfacts ratdata display "Press any key to examine the total asset turnover ratios.¬" display " " find t_asset_turn_display find inv_turn_display chain pts ;


!Rules Block

Rule calculate_t_asset_turn_ratios

If todo = ratio_analysis

Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2));


Rule display_for_t_asset_turn If t_asset_turn_ratio < > unknown Then cls
    color = 11
    locate 1,24
    display "TOTAL ASSET TURNOVER RATIOS"
    locate 4,45
    display "{current_year)"
    locate 4,35
    display "{last_year)"
    locate 4,25
    display "{year_2_ago)"
    locate 7,44
    format t_asset_turn_ratio, 5.3
    display "{t_asset_turn_ratio)"
    locate 7,34
    format t_asset_turn_ratio_last, 5.3
    display "{t_asset_turn_ratio_last)"
    locate 7,24
    format t_asset_turn_ratio_2, 5.3
    display "{t_asset_turn_ratio_2)"
    t_asset_turn_display = found


    pdisplay " "
    locate 1,24
    pdisplay "                    TOTAL ASSET TURNOVER RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                    {c)      {b)      {a)"
    pdisplay " "
    pdisplay " "
    a = (t_asset_turn_ratio)
    b = (t_asset_turn_ratio_last)
    c = (t_asset_turn_ratio_2)
    pdisplay "                    {c)      {b)      {a)"
    t_asset_turn_display = found
    find t_asset_turn_analysis;

Rule analyze_t_asset_turn_1 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
   color = 10
   display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it is improving over time.¬" pdisplay " " pdisplay " " pdisplay "    In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay
```

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"signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the
revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " "
pdisplay "     As can be seen above, the total asset turnover ratio is quite good," pdisplay "and it is improving over time."
   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_2 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it has improved over the past
year. ¬" pdisplay " " pdisplay " " pdisplay "     In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered
good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms
" pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will ap-
proximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good."
pdisplay " " pdisplay "     As can be seen above, the total asset turnover ratio is quite good," pdisplay "and it has improved over the past
year."
   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_3 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = .9 and
  t_asset_turn_ratio < 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and is improving over time. ¬" pdisplay
"" pdisplay "" pdisplay "     In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio
of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out
to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue "
pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay "
As can be seen above, the total asset turnover ratio is acceptable," pdisplay "and is improving over time."

   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_4 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = .9 and
  t_asset_turn_ratio < 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and has improved over the past year. ¬"
pdisplay " " pdisplay " " pdisplay "     In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and
a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay
"signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the
revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " "
pdisplay "     As can be seen above, the total asset turnover ratio is acceptable," pdisplay "and has improved over the past year."


   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_5 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < = .9 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
it does appear to be improving over time. ¬" pdisplay " " pdisplay " " pdisplay "     In general, a high ratio of dollar sales versus total value
of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop,
issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost
of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered"
pdisplay "to be quite good." pdisplay " " pdisplay "     As can be seen above, the total asset turnover ratio is not as high as" pdisplay
"management would like. However, it does appear to be improving over time."


   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_6 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < = .9 Then locate 10,6
    color = 12
```

```
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
      locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
    it has improved over the past year and may" display "continue to do so in the future. ¬" pdisplay " " pdisplay " " pdisplay "    In general,
    a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered"
    pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its
    assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any
    asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay "    As can be seen above, the total
    asset turnover ratio is not as high as" pdisplay "management would like. However, it has improved over the past year and may" pdisplay
    "continue to do so in the future."



      t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_7 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
    t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
    t_asset_turn_ratio > = 1.0 Then locate 10,6
      color = 14
      display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
      locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it appears to be decreasing
    over time. Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬" pdisplay " "
    pdisplay " " pdisplay "    In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio
    of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out
    to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue "
    pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay "
    As can be seen above, the total asset turnover ratio is quite good." pdisplay "However, it appears to be decreasing over time. Management
    might want to" pdisplay "determine whether this is just random fluctuation or an actual trend."

      t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_8 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
    t_asset_turn_ratio > = 1.0 Then locate 10,6
      color = 14
      display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
      locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it has decreased over the past
    year. Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
    pdisplay " " pdisplay " " pdisplay "    In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and
    a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay
    "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the
    revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " "
    pdisplay "    As can be seen above, the total asset turnover ratio is quite good." pdisplay "However, it has decreased over the past year.
    Management might want to" pdisplay "determine whether this is just random fluctuation or the beginning of a" pdisplay "trend."

      t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_9 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
    t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
    t_asset_turn_ratio < 1.0 and
    t_asset_turn_ratio > .90 Then locate 10,6
      color = 14
      display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
      locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it appears to be
    decreasing over time. Management" display "might want to determine whether this is just random fluctuation or an actual" display
    "trend. ¬" pdisplay " " pdisplay " " pdisplay "    In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered
    good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms
    " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will ap-
    proximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good."
    pdisplay " " pdisplay "    As can be seen above, the total asset turnover ratio is at an" pdisplay "acceptable level. However, it appears to
    be decreasing over time. Management" pdisplay "might want to determine whether this is just random fluctuation or an actual" pdisplay
    "trend."

      t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_10 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
    t_asset_turn_ratio < 1.0 and
    t_asset_turn_ratio > = 0.9 Then locate 10,6
      color = 14
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```
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it has decreased
    over the past year. Management" display "might want to determine whether this is just random fluctuation or the" display "beginning of a
    downward trend. ¬" pdisplay " " pdisplay " " pdisplay "    In general, a high ratio of dollar sales versus total value of assets" pdisplay "is
    considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e.,
    uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms
    will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite
    good." pdisplay " " pdisplay "    As can be seen above, the total asset turnover ratio is at an" pdisplay "acceptable level. However, it has
    decreased over the past year. Management" pdisplay "might want to determine whether this is just random fluctuation or the" pdisplay
    "beginning of a downward trend."

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_11 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < 0.9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high
    enough for the level of assets" display "being held. Furthermore, there appears to be a downward trend over time." display "This is defi-
    nitely something that management should check into. ¬" pdisplay " " pdisplay " " pdisplay "    In general, a high ratio of dollar sales versus
    total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the
    Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected
    that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is
    considered" pdisplay "to be quite good." pdisplay " " pdisplay "    As can be seen above, the total asset turnover ratio is fairly low."
    pdisplay "This indicates that revenues are not high enough for the level of assets" pdisplay "being held. Furthermore, there appears to be
    a downward trend over time." pdisplay "This is definitely something that management should check into."

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_12 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < 0.9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
    value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
    portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
    them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high
    enough for the level of assets" display "being held. Furthermore, is has decreased over the past year. Management" display "should de-
    termine whether or not this is merely random fluctuation or the" display "beginning of a downward trend. ¬" pdisplay " " pdisplay " "
    pdisplay "    In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to
    asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets)
    is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay
    "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay "    As
    can be seen above, the total asset turnover ratio is fairly low." pdisplay "This indicates that revenues are not high enough for the level of
    assets" pdisplay "being held. Furthermore, is has decreased over the past year. Management" pdisplay "should determine whether or not
    this is merely random fluctuation or the" pdisplay "beginning of a downward trend."

    t_asset_turn_analysis = found;


Rule displayinv_turn_ratio_beg If inv_turn_ratio < > unknown Then cls
    locate 1,25
    color = 11
    display "INVENTORY TURNOVER RATIOS"
    locate 4,6 display "The inventory turnover ratio is designed to measure how fast an " display "organization turns over its inventory.
    Ideally, this number is quite high," display "since it is best to turn over goods as quickly as possible. Doing so" display "decreases the
    possiblity of lowering the value of the goods due to" display "obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory"
    display "however, cannot be turned over more than once a year, because uniforms" display "issued to cadets are considered part of total
    inventory. In the case of" display "the Tailor Shop, this ratio is calculated by dividing income produced" display "from the corps by the
    average dollar value of inventory (which consists" display "almost solely of cadet uniforms). If this ratio is very low, say less" display "than
    .50, it indicates that the Tailor Shop is holding a large amount of" display "unissued inventory in the shop. Given these circumstances, any
    ratio" display "which is greater than 0.75 is considered to be 'acceptable.'" locate 19,13 display "Press any key to see the inventory turnover
    analysis ¬"
    pdisplay " "
    pdisplay " "
    pdisplay "                                INVENTORY TURNOVER RATIOS"
    pdisplay " "
    pdisplay " " pdisplay "    The inventory turnover ratio is designed to measure how fast an " pdisplay "organization turns over its in-
    ventory. Ideally, this number is quite high," pdisplay "since it is best to turn over goods as quickly as possible. Doing so" pdisplay "de-
    creases the possiblity of lowering the value of the goods due to" pdisplay "obsolescence, pilferage, damage, etc. Much of the Tailor Shop's
    inventory" pdisplay "however, cannot be turned over more than once a year, because uniforms" pdisplay "issued to cadets are considered
    part of total inventory. In the case of" pdisplay "the Tailor Shop, this ratio is calculated by dividing income produced" pdisplay "from the
    corps by the average dollar value of inventory (which consists" pdisplay "almost solely of cadet uniforms). If this ratio is very low, say less"
```

```
pdisplay "than .50, it indicates that the Tailor Shop is holding a large amount of" pdisplay "unissued inventory in the shop. Given these
circumstances, any ratio" pdisplay "which is greater than 0.75 is considered to be 'acceptable.' " pdisplay " " pdisplay "          Press any
key to see the inventory turnover analysis"
    inv_turn_display = found
    find actual_inv_turn_display;

Rule display_for_inv_turn If inv_turn_ratio < > unknown Then cls
    color = 11
    locate 3,25
    display "INVENTORY TURNOVER RATIOS"
    locate 6,45
    display "{current_year}"
    locate 6,35
    display "{last_year}"
    locate 6,25
    display "{year_2_ago}"
    locate 9,44
    format inv_turn_ratio, 5.3
    display "{inv_turn_ratio}"
    locate 9,34
    format inv_turn_ratio_last, 5.3
    display "{inv_turn_ratio_last}"
    locate 9,24
    format inv_turn_ratio_2, 5.3
    display "{inv_turn_ratio_2}"

    pdisplay " "
    pdisplay " "
    pdisplay " "
    locate 3,25
    pdisplay "                    INVENTORY TURNOVER RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                    {c}      {b}      {a}"
    pdisplay " "
    pdisplay " "
    a = (inv_turn_ratio)
    b = (inv_turn_ratio_last)
    c = (inv_turn_ratio_2)
    pdisplay "                    {c}      {b}      {a}"
    actual_inv_turn_display = found
    find inv_turn_analysis;

Rule analyze_inv_turn_1 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = 0.8 Then locate 9,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good.  Not" display "only does it fall within a good
range, but it is increasing over time. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover
ratio is quite good.  Not" pdisplay "only does it fall within a good range, but it is increasing over time."
    inv_turn_analysis = found;

Rule analyze_inv_turn_2 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good.  Not" display "only does it fall within a good
range, but it has increased over the past" display "year. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the
inventory turnover ratio is quite good.  Not" pdisplay "only does it fall within a good range, but it has increased over the past" pdisplay
"year."

    inv_turn_analysis = found;

Rule analyze_inv_turn_3 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable.  Not" display "only does it appear reasonable, but
it is increasing over time. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is ac-
ceptable.  Not" pdisplay "only does it appear reasonable, but it is increasing over time."

    inv_turn_analysis = found;

Rule analyze_inv_turn_4 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
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```
    locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable.  Not" display "only does it appear reasonable, but
it has increased over the past year. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio
is acceptable.  Not" pdisplay "only does it appear reasonable, but it has increased over the past year."

    inv_turn_analysis = found;

Rule analyze_inv_turn_5 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like.  However,
it does appear to be improving over time. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory
turnover ratio is not as high as" pdisplay "management would like.  However, it does appear to be improving over time."

    inv_turn_analysis = found;

Rule analyze_inv_turn_6 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 12
    locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like.  However,
it has improved over the past year and may" display "continue to do so in the future. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "
As can be seen above, the inventory turnover ratio is not as high as" pdisplay "management would like.  However, it has improved over the
past year and may" pdisplay "continue to do so in the future."


    inv_turn_analysis = found;

Rule analyze_inv_turn_7 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good."  display "However, it appears to be decreasing
over time.  Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬" pdisplay " "
pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is quite good."  pdisplay "However, it appears
to be decreasing over time.  Management might want to" pdisplay "determine whether this is just random fluctuation or an actual trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_8 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good."  display "However, it has decreased over the past
year.  Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is quite good."  pdisplay "However,
it has decreased over the past year.  Management might want to" pdisplay "determine whether this is just random fluctuation or the begin-
ning of a" pdisplay "trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_9 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > .750 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level.  However, it appears to be
decreasing over time.  Management might" display "want to determine whether this is just random fluctuation or an actual" display
"trend. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is at an acceptable"
pdisplay "level.  However, it appears to be decreasing over time.  Management might" pdisplay "want to determine whether this is just
random fluctuation or an actual" pdisplay "trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_10 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > = 0.75 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level.  However, it has decreased
over the past year.  Management might want" display "to determine whether this is just random fluctuation or the beginning of a" display
"downward trend. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is at an ac-
ceptable" pdisplay "level.  However, it has decreased over the past year.  Management might want" pdisplay "to determine whether this is
just random fluctuation or the beginning of a" pdisplay "downward trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_11 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
    locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low.  This" display "indicates that revenues are not high
enough for the level of assets being" display "held.  Furthermore, there appears to be a downward trend over time.  This" display "is defi-
```

```
nitely something that management should check into. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is fairly low. This" pdisplay "indicates that revenues are not high enough for the level of assets being" pdisplay "held. Furthermore, there appears to be a downward trend over time. This" pdisplay "is definitely something that management should check into."

    inv_turn_analysis = found;

Rule analyze_inv_turn_12 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low. This" display "indicates that revenues are not high enough for the level of assets being" display "held. Furthermore, is has decreased over the past year. Management should" display "determine whether or not this is merely random fluctuation or the beginning" display "of a downward trend. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is fairly low. This" pdisplay "indicates that revenues are not high enough for the level of assets being" pdisplay "held. Furthermore, is has decreased over the past year. Management should" pdisplay "determine whether or not this is merely random fluctuation or the beginning" pdisplay "of a downward trend."

    inv_turn_analysis = found;


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv: "Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the (equip_name) cost?";

ask purchase_month: "Please enter the number for the month in which the (equip_name) was purchased. Use 1 for January, 2 for February, ....12 for December.";

ask useful_life: "How many years is the (equip_name) expected to last?";

ask num_fresh: "June (current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How many seniors?";

ask ca_fresh: "June (current_year)?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 todo = trend_statements find trend_display find get_data locate 18,25 display "Press any key to continue – " pdisplay "
" pdisplay " " display "Press any key to continue" cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end ;

Rule trend_display If todo = trend_statements Then color = 11
    trend_display = found
    locate 2,30 display "TREND STATEMENTS" locate 5,6 display "Trend statements are the financial statements of several years," dis-
play "expressed as percentages of one of those years. For purposes of this" display "analysis, the base year chosen is the first year in the
series. For each" display "year, the dollar value of each item is divided by the dollar value of the" display "corresponding item in the base
year. This results in a value which is in" display "terms of the percentage of the base year. From these statements, trends" display "over
time can be seen. For the statements which follow, any trend of more" display "than 5% increase per year in expenses or 5% decrease per
year in revenues" display "is displayed in red. Likewise, any trend of more than 5% increase per " display "year in revenue or 5% decrease
per year in cost is displayed in yellow." display "Processing is currently in progress. You will be instructed when to" display "continue."

pdisplay "                    TREND STATEMENTS" pdisplay " " pdisplay "    Trend statements are the financial statements of several
years," pdisplay "expressed as percentages of one of those years. For purposes of this" pdisplay "analysis, the base year chosen is the first
year in the series. For each" pdisplay "year, the dollar value of each item is divided by the dollar value of the" pdisplay "corresponding
item in the base year. This results in a value which is in" pdisplay "terms of the percentage of the base year. From these statements, trends"
pdisplay "over time can be seen. For the statements which follow, any trend of more" pdisplay "than 5% increase per year in expenses or
5% decrease per year in revenues" pdisplay "is displayed in red. Likewise, any trend of more than 5% increase per " pdisplay "year in re-
venue or 5% decrease per year in cost is displayed in yellow." pdisplay " ";


Rule get_necessary_data If get_data = unknown Then get_data = found
    wks bs_this,b1..b14,\vpp\playabbs
    wks bs_last,c1..c14,\vpp\playabbs
    wks bs_2_ago,d1..d14,\vpp\playabbs
    wks is_this,b1..b76,\vpp\playabis
    wks is_last,c1..c76,\vpp\playabis
    wks is_2_ago,d1..d76,\vpp\playabis
    wks uniforms,b10..d10,\vpp\playcbis
    wks act_equip,b55..d55,\vpp\playcbis
    wks cbis_oper_exp,b56..d56,\vpp\playcbis
    wks cbis_net_income,b57..d57,\vpp\playcbis
    cash_oper_exp_this = (cbis_oper_exp[1])
    cash_oper_exp_last = (cbis_oper_exp[2])
    cash_oper_exp_2 = (cbis_oper_exp[3])
    cash_net_income_this = (cbis_net_income[1])
    cash_net_income_last = (cbis_net_income[2])
    cash_net_income_2 = (cbis_net_income[3])
    t_cash_exp_this = (cash_oper_exp_this + act_unif_this)
    t_cash_exp_last = (cash_oper_exp_last + act_unif_last)
    t_cash_exp_2 = (cash_oper_exp_2 + act_unif_2)
    act_unif_this = (uniforms[1])
    act_unif_last = (uniforms[2])
    act_unif_2 = (uniforms[3])
    act_equip_this = (act_equip[1])
    act_equip_last = (act_equip[2])
    act_equip_2 = (act_equip[3])
    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    reserves_this = (bs_this[13])
    reserves_last = (bs_last[13])
    reserves_2 = (bs_2_ago[13])
    t_assets_this = (bs_this[9])
    t_assets_last = (bs_last[9])
    t_assets_2 = (bs_2_ago[9])
    net_income = (is_this[65])
    net_income_last = (is_last[65])
    net_income_2 = (is_2_ago[65])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
```

```
    equip_2_ago = (bs_2_ago[8])
    t_mil_rev = (is_this[9])
    mil_rev_last = (is_last[9])
    mil_rev_2 = (is_2_ago[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    cost_uniforms_last = (is_last[15])
    cost_uniforms_2 = (is_2_ago[15])
    total_oper_exp_last = (is_last[64])
    total_oper_exp_2 = (is_2_ago[64])
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)
    t_other_rev = (is_this[24])
    other_rev_last = (is_last[24])
    other_rev_2 = (is_2_ago[24])
    t_rev_this = (t_mil_rev + t_other_rev)
    t_rev_last = (mil_rev_last + other_rev_last)
    t_rev_2 = (mil_rev_2 + other_rev_2)
    t_personal = (is_this[36])
    personal_last = (is_last[36])
    personal_2 = (is_2_ago[36])
    contract_this = (is_this[47])
    contract_last = (is_last[47])
    contract_2 = (is_2_ago[47])
    s_&_m_this = (is_this[54])
    s_&_m_last = (is_last[54])
    s_&_m_2 = (is_2_ago[54])
    contin_this = (is_this[62])
    contin_last = (is_last[62])
    contin_2 = (is_2_ago[62])
    deprec_this = (is_this[63])
    deprec_last = (is_last[63])
    deprec_2 = (is_2_ago[63])
    public_rev_this = (is_this[19])
    s_f_s_rev_this = (is_this[20])
    interdept_rev_this = (is_this[21])
    music_rev_this = (is_this[22])
    state_rev_this = (is_this[23])
    public_rev_last = (is_last[19])
    s_f_s_rev_last = (is_last[20])
    interdept_rev_last = (is_last[21])
    music_rev_last = (is_last[22])
    state_rev_last = (is_last[23])
    public_rev_2 = (is_2_ago[19])
    s_f_s_rev_2 = (is_2_ago[20])
    interdept_rev_2 = (is_2_ago[21])
    music_rev_2 = (is_2_ago[22])
    state_rev_2 = (is_2_ago[23])
    corps_cost_this = (is_this[68])
    public_cost_this = (is_this[70])
    s_f_s_cost_this = (is_this[71])
    interdept_cost_this = (is_this[72])
    music_cost_this = (is_this[73])
    state_cost_this = (is_this[74])
    corps_cost_last = (is_last[68])
    public_cost_last = (is_last[70])
    s_f_s_cost_last = (is_last[71])
    interdept_cost_last = (is_last[72])
    music_cost_last = (is_last[73])
    state_cost_last = (is_last[74])
    corps_cost_2 = (is_2_ago[68])
    public_cost_2 = (is_2_ago[70])
    s_f_s_cost_2 = (is_2_ago[71])
    interdept_cost_2 = (is_2_ago[72])
    music_cost_2 = (is_2_ago[73])
    state_cost_2 = (is_2_ago[74])
    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago
    reset uniforms
    reset act_equip;

Rule display_for_which_stmt If todo = trend_statements Then cls
    color = 11
    locate 3,15
    display "Select the number corresponding to the trend"
    locate 4,15
```

```
    display "statements which would like to see."
    locate 7,20
    display "1  accrual based income statements"
    locate 9,20
    display "2  cash based income statements"
    locate 11,20
    display "3  balance sheets"
    locate 13,20
    display "4  market segment revenues and expenses"
    locate 15,20
    display "5  exit to main menu"

    pdisplay " "
    pdisplay " "
    pdisplay "          Select the number corresponding to the trend"
    pdisplay "          statements which would like to see."
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "             1  accrual based income statements"
    pdisplay " "
    pdisplay "             2  cash based income statements"
    pdisplay " "
    pdisplay "             3  balance sheets"
    pdisplay " "
    pdisplay "             4  market segment revenues and expenses"
    pdisplay " "
    pdisplay "             5  exit to main menu"
    pdisplay " "
    pdisplay " "

    find stmt_number
    which_stmt = found
    find what_next;

Rule do_abis If stmt_number = 1 then which_stmt = abis
    pdisplay " "
    pdisplay "1  accrual based income statements"
    pdisplay " "
    what_next = abis
    cls
    color = 11
    locate 0,8 display "TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" locate 2,60 display "{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}"

    locate 0,8 pdisplay "       TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" pdisplay " " pdisplay " " a = (year_2_ago) b = (last_year) c = (current_year) pdisplay "                                                    {a}      {b}      {c}"

locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Cost of Uniforms Issued" locate 13,6 display "Personnel" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Depreciation" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find abis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find abis_deprec
    find abis_t_exp
    find abis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset abis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
```

```
    reset abis_deprec
    reset abis_t_exp
    reset abis_ni;

Rule do_cbis If stmt_number = 2 then which_stmt = cbis
    what_next = cbis
    pdisplay " "
    pdisplay "2  cash based income statements"
    pdisplay " "
    cls
    color = 11
    locate 0,10 display "TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenue" locate 4,6 display "Corps"
locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music De-
partment" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Uni-
form Purchases" locate 13,6 display "Personnel" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6
display "Continuous" locate 17,6 display "Equipment" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Oper-
ations"

pdisplay " " pdisplay " " pdisplay "          TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS"
pdisplay " " pdisplay " " locate 2,60 a = (current_year) b = (last_year) c = (year_2_ago) pdisplay "                                    (c)
(b)      (a)"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find cbis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find cbis_equip
    find cbis_t_exp
    find cbis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset cbis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset cbis_equip
    reset cbis_t_exp
    reset cbis_ni;

Rule do_bs If stmt_number = 3 Then which_stmt = bs
    what_next = bs
    pdisplay " "
    pdisplay "3  balance sheets"
    pdisplay " "
    cls
    color = 11
    locate 2,23 display "TREND STATEMENTS FOR BALANCE SHEETS" locate 4,65 display "{current_year}" locate 4,55 display
"{last_year}" locate 4,45 display "{year_2_ago}" locate 6,3 display "Current Assets" locate 7,6 display "Inventory" locate 8,3 display "Long
Term Assets" locate 9,6 display "Equipment" locate 10,9 display "Total Assets" locate 12,3 display "Liabilities & Capital" locate 13,6 dis-
play "Cash Basis Loan from " locate 14,8 display "other Auxiliaries" locate 15,6 display "Equity -- Reserves" locate 16,9 display "Total
Liabilities & Captital"

pdisplay " " pdisplay " "
    locate 2,23 pdisplay "          TREND STATEMENTS FOR BALANCE SHEETS" pdisplay " " pdisplay " " a = (current_year)
b = (last_year) c = (year_2_ago) pdisplay "                                    (c)      (b)      (a)" pdisplay " " pdisplay " " pdisplay "
Current Assets"

    find bs_inventory
    find bs_equipment
    find bs_total_assets1
    find bs_due_from
    find bs_reserves
    find bs_total_assets
    reset bs_inventory
    reset bs_equipment
    reset bs_total_assets
```

```
    reset bs_due_from
    reset bs_reserves;

Rule do_mkt_seg If stmt_number = 4 then which_stmt = mkt_seg
    what_next = mkt_seg
    pdisplay " "
    pdisplay "4  market segment revenues and expenses"
    pdisplay " "
    cls
    color = 11
    locate 0,12 display "TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenues" locate 5,6 display
"Corps" locate 6,6 display "Public" locate 7,6 display "Students/Faculty/Staff" locate 8,6 display "Interdepartmental" locate 9,6 display
"Music Department" locate 10,6 display "State Related " locate 12,3 display "Expenses" locate 14,6 display "Corps" locate 15,6 display
"Public" locate 16,6 display "Students/Faculty/Staff" locate 17,6 display "Interdepartmental" locate 18,6 display "Music Department" locate
19,6 display "State Related"

    locate 0,12 pdisplay "          TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" pdisplay " "
pdisplay " " a = (year_2_ago) b = (last_year) c = (current_year) pdisplay "                                    (a)      (b)      (c)" pdisplay
"  Revenues" pdisplay " "

    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state

pdisplay " " pdisplay "  Expenses" pdisplay " "


    find seg_corps_cost
    find seg_public_cost
    find seg_s_f_s_cost
    find seg_interdept_cost
    find seg_music_cost
    find seg_state_cost
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset seg_corps_cost
    reset seg_public_cost
    reset seg_s_f_s_cost
    reset seg_interdept_cost
    reset seg_music_cost
    reset seg_state_cost
    find rev_minus_exp_display;

Rule do_mkt_seg If stmt_number = 4 then rev_minus_exp_display = found
    cls
    color = 11
    locate 3,30 display "TREND STATEMENTS FOR" locate 4,21 display "MARKET SEGMENT REVENUES MINUS EXPENSES"
locate 7,56 display "{current_year}" locate 7,46 display "{last_year}" locate 7,36 display "{year_2_ago}" locate 9,6 display "Corps" locate
10,6 display "Public" locate 11,6 display "Students/Faculty/Staff" locate 12,6 display "Interdepartmental" locate 13,6 display "Music De-
partment" locate 14,6 display "State Related "

pdisplay " " pdisplay " " pdisplay " " pdisplay "                    TREND STATEMENTS FOR" pdisplay "                MARKET
SEGMENT REVENUES MINUS EXPENSES" pdisplay " " pdisplay " " c = (current_year) b = (last_year) a = (year_2_ago) pdisplay
"                          (a)      (b)      (c)"

    find corps_diff
    find public_diff
    find s_f_s_diff
    find interdept_diff
    find music_diff
    find state_diff
    reset corps_diff
    reset pub_diff
    reset s_f_s_diff
    reset interdept_diff
    reset music_diff
    reset state_diff
    find display_for_neg;

Rule exit_this_kbs If stmt_number = 5 Then which_stmt = doesnt_matter
    what_next = return
    pdisplay " "
```

```
    pdisplay "5  exit to main menu"
    pdisplay " "
    color = 15
    chain pts;

Rule display_abis_corps If todo = trend_statements Then  abis_corps = found
    trend_mil_rev_last = (mil_rev_last / mil_rev_2)
    trend_mil_rev_this = (t_mil_rev / mil_rev_2)
    x = (trend_mil_rev_last)
    y = (trend_mil_rev_this)
    find rev_color
    locate 4,60
    format trend_mil_rev_this, 5.2
    a = (trend_mil_rev_this)
    format a,5.2
    display "(trend_mil_rev_this)"
    locate 4,50
    format trend_mil_rev_last, 5.2
    b = (trend_mil_rev_last)
    format b,5.2
    display "(trend_mil_rev_last)"
    locate 4,40
    display "1.00"
    pdisplay "     Corps                    1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_public If todo = trend_statements Then  abis_pub = found
    trend_pub_rev_last = (public_rev_last / public_rev_2)
    trend_pub_rev_this = (public_rev_this / public_rev_2)
    x = (trend_pub_rev_last)
    y = (trend_pub_rev_this)
    find rev_color
    locate 5,60
    format trend_pub_rev_this, 5.2
    display "(trend_pub_rev_this)"
    a = (trend_pub_rev_this)
    format a,5.2
    locate 5,50
    format trend_pub_rev_last, 5.2
    b = (trend_pub_rev_last)
    format b,5.2
    display "(trend_pub_rev_last)"
    locate 5,40
    display "1.00"
    pdisplay "     Public                   1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_s_f_s If todo = trend_statements Then  abis_s_f_s = found
    trend_s_f_s_rev_last = (s_f_s_rev_last / s_f_s_rev_2)
    trend_s_f_s_rev_this = (s_f_s_rev_this / s_f_s_rev_2)
    x = (trend_s_f_s_rev_last)
    y = (trend_s_f_s_rev_this)
    find rev_color
    locate 6,60
    format trend_s_f_s_rev_this, 5.2
    display "(trend_s_f_s_rev_this)"
    a = (trend_s_f_s_rev_this)
    format a,5.2
    locate 6,50
    format trend_s_f_s_rev_last, 5.2
    display "(trend_s_f_s_rev_last)"
    b = (trend_s_f_s_rev_last)
    format b,5.2
    locate 6,40
    display "1.00"
    pdisplay "     Student/Faculty/Staff    1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_interdept If todo = trend_statements Then  abis_interdept = found
    trend_interdept_rev_last = (interdept_rev_last / interdept_rev_2)
    trend_interdept_rev_this = (interdept_rev_this / interdept_rev_2)
    x = (trend_interdept_rev_last)
    y = (trend_interdept_rev_this)
    find rev_color
    locate 7,60
    format trend_interdept_rev_this, 5.2
    display "(trend_interdept_rev_this)"
    a = (trend_interdept_rev_this)
    format a,5.2
    locate 7,50
```

```
    format trend_interdept_rev_last, 5.2
    display "(trend_interdept_rev_last)"
    b = (trend_interdept_rev_last)
    format b,5.2
    locate 7,40
    display "1.00"
    pdisplay "     Interdepartmental              1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_music If todo = trend_statements Then abis_music = found
    trend_music_rev_last = (music_rev_last / music_rev_2)
    trend_music_rev_this = (music_rev_this / music_rev_2)
    x = (trend_music_rev_last)
    y = (trend_music_rev_this)
    find rev_color
    locate 8,60
    format trend_music_rev_this, 5.2
    display "(trend_music_rev_this)"
    a = (trend_music_rev_this)
    format a,5.2
    locate 8,50
    format trend_music_rev_last, 5.2
    display "(trend_music_rev_last)"
    b = (trend_music_rev_last)
    format b,5.2
    locate 8,40
    display "1.00"
    pdisplay "     Music Department               1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_state If todo = trend_statements Then abis_state = found
    trend_state_rev_last = (state_rev_last / state_rev_2)
    trend_state_rev_this = (state_rev_this / state_rev_2)
    x = (trend_state_rev_last)
    y = (trend_state_rev_this)
    find rev_color
    locate 9,60
    format trend_state_rev_this, 5.2
    display "(trend_state_rev_this)"
    a = (trend_state_rev_this)
    format a,5.2
    locate 9,50
    format trend_state_rev_last, 5.2
    display "(trend_state_rev_last)"
    b = (trend_state_rev_last)
    format b,5.2
    locate 9,40
    display "1.00"
    pdisplay "     State Related                 1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_t_rev If todo = trend_statements Then abis_t_rev = found
    trend_t_rev_last = (t_rev_last / t_rev_2)
    trend_t_rev_this = (t_rev_this / t_rev_2)
    x = (trend_t_rev_last)
    y = (trend_t_rev_this)
    find rev_color
    locate 10,60
    format trend_t_rev_this, 5.2
    display "(trend_t_rev_this)"
    a = (trend_t_rev_this)
    format a,5.2
    locate 10,50
    format trend_t_rev_last, 5.2
    display "(trend_t_rev_last)"
    b = (trend_t_rev_last)
    format b,5.2
    locate 10,40
    display "1.00"
    pdisplay "       Total Revenue               1.00     (b)     (a)"
    pdisplay "  Expenses"
    reset rev_color;

Rule display_abis_cost_uniforms_issued If todo = trend_statements Then abis_uniforms = found
    trend_uniforms_last = (cost_uniforms_last / cost_uniforms_2)
    trend_uniforms_this = (cost_uniforms_this / cost_uniforms_2)
    x = (trend_uniforms_last)
    y = (trend_uniforms_this)
    find cost_color
    locate 12,60
```

```
    format trend_uniforms_this, 5.2
    display "(trend_uniforms_this)"
    a = (trend_uniforms_this)
    format a,5.2
    locate 12,50
    format trend_uniforms_last, 5.2
    display "(trend_uniforms_last)"
    b = (trend_uniforms_last)
    format b,5.2
    locate 12,40
    display "1.00"
    pdisplay "    Cost of Uniforms Issued          1.00    (b)    (a)"
    reset cost_color;

Rule display_cbis_cost_uniforms_issued If stmt_number = 2 Then cbis_uniforms = found
    trend_uniforms_last_c = (act_unif_last / act_unif_2)
    trend_uniforms_this_c = (act_unif_this / act_unif_2)
    x = (trend_uniforms_last_c)
    y = (trend_uniforms_this_c)
    find cost_color
    locate 12,60
    format trend_uniforms_this_c, 5.2
    display "(trend_uniforms_this_c)"
    a = (trend_uniforms_this_c)
    format a,5.2
    locate 12,50
    format trend_uniforms_last_c, 5.2
    display "(trend_uniforms_last_c)"
    b = (trend_uniforms_last_c)
    format b,5.2
    locate 12,40
    display "1.00"
    pdisplay "    Uniform Purchases              1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_personal If todo = trend_statements Then abis_personal = found
    trend_personal_last = (personal_last / personal_2)
    trend_personal_this = (t_personal / personal_2)
    x = (trend_personal_last)
    y = (trend_personal_this)
    find cost_color
    locate 13,60
    format trend_personal_this, 5.2
    display "(trend_personal_this)"
    a = (trend_personal_this)
    format a,5.2
    locate 13,50
    format trend_personal_last, 5.2
    display "(trend_personal_last)"
    b = (trend_personal_last)
    format b,5.2
    locate 13,40
    display "1.00"
    pdisplay "    Personnel                      1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_contractual If todo = trend_statements Then abis_contract = found
    trend_contract_last = (contract_last / contract_2)
    trend_contract_this = (contract_this / contract_2)
    x = (trend_contract_last)
    y = (trend_contract_this)
    find cost_color
    locate 14,60
    format trend_contract_this, 5.2
    display "(trend_contract_this)"
    a = (trend_contract_this)
    format a,5.2
    locate 14,50
    format trend_contract_last, 5.2
    display "(trend_contract_last)"
    b = (trend_contract_last)
    format b,5.2
    locate 14,40
    display "1.00"
    pdisplay "    Contractual                    1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_s_&_m If todo = trend_statements Then abis_s_&_m = found
    trend_s_&_m_last = (s_&_m_last / s_&_m_2)
    trend_s_&_m_this = (s_&_m_this / s_&_m_2)
```

```
    x = (trend_s_&_m_last)
    y = (trend_s_&_m_this)
    find cost_color
    locate 15,60
    format trend_s_&_m_this, 5.2
    display "{trend_s_&_m_this}"
    a = (trend_s_&_m_this)
    format a,5.2
    locate 15,50
    format trend_s_&_m_last, 5.2
    display "{trend_s_&_m_last}"
    b = (trend_s_&_m_last)
    format b,5.2
    locate 15,40
    display "1.00"
    pdisplay "    Supplies & Materials          1.00    {b}    {a}"
    reset cost_color;

Rule display_abis_continuous If todo = trend_statements Then abis_contin = found
    trend_contin_last = (contin_last / contin_2)
    trend_contin_this = (contin_this / contin_2)
    x = (trend_contin_last)
    y = (trend_contin_this)
    find cost_color
    locate 16,60
    format trend_contin_this, 5.2
    display "{trend_contin_this}"
    a = (trend_contin_this)
    format 1,5.2
    locate 16,50
    format trend_contin_last, 5.2
    display "{trend_contin_last}"
    b = (trend_contin_last)
    format b,5.2
    locate 16,40
    display "1.00"
    pdisplay "    Continuous                    1.00    {b}    {a}"
    reset cost_color;

Rule display_abis_depreciation If todo = trend_statements Then abis_deprec = found
    trend_deprec_last = (deprec_last / deprec_2)
    trend_deprec_this = (deprec_this / deprec_2)
    x = (trend_deprec_last)
    y = (trend_deprec_this)
    find cost_color
    locate 17,60
    format trend_deprec_this, 5.2
    display "{trend_deprec_this}"
    a = (trend_deprec_this)
    format a,5.2
    locate 17,50
    format trend_deprec_last, 5.2
    display "{trend_deprec_last}"
    b = (trend_deprec_last)
    format b,5.2
    locate 17,40
    display "1.00"
    pdisplay "    Depreciation                  1.00    {b}    {a}"
    reset cost_color;

Rule display_cbis_equipment If todo = trend_statements Then cbis_equip = found
    trend_equip_last = (act_equip_last / act_equip_2)
    trend_equip_this = (act_equip_this / act_equip_2)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find cost_color
    locate 17,60
    format trend_equip_this, 5.2
    a = (trend_equip_this)
    format a,5.2
    display "{trend_equip_this}"
    locate 17,50
    format trend_equip_last, 5.2
    b = (trend_equip_last)
    format b,5.2
    display "{trend_equip_last}"
    locate 17,40
    display "1.00"
    pdisplay "    Equipment                     1.00    {b}    {a}"
    reset cost_color;
```

```
Rule display_abis_t_expenses If todo = trend_statements Then  abis_t_exp = found
    trend_t_expenses_last = (t_expenses_last / t_expenses_2)
    trend_t_expenses_this = (t_expenses / t_expenses_2)
    x = (trend_t_expenses_last)
    y = (trend_t_expenses_this)
    find cost_color
    locate 18,60
    format trend_t_expenses_this, 5.2
    display "(trend_t_expenses_this)"
    a = (trend_t_expenses_this)
    format a,5.2
    locate 18,50
    format trend_t_expenses_last, 5.2
    display "(trend_t_expenses_last)"
    b = (trend_t_expenses_last)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "       Total Expenses              1.00     (b)     (a)"
    reset cost_color;

Rule display_cbis_t_expenses If todo = trend_statements Then  cbis_t_exp = found
    trend_t_expenses_last_c = (t_cash_exp_last / t_cash_exp_2)
    trend_t_expenses_this_c = (t_cash_exp_this / t_cash_exp_2)
    x = (trend_t_expenses_last_c)
    y = (trend_t_expenses_this_c)
    find cost_color
    locate 18,60
    format trend_t_expenses_this_c, 5.2
    display "(trend_t_expenses_this_c)"
    a = (trend_t_expenses_this_c)
    format a,5.2
    locate 18,50
    format trend_t_expenses_last_c, 5.2
    display "(trend_t_expenses_last_c)"
    b = (trend_t_expenses_last_c)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "       Total Expenses              1.00     (b)     (a)"
    reset cost_color;

Rule display_abis_net_income If todo = trend_statements Then  abis_ni = found
    trend_net_income_last = (net_income_last / net_income_2)
    trend_net_income_this = (net_income / net_income_2)
    x = (trend_net_income_last)
    y = (trend_net_income_this)
    find rev_color
    locate 19,60
    format trend_net_income_this, 5.2
    display "(trend_net_income_this)"
    a = (trend_net_income_this)
    format a,5.2
    locate 19,50
    format trend_net_income_last, 5.2
    display "(trend_net_income_last)"
    b = (trend_net_income_last)
    format b,5.2
    find is_it_neg
!   find neg_base
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00-"
    pdisplay "  Net Income from Operations       1.00     (b)     (a)"
    find neg_disp?
    reset rev_color
    reset is_it_neg;


Rule display_that_ni_base_yr_neg

If net_income_2 < 0

Then neg_base = found

   locate 8,68
   display "note: the"
```

```
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";

Rule display_that_ni_base_yr_neg

If cash_net_income_2 < 0

Then neg_base_c = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";


Rule pdisplay_neg_ni_abis

If is_it_neg = yes

Then neg_disp? = found
    pdisplay " "
    pdisplay "Note that net income is increasing in the negative direction."
    pdisplay " "
    pdisplay " ";


Rule display_cbis_net_income If todo = trend_statements Then  cbis_ni = found
    trend_net_income_last_c = (cash_net_income_last / cash_net_income_2)
    trend_net_income_this_c = (cash_net_income_this / cash_net_income_2)
    x = (trend_net_income_last_c)
    y = (trend_net_income_this_c)
    find rev_color
    locate 19,60
    format trend_net_income_this_c, 5.2
    display "(trend_net_income_this_c)"
    a = (trend_net_income_this_c)
    format a,5.2
    locate 19,50
    format trend_net_income_last_c, 5.2
    display "(trend_net_income_last_c)"
    b = (trend_net_income_last_c)
    format b,5.2
    find is_it_neg_c
!   find neg_base_c
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00¬"
    pdisplay "  Net Income from Operations          1.00      (b)      (a)"
    find neg_disp?_c
    reset rev_color
    reset is_it_neg_c;

Rule pdisplay_neg_ni_cbis

If is_it_neg_c = yes

Then neg_disp?_c = found
    pdisplay " "
    pdisplay "Note that net income is increasing in the negative direction."
    pdisplay " "
    pdisplay " ";
```

```
Rule is_net_income_negative If net_income < = 0 and
  net_income_last < = 0 and
  net_income_2 < = 0 and
  x > 1.05  and
  y > 1.1025 Then locate 8,68
    color = 15
    display "**  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction"
    locate 19,66
    display "**"
    color = 12                          !!2
     locate 19,60                       !!!this was all added
     format trend_net_income_this, 5.2
     display "{trend_net_income_this}"
     locate 19,50
     format trend_net_income_last, 5.2
     display "{trend_net_income_last}"
     locate 19,40
     display "1.00¬"                    !!
    is_it_neg = yes;

Rule is_net_income_negative If cash_net_income_this < = 0 and
  cash_net_income_last < = 0 and
  cash_net_income_2 < = 0 and
  x > 1.05  and
  y > 1.1025 Then locate 8,68
    color = 15
    display "**  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction"
    locate 19,66
    display "**"
    color = 12
     locate 19,60
     format trend_net_income_this_c, 5.2
     display "{trend_net_income_this_c}"
     locate 19,50
     format trend_net_income_last_c, 5.2
     display "{trend_net_income_last_c}"
     locate 19,40
     display "1.00¬"
     is_it_neg_c = yes;


Rule display_bs_inventory If todo = trend_statements Then  bs_inventory = found
     trend_inv_rev_last = (last_yr_inventory / inv_2_ago)
     trend_inv_rev_this = (total_inv / inv_2_ago)
     x = (trend_inv_rev_last)
     y = (trend_inv_rev_this)
     find rev_color
     locate 7,65
     format trend_inv_rev_this, 5.2
     display "{trend_inv_rev_this}"
     a = (trend_inv_rev_this)
     format a,5.2
     locate 7,55
     format trend_inv_rev_last, 5.2
     display "{trend_inv_rev_last}"
     b = (trend_inv_rev_last)
     format b,5.2
     locate 7,45
     display "1.00"
     pdisplay "     Inventory                          1.00     {b}      {a}"
```

```
    pdisplay "   Long Term Assets"
    reset rev_color;

Rule display_bs_equipment If todo = trend_statements Then  bs_equipment = found
    trend_equip_last = (last_yr_equip_value / equip_2_ago)
    trend_equip_this = (total_current_value / equip_2_ago)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find rev_color
    locate 9,65
    format trend_equip_this, 5.2
    display "(trend_equip_this)"
    a = (trend_equip_this)
    format a,5.2
    locate 9,55
    format trend_equip_last, 5.2
    display "(trend_equip_last)"
    b = (trend_equip_last)
    format b,5.2
    locate 9,45
    display "1.00"
    pdisplay "      Equipment                          1.00      (b)       (a)"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then  bs_total_assets1 = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    format trend_totals_this, 5.2
    a = (trend_totals_this)
    format a,5.2
    format trend_totals_last, 5.2
    b = (trend_totals_last)
    format b,5.2
    locate 10,45
    locate 16,65
    format trend_totals_this, 5.2
    display "(trend_totals_this)"
    locate 16,55
    format trend_totals_last, 5.2
    display "(trend_totals_last)"
    locate 16,45
    pdisplay "       Total Assets                       1.00      (b)       (a)"
    pdisplay " "
    pdisplay "   Liabilities & Capital";


Rule display_bs_due_to_other_ae If todo = trend_statements Then  bs_due_from = found
    trend_due_rev_last = (last_yr_due_to / due_to_2_ago)
    trend_due_rev_this = (new_due_to / due_to_2_ago)
    x = (trend_due_rev_last)
    y = (trend_due_rev_this)
    find cost_color
    locate 14,65
    format trend_due_rev_this, 5.2
    display "(trend_due_rev_this)"
    a = (trend_due_rev_this)
    format a,5.2
    locate 14,55
    format trend_due_rev_last, 5.2
    display "(trend_due_rev_last)"
    b = (trend_due_rev_last)
    format b,5.2
    locate 14,45
    display "1.00"
    pdisplay "      Cash Basis Loan from               1.00      (b)       (a)"
    pdisplay "        other Auxiliaries"
    reset cost_color;

Rule display_bs_reserves If todo = trend_statements Then  bs_reserves = found
    trend_reserves_last = (reserves_last / reserves_2)
    trend_reserves_this = (reserves_this / reserves_2)
    x = (trend_reserves_last)
    y = (trend_reserves_this)
    find rev_color
    locate 15,65
    format trend_reserves_this, 5.2
    display "(trend_reserves_this)"
    a = (trend_reserves_this)
```

```
    format a,5.2
    locate 15,55
    format trend_reserves_last, 5.2
    display "{trend_reserves_last}"
    b = (trend_reserves_last)
    format b,5.2
    locate 15,45
    display "1.00"
    pdisplay "     Equity -- Reserves                    1.00     {b}      {a}"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    color = 11
    locate 10,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    locate 10,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
    locate 10,45
    display "1.00"
    locate 16,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    a = (trend_totals_this)
    format a,5.2
    locate 16,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
    b = (trend_totals_last)
    format b,5.2
    locate 16,45
    pdisplay "     Total Liabilities & Capital       1.00     {b}      {a}"
    display "1.00-";

Rule display_seg_corps_cost If todo = trend_statements Then seg_corps_cost = found
    trend_seg_corps_cost_last = (corps_cost_last / corps_cost_2)
    trend_seg_corps_cost_this = (corps_cost_this / corps_cost_2)
    x = (trend_seg_corps_cost_last)
    y = (trend_seg_corps_cost_this)
    find cost_color
    locate 14,60
    format trend_seg_corps_cost_this, 5.2
    display "{trend_seg_corps_cost_this}"
    a = (trend_seg_corps_cost_this)
    format a,5.2
    locate 14,50
    format trend_seg_corps_cost_last, 5.2
    display "{trend_seg_corps_cost_last}"
    b = (trend_seg_corps_cost_last)
    format b,5.2
    locate 14,40
    display "1.00"
    pdisplay "     Corps                         1.00     {b}      {a}"
    reset cost_color;

Rule display_seg_public_cost If todo = trend_statements Then seg_public_cost = found
    trend_seg_public_cost_last = (public_cost_last / public_cost_2)
    trend_seg_public_cost_this = (public_cost_this / public_cost_2)
    x = (trend_seg_public_cost_last)
    y = (trend_seg_public_cost_this)
    find cost_color
    locate 15,60
    format trend_seg_public_cost_this, 5.2
    display "{trend_seg_public_cost_this}"
    a = (trend_seg_public_cost_this)
    format a,5.2
    locate 15,50
    format trend_seg_public_cost_last, 5.2
    display "{trend_seg_public_cost_last}"
    b = (trend_seg_public_cost_last)
    format b,5.2
    locate 15,40
    display "1.00"
    pdisplay "     Public                        1.00     {b}      {a}"
    reset cost_color;
```

```
Rule display_seg_s_f_s_cost If todo = trend_statements Then seg_s_f_s_cost = found
    trend_seg_s_f_s_cost_last = (s_f_s_cost_last / s_f_s_cost_2)
    trend_seg_s_f_s_cost_this = (s_f_s_cost_this / s_f_s_cost_2)
    x = (trend_seg_s_f_s_cost_last)
    y = (trend_seg_s_f_s_cost_this)
    find cost_color
    locate 16,60
    format trend_seg_s_f_s_cost_this, 5.2
    display "(trend_seg_s_f_s_cost_this)"
    a = (trend_seg_s_f_s_cost_this)
    format a,5.2
    locate 16,50
    format trend_seg_s_f_s_cost_last, 5.2
    display "(trend_seg_s_f_s_cost_last)"
    b = (trend_seg_s_f_s_cost_last)
    format b,5.2
    locate 16,40
    display "1.00"
    pdisplay "    Students/Faculty/Staff          1.00    (b)    (a)"
    reset cost_color;

Rule display_seg_interdept_cost If todo = trend_statements Then seg_interdept_cost = found
    trend_seg_interdept_cost_last = (interdept_cost_last / interdept_cost_2)
    trend_seg_interdept_cost_this = (interdept_cost_this / interdept_cost_2)
    x = (trend_seg_interdept_cost_last)
    y = (trend_seg_interdept_cost_this)
    find cost_color
    locate 17,60
    format trend_seg_interdept_cost_this, 5.2
    display "(trend_seg_interdept_cost_this)"
    a = (trend_seg_interdept_cost_this)
    format a,5.2
    locate 17,50
    format trend_seg_interdept_cost_last, 5.2
    display "(trend_seg_interdept_cost_last)"
    b = (trend_seg_interdept_cost_last)
    format b,5.2
    locate 17,40
    display "1.00"
    pdisplay "    Interdepartmental               1.00    (b)    (a)"
    reset cost_color;

Rule display_seg_music_cost If todo = trend_statements Then seg_music_cost = found
    trend_seg_music_cost_last = (music_cost_last / music_cost_2)
    trend_seg_music_cost_this = (music_cost_this / music_cost_2)
    x = (trend_seg_music_cost_last)
    y = (trend_seg_music_cost_this)
    find cost_color
    locate 18,60
    format trend_seg_music_cost_this, 5.2
    display "(trend_seg_music_cost_this)"
    a = (trend_seg_music_cost_this)
    format a,5.2
    locate 18,50
    format trend_seg_music_cost_last, 5.2
    display "(trend_seg_music_cost_last)"
    b = (trend_seg_music_cost_last)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "    Music Department                1.00    (b)    (a)"
    reset cost_color;

Rule display_seg_state_cost If todo = trend_statements Then seg_state_cost = found
    trend_seg_state_cost_last = (state_cost_last / state_cost_2)
    trend_seg_state_cost_this = (state_cost_this / state_cost_2)
    x = (trend_seg_state_cost_last)
    y = (trend_seg_state_cost_this)
    find cost_color
    locate 19,60
    format trend_seg_state_cost_this, 5.2
    display "(trend_seg_state_cost_this)"
    a = (trend_seg_state_cost_this)
    format a,5.2
    locate 19,50
    format trend_seg_state_cost_last, 5.2
    display "(trend_seg_state_cost_last)"
    b = (trend_seg_state_cost_last)
    format b,5.2
```

```
    locate 19,40
    display "1.00¬"
    pdisplay "     State Related                1.00     (b)     (a)"
    reset cost_color;

Rule display_corps_diff If todo = trend_statements Then  corps_diff = found
    corps_diff_this = (t_mil_rev - corps_cost_this)
    corps_diff_last = (mil_rev_last - corps_cost_last)
    corps_diff_2 = (mil_rev_2 - corps_cost_2)
    trend_corps_diff_last = (corps_diff_last / corps_diff_2)
    trend_corps_diff_this = (corps_diff_this / corps_diff_2)
    x = (trend_corps_diff_last)
    y = (trend_corps_diff_this)
    find rev_color
    a = (corps_diff_this)
    b = (corps_diff_last)
    c = (corps_diff_2)
    temp_vbl = corps
    find neg?
    locate 9,56
    format trend_corps_diff_this, 5.2
    display "(trend_corps_diff_this)"
    a = (trend_corps_diff_this)
    format a,5.2
    locate 9,46
    format trend_corps_diff_last, 5.2
    display "(trend_corps_diff_last)"
    b = (trend_corps_diff_last)
    format b,5.2
    locate 9,36
    pdisplay "     Corps                        1.00     (b)     (a)"
    display "1.00"
    reset rev_color
    locate 9,62
    display "(neg?)"
    reset neg?;

Rule display_public_diff If todo = trend_statements Then  public_diff = found
    public_diff_this = (public_rev_this - public_cost_this)
    public_diff_last = (public_rev_last - public_cost_last)
    public_diff_2 = (public_rev_2 - public_cost_2)
    trend_public_diff_last = (public_diff_last / public_diff_2)
    trend_public_diff_this = (public_diff_this / public_diff_2)
    x = (trend_public_diff_last)
    y = (trend_public_diff_this)
    find rev_color
    a = (public_diff_this)
    b = (public_diff_last)
    c = (public_diff_2)
    temp_vbl = public
    find neg?
    locate 10,56
    format trend_public_diff_this, 5.2
    display "(trend_public_diff_this)"
    a = (trend_public_diff_this)
    format a,5.2
    locate 10,46
    format trend_public_diff_last, 5.2
    display "(trend_public_diff_last)"
    b = (trend_public_diff_last)
    format b,5.2
    locate 10,36
    pdisplay "     Public                       1.00     (b)     (a)"
    display "1.00"
    reset rev_color
    locate 10,62
    display "(neg?)"
    reset neg?;

Rule display_s_f_s_diff If todo = trend_statements Then  s_f_s_diff = found
    s_f_s_diff_this = (s_f_s_rev_this - s_f_s_cost_this)
    s_f_s_diff_last = (s_f_s_rev_last - s_f_s_cost_last)
    s_f_s_diff_2 = (s_f_s_rev_2 - s_f_s_cost_2)
    trend_s_f_s_diff_last = (s_f_s_diff_last / s_f_s_diff_2)
    trend_s_f_s_diff_this = (s_f_s_diff_this / s_f_s_diff_2)
    x = (trend_s_f_s_diff_last)
    y = (trend_s_f_s_diff_this)
    find rev_color
    a = (s_f_s_diff_this)
    b = (s_f_s_diff_last)
```

```
    c = (s_f_s_diff_2)
    temp_vbl = students_faculty_staff
    find neg?
    locate 11,56
    format trend_s_f_s_diff_this, 5.2
    display "(trend_s_f_s_diff_this)"
    a = (trend_s_f_s_diff_this)
    format a,5.2
    locate 11,46
    format trend_s_f_s_diff_last, 5.2
    display "(trend_s_f_s_diff_last)"
    b = (trend_s_f_s_diff_last)
    format b,5.2
    locate 11,36
    pdisplay "    Students/Faculty/Staff      1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 11,62
    display "(neg?)"
    reset neg?;

Rule display_interdept_diff If todo = trend_statements Then interdept_diff = found
    interdept_diff_this = (interdept_rev_this - interdept_cost_this)
    interdept_diff_last = (interdept_rev_last - interdept_cost_last)
    interdept_diff_2 = (interdept_rev_2 - interdept_cost_2)
    trend_interdept_diff_last = (interdept_diff_last / interdept_diff_2)
    trend_interdept_diff_this = (interdept_diff_this / interdept_diff_2)
    x = (trend_interdept_diff_last)
    y = (trend_interdept_diff_this)
    find rev_color
    a = (interdept_diff_this)
    b = (interdept_diff_last)
    c = (interdept_diff_2)
    temp_vbl = interdepartmental
    find neg?
    locate 12,56
    format trend_interdept_diff_this, 5.2
    display "(trend_interdept_diff_this)"
    a = (trend_interdept_diff_this)
    format a,5.2
    locate 12,46
    format trend_interdept_diff_last, 5.2
    display "(trend_interdept_diff_last)"
    b = (trend_interdept_diff_last)
    format b,5.2
    locate 12,36
    pdisplay "    Interdepartmental          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 12,62
    display "(neg?)"
    reset neg?;

Rule display_music_diff If todo = trend_statements Then music_diff = found
    music_diff_this = (music_rev_this - music_cost_this)
    music_diff_last = (music_rev_last - music_cost_last)
    music_diff_2 = (music_rev_2 - music_cost_2)
    trend_music_diff_last = (music_diff_last / music_diff_2)
    trend_music_diff_this = (music_diff_this / music_diff_2)
    x = (trend_music_diff_last)
    y = (trend_music_diff_this)
    find rev_color
    a = (music_diff_this)
    b = (music_diff_last)
    c = (music_diff_2)
    temp_vbl = music_department
    find neg?
    locate 13,56
    format trend_music_diff_this, 5.2
    display "(trend_music_diff_this)"
    a = (trend_music_diff_this)
    format a,5.2
    locate 13,46
    format trend_music_diff_last, 5.2
    display "(trend_music_diff_last)"
    b = (trend_music_diff_last)
    format b,5.2
    locate 13,36
    pdisplay "    Music Department           1.00      (b)      (a)"
    display "1.00"
```

```
    reset rev_color
    locate 13,62
    display "(neg?)"
    reset neg?;

Rule display_state_diff If todo = trend_statements Then  state_diff = found
    state_diff_this = (state_rev_this - state_cost_this)
    state_diff_last = (state_rev_last - state_cost_last)
    state_diff_2 = (state_rev_2 - state_cost_2)
    trend_state_diff_last = (state_diff_last / state_diff_2)
    trend_state_diff_this = (state_diff_this / state_diff_2)
    x = (trend_state_diff_last)
    y = (trend_state_diff_this)
    find rev_color
    a = (state_diff_this)
    b = (state_diff_last)
    c = (state_diff_2)
    temp_vbl = state_related
    find neg?
    locate 14,56
    format trend_state_diff_this, 5.2
    display "(trend_state_diff_this)"
    a = (trend_state_diff_this)
    format a,5.2
    locate 14,46
    format trend_state_diff_last, 5.2
    display "(trend_state_diff_last)"
    b = (trend_state_diff_last)
    format b,5.2
    locate 14,36
    pdisplay "     State Related              1.00      (b)       (a)"
    display "1.00"
    reset rev_color
    locate 14,62
    display "(neg?)"
    find print_negs
    reset neg?;

Rule print_neg_mkt_trends

If mkt_neg_trends < > unknown

Then print_negs = found
    pdisplay " "
    pdisplay " "
    pdisplay "Note that the trends for revenue minus expenses in some market segments"
    pdisplay "are increasing in the negative direction.  These market segments include:"
    pdisplay "(mkt_neg_trends)"
    pdisplay " "
    pdisplay " ";

Rule is_it_negative If a < = 0 and
  b < = 0 and
  c < = 0 and
  x > 1.05  and
  y > 1.1025 Then neg? = "*"
    mkt_neg_trends = (temp_vbl)
    color = 12;

Rule put_"*"_explanation_on_display If todo = trend_statements Then display_for_neg = found
    locate 8,68
    color = 14
    display "*"  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction - ";

Rule color_exp_inc_rev If x > = 1.05 and
  y > = 1.1025 Then rev_color = found
    color = 14;

Rule color_exp_dec_rev If x < = .95 and
  y < = .9025 Then rev_color = found
```

```
    color = 12 else color = 11;

Rule color_exp_inc_cost If x > = 1.05 and
  y > = 1.1025 Then cost_color = found
    color = 12;

Rule color_exp_dec_cost If x < = .95 and
  y < = .9025 Then cost_color = found
    color = 14 else color = 11;

! Statement Block

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5; plural: mkt_neg_trends; bkcolor = 1;
```

```
endoff; execute; runtime;

actions

color = 15 bcall killbud todo = budget_analysis find beg_display find farse;

!rules block

Rule beginning_display

If todo = budget_analysis Then beg_display = found
    cls
    locate 1,29
    display "BUDGET ANALYSIS"
    pdisplay "                    BUDGET ANALYSIS"
    pdisplay " "
    locate 3,6 display "Budget analysis is used to determine whether or not the organiztion's" display "revenues and expenses have been
within budget over time. For the Tailor" display "Shop, a budget is determined in advance for the year. A monthly review" display "of the
budget versus actual data is conducted to determine whether or" display "not the Tailor Shop is operating within its budget. An acceptance
" display "range, which is currently + or - 20% of the expected amount for each" display "revenue and expense category, is used to deter-
mine whether or not each" display "item is within budget." display " " pdisplay "      Budget analysis is used to determine whether or not
the organiztion's" pdisplay "revenues and expenses have been within budget over time. For the Tailor" pdisplay "Shop, a budget is deter-
mined in advance for the year. A monthly review" pdisplay "of the budget versus actual data is conducted to determine whether or"
pdisplay "not the Tailor Shop is operating within its budget. An acceptance " pdisplay "range, which is currently + or - 20% of the ex-
pected amount for each" pdisplay "revenue and expense category, is used to determine whether or not each" pdisplay "item is within
budget." pdisplay " ";



Rule tell_user_of_budget_limits If todo = budget_analysis Then find change_limits  ! statement allows user to specify which limits to
change
    pdisplay "Would you like to change any of these ranges for the revenue"
    pdisplay "categories?"
    pdisplay ""
    pdisplay "no      yes"
    pdisplay " "
    pdisplay "{change_limits}"
    pdisplay " "
    pdisplay "Would you like to change any of these ranges for the expense"
    pdisplay "categories?"
    pdisplay ""
    pdisplay "no      yes"
    pdisplay " "
    find change_limits_costs ! statement allows user to specify limits
    pdisplay "{change_limits_costs}"
    pdisplay " "
    farse = ok
    military_ll_b = 20
    military_ul_b = 20
    public_ll_b = 20
    public_ul_b = 20
    s_f_s_ll_b = 20
    s_f_s_ul_b = 20
    interdept_ll_b = 20
    interdept_ul_b = 20
    music_ll_b = 20
    music_ul_b = 20
    state_ll_b = 20
    state_ul_b = 20
    fringes_ll_b = 20
    salaries_ll_b = 20
    wages_ll_b = 20
    total_personal_ll_b = 20
    tele_ll_b = 20
    R_and_M_ll_b = 20
    travel_ll_b = 20
    other_contract_ll_b = 20
    total_contract_ll_b = 20
    repair_ll_b = 20
    other_s_and_m_ll_b = 20
    total_s_and_m_ll_b = 20
    equip_ll_b = 20
    uniforms_ll_b = 20
    elect_ll_b = 20
    w_and_s_ll_b = 20
```

```
    insure_ll_b = 20
    agency_ll_b = 20
    other_contin_ll_b = 20
    total_contin_ll_b = 20
    fringes_ul_b = 20
    salaries_ul_b = 20
    wages_ul_b = 20
    total_personal_ul_b = 20
    tele_ul_b = 20
    R_and_M_ul_b = 20
    travel_ul_b = 20
    other_contract_ul_b = 20
    total_contract_ul_b = 20
    repair_ul_b = 20
    other_s_and_m_ul_b = 20
    total_s_and_m_ul_b = 20
    equip_ul_b = 20
    uniforms_ul_b = 20
    elect_ul_b = 20
    w_and_s_ul_b = 20
    insure_ul_b = 20
    agency_ul_b = 20
    other_contin_ul_b = 20
    total_contin_ul_b = 20
    find change_values ! leads to a series of rules to change or leave limits on revenues
    find change_values_costs ! leads to rules as above, but for costs
    find explain_rev_budget
    find rev_budget ! leads to a series of rules which get budget and if there
                    ! is a difference, accounts for it through prompts
     reset rev_budget
    savefacts pbuddata
    chain pbudget5;

Rule display_to_explain_rev_budget If todo = budget_analysis Then explain_rev_budget = found
    cls
    locate 3,6 display "The annual budget for the Tailor Shop is determined for revenue in" display "total, and by category for expenses (eg.
personal, continuous, etc.)." display "In order to determine whether or not revenue is within budget, the" display "budget is first divided
into market segments. Thus, any increase or" display "decrease in the expected revenues must be allocated to one or more of" display "these
revenue segments. If such an increase or decrease does occur," display "you will be asked to determine which segments are responsible for"
display "the change." display " " display " " pdisplay "The annual budget for the Tailor Shop is determined for revenue in" pdisplay "total,
and by category for expenses (eg. personal, continuous, etc.)." pdisplay "In order to determine whether or not revenue is within budget, the"
pdisplay "budget is first divided into market segments. Thus, any increase or" pdisplay "decrease in the expected revenues must be allocated
to one or more of" pdisplay "these revenue segments. If such an increase or decrease does occur," pdisplay "you will be asked to determine
which segments are responsible for" pdisplay "the change." pdisplay " ";

Rule budget_limits_ok If change_limits = no Then military_ll = (military_ll_b)
    military_ul = (military_ul_b)
    public_ll = (public_ll_b)
    public_ul = (public_ul_b)
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b)
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b)
    music_ll = (music_ll_b)
    music_ul = (music_ul_b)
    state_ll = (state_ll_b)
    state_ul = (state_ul_b)
    change_values = found;

Rule budget_limits_not_ok If change_limits = yes Then pdisplay "Which revenue limits would you like to change?"
    pdisplay " "
    pdisplay "military              public              stu fac staff"
    pdisplay "interdepartmental     music dept          state related"
    pdisplay " "
    find which_rev_limits
    pdisplay "(which_rev_limits)"
    pdisplay " "
    find mil_limits
    find public_limits
    find s_f_s_limits
    find interdept_limits
    find music_limits
    find state_limits
    change_values = found;

Rule budget_cost_limits_ok If change_limits_costs = no Then fringes_ll = (fringes_ll_b)
    salaries_ll = (salaries_ll_b)
```

```
    wages_ll = (wages_ll_b)
    total_personal_ll = (total_personal_ll_b)
    tele_ll = (tele_ll_b)
    R_and_M_ll = (R_and_M_ll_b)
    travel_ll = (travel_ll_b)
    other_contract_ll = (other_contract_ll_b)
    total_contract_ll = (total_contract_ll_b)
    repair_ll = (repair_ll_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    total_s_and_m_ll = (total_s_and_m_ll_b)
    equip_ll = (equip_ll_b)
    uniforms_ll = (uniforms_ll_b)
    elect_ll = (elect_ll_b)
    w_and_s_ll = (w_and_s_ll_b)
    insure_ll = (insure_ll_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    total_contin_ll = (total_contin_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ul = (salaries_ul_b)
    wages_ul = (wages_ul_b)
    total_personal_ul = (total_personal_ul_b)
    tele_ul = (tele_ul_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ul = (travel_ul_b)
    other_contract_ul = (other_contract_ul_b)
    total_contract_ul = (total_contract_ul_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ul = (other_s_and_m_ul_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    equip_ul = (equip_ul_b)
    uniforms_ul = (uniforms_ul_b)
    elect_ul = (elect_ul_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ul = (insure_ul_b)
    agency_ul = (agency_ul_b)
    other_contin_ul = (other_contin_ul_b)
    total_contin_ul = (total_contin_ul_b)
    change_values_costs = found;

Rule budget_cost_limits_not_ok If change_limits_costs = yes Then pdisplay "Which expense category limits would you like to change?"
    pdisplay "equipment          uniforms          personnel"
    pdisplay "contractual        supplies materials  continuous"
    pdisplay " "
    find which_cost_limits
    find equip_limits
    find uniforms_limits
    find personal_limits
    find contract_limits
    find s_and_m_limits
    find contin_limits
    change_values_costs = found;

Rule go_get_rev_budget_data If todo = budget_analysis Then wks budget_rev, b3..c3, \vpp\playbud
    rev_budget = found
    budget_rev_now = (budget_rev[1])
    budget_rev_past = (budget_rev[2])
    diff = (budget_rev_now - budget_rev_past)
    find rev_diff;

Rule rev_budget_same If diff = 0 Then mil_exp_inc = 0
    public_exp_inc = 0
    s_f_s_exp_inc = 0
    interdept_exp_inc = 0
    music_exp_inc = 0
    state_exp_inc = 0
    rev_diff = found;

Rule rev_budget_higher If diff > 0 Then display "The amount budgeted for revenue this year has increased from the "
    display "previous year by ${diff}.  Which market segments are responsible for "
    display "contributing more this year to total revenue?  Please make certain that your"

    pdisplay "The amount budgeted for revenue this year has increased from the "
    pdisplay "previous year by ${diff}.  Which market segments are responsible for "
    pdisplay "contributing more this year to total revenue?  Please make certain that your"
    pdisplay "input adds up to ${diff} > "
    pdisplay " "
    pdisplay "military          public          stu fac staff"
    pdisplay "interdepartmental    music dept      state related"
    pdisplay " "
```

```
    find resp_rev_mkt_segments  ! statement - determines which segments
                        ! are expected to contribute more this year
    pdisplay " "
    pdisplay "{resp_rev_mkt_segments}"
    pdisplay " "
    rev_diff = found
    find mil_higher? ! leads to a series of rules which calculate
                ! changes in expectations
    find check_math;

Rule rev_budget_lower If diff < 0 Then diff = (@abs(diff))
    display "The amount budgeted for revenue this year has decreased from the "
    display "previous year by ${diff}.  Which market segments are responsible for"
    display "contributing less this year to total revenue?  Please make certain that your"

    pdisplay "The amount budgeted for revenue this year has decreased from the "
    pdisplay "previous year by ${diff}.  Which market segments are responsible for"
    pdisplay "contributing less this year to total revenue?  Please make certain that your"
    pdisplay "input adds up to ${diff}."
    pdisplay " "
    pdisplay "military              public              stu fac staff"
    pdisplay "interdepartmental     music dept          state related"
    pdisplay " "

    find resp_rev_mkt_segments_l  ! statement - determines which segments
                        ! are expected to contribute less this year
    pdisplay " "
    pdisplay "{resp_rev_mkt_segments_l}"
    pdisplay " "
    diff = (0 - diff)
    rev_diff = found
    find mil_lower? ! leads to a series of rules which calculate
                ! changes in expectations
    find check_math;

Rule military_exp_higher If resp_rev_mkt_segments = military Then pdisplay "How much is military revenue expected to increase?"
    pdisplay " "
    find mil_exp_inc_h
    pdisplay "{mil_exp_inc_h}"
    pdisplay " "
    mil_exp_inc = (mil_exp_inc_h)
    mil_higher? = found
    find public_higher?;

Rule military_exp_not_higher If resp_rev_mkt_segments < > military Then mil_exp_inc = 0
    mil_higher? = found
    find public_higher?;

Rule military_exp_lower If resp_rev_mkt_segments_l = military Then pdisplay "How much is military revenue expected to decrease?"
    pdisplay " "
    find mil_exp_inc_l
    pdisplay "{mil_exp_inc_l}"
    pdisplay " "
    mil_exp_inc = (0 - mil_exp_inc_l)
    mil_lower? = found
    find public_lower?;

Rule military_exp_not_lower If resp_rev_mkt_segments_l < > military Then mil_exp_inc = 0
    mil_lower? = found
    find public_lower?;

Rule public_exp_higher If resp_rev_mkt_segments = public Then pdisplay "How much is public revenue expected to increase?"
    pdisplay " "
    find public_exp_inc_h
    public_exp_inc = (public_exp_inc_h)
    pdisplay "{public_exp_inc_h}"
    pdisplay " "
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_not_higher If resp_rev_mkt_segments < > public Then public_exp_inc = 0
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_lower If resp_rev_mkt_segments_l = public Then pdisplay "How much is public revenue expected to decrease?"
    pdisplay " "
    find public_exp_inc_l
    pdisplay "{public_exp_inc_l}"
    pdisplay " "
    public_exp_inc = (0 - public_exp_inc_l)
```

```
    public_lower? = found
    find s_f_s_lower?;

Rule public_exp_not_lower If resp_rev_mkt_segments_1 < > lower Then public_exp_inc = 0
    public_lower? = found
    find s_f_s_lower?;

Rule s_f_s_exp_higher If resp_rev_mkt_segments = stu_fac_staff Then pdisplay "How much is student/faculty/staff revenue expected to
increase?"
    pdisplay " "
    find s_f_s_exp_inc_h
    pdisplay "{s_f_s_exp_inc_h}"
    pdisplay " "
    s_f_s_exp_inc = (s_f_s_exp_inc_h)
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_not_higher If resp_rev_mkt_segments < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_lower If resp_rev_mkt_segments_1 = stu_fac_staff Then pdisplay "How much is student/faculty/staff revenue expected to
decrease?"
    pdisplay " "
    find s_f_s_exp_inc_l
    pdisplay "{s_f_s_exp_inc_l}"
    pdisplay " "
    s_f_s_exp_inc = (0 - s_f_s_exp_inc_l)
    s_f_s_lower? = found
    find interdept_lower?;

Rule s_f_s_exp_not_lower If resp_rev_mkt_segments_1 < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_lower? = found
    find interdept_lower?;

Rule interdept_exp_higher If resp_rev_mkt_segments = interdepartmental Then pdisplay "How much is interdepartmental revenue expected
to increase?"
    pdisplay " "
    find interdept_exp_inc_h
    pdisplay "{interdept_exp_inc_h}"
    pdisplay " "
    interdept_exp_inc = (interdept_exp_inc_h)
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_not_higher If resp_rev_mkt_segments < > interdepartmental Then interdept_exp_inc = 0
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_lower If resp_rev_mkt_segments_1 = interdepartmental Then pdisplay "How much is interdepartmental revenue ex-
pected to decrease?"
    pdisplay " "
    find interdept_exp_inc_l
    pdisplay "{interdept_exp_inc_l}"
    pdisplay " "
    interdept_exp_inc = (0 - interdept_exp_inc_l)
    interdept_lower? = found
    find music_lower?;

Rule interdept_exp_not_lower If resp_rev_mkt_segments_1 < > interdepartmental Then interdept_exp_inc = 0
    interdept_lower? = found
    find music_lower?;

Rule music_exp_higher If resp_rev_mkt_segments = music_dept Then pdisplay "How much is music department revenue expected to in-
crease?"
    pdisplay " "
    find music_exp_inc_h
    pdisplay "{music_exp_inc_h}"
    pdisplay " "
    music_exp_inc = (music_exp_inc_h)
    music_higher? = found
    find state_higher?;

Rule music_exp_not_higher If resp_rev_mkt_segments < > music_dept Then music_exp_inc = 0
    music_higher? = found
    find state_higher?;

Rule music_exp_lower If resp_rev_mkt_segments_1 = music_dept Then pdisplay "How much is music department revenue expected to de-
crease?"
    pdisplay " "
```

```
    find music_exp_inc_l
    pdisplay "{music_exp_inc_l}"
    pdisplay " "
    music_exp_inc = (0 - music_exp_inc_l)
    music_lower? = found
    find state_lower?;

Rule music_exp_not_lower If resp_rev_mkt_segments_l < > music_dept Then music_exp_inc = 0
    music_lower? = found
    find state_lower?;

Rule state_exp_higher If resp_rev_mkt_segments = state_related Then pdisplay "How much is state related revenue expected to increase?"
    pdisplay " "
    find state_exp_inc_h
    pdisplay "{state_exp_inc_h}"
    pdisplay " "
    state_exp_inc = (state_exp_inc_h)
     n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diffl = (@abs(diff))
    state_higher? = found;

Rule state_exp_not_higher If resp_rev_mkt_segments < > state_related Then state_exp_inc = 0
    n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diffl = (@abs(diff))
    state_higher? = found;

Rule state_exp_lower If resp_rev_mkt_segments_l = state_related Then pdisplay "How much is state related revenue expected to decrease?"
    pdisplay " "
    find state_exp_inc_l
    pdisplay "{state_exp_inc_l}"
    pdisplay " "
    state_exp_inc = (0 - state_exp_inc_l)
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diffl = (@abs(diff));

Rule state_exp_not_lower If resp_rev_mkt_segments_l < > state_related Then state_exp_inc = 0
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diffl = (@abs(diff));

Rule math_is_ok If diffl = (n) Then check_math = done;

Rule math_not_ok If diffl < > (n) Then display "The increments you have given do not add up to the total increment in the"
    display "budget. Therefore, let's start this part over."
    display "Press any key to continue. ¬"
    display ""
    display ""

    pdisplay "The increments you have given do not add up to the total increment in the"
    pdisplay "budget. Therefore, let's start this part over."
    pdisplay "Press any key to continue."
    pdisplay ""
    pdisplay ""

    reset rev_budget
    reset rev_diff
    reset mil_higher?
    reset public_higher?
    reset s_f_s_higher?
    reset interdept_higher?
    reset music_higher?
    reset state_higher?
    reset mil_lower?
    reset public_lower?
    reset s_f_s_lower?
    reset interdept_lower?
    reset music_lower?
    reset state_lower?
    reset mil_exp_inc_h
    reset public_exp_inc_h
    reset s_f_s_exp_inc_h
    reset interdept_exp_inc_h
    reset music_exp_inc_h
    reset state_exp_inc_h
    reset mil_exp_inc_l
    reset public_exp_inc_l
    reset s_f_s_exp_inc_l
```

```
    reset interdept_exp_inc_l
    reset music_exp_inc_l
    reset state_exp_inc_l
    reset mil_exp_inc
    reset public_exp_inc
    reset s_f_s_exp_inc
    reset interdept_exp_inc
    reset music_exp_inc
    reset state_exp_inc
    reset resp_rev_mkt_segments
    reset resp_rev-mkt_segments_l
    reset farse
    reset display_clause
    reset change_limits
    reset change_values
    check_math = done
    reset check_math
    find rev_diff;

Rule find_military_limits If which_rev_limits = military Then display "What percentage below expected should the lower limit be for
military revenue?"
    pdisplay "What percentage below expected should the lower limit be for military revenue?"
    pdisplay "Please do not use decimals."
    pdisplay " "
    find military_ll
    pdisplay "{military_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for military revenue?"
    pdisplay "What percentage above expected should the upper limit be for military revenue?"
    pdisplay "Please do not use decimals."
    pdisplay " "
    find military_ul
    pdisplay "{military_ul}"
    pdisplay " "
    mil_limits = found;

Rule dont_find_military_limits If which_rev_limits < > military Then mil_limits = found
    military_ll = (military_ll_b)
    military_ul = (military_ul_b);

Rule find_public_limits If which_rev_limits = public Then display "What percentage below expected should the lower limit be for revenue
from the public? Please do not use decimals." pdisplay "What percentage below expected should the lower limit be for revenue from the
public? Please do not use decimals."
    pdisplay " "
    find public_ll
    pdisplay "{public_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for revenue from the public? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for revenue from the public? Please do not use decimals."
    pdisplay " "
    find public_ul
    pdisplay "{public_ul}"
    pdisplay " "
    public_limits = found;

Rule dont_find_public_limits If which_rev_limits < > public Then public_limits = found
    public_ll = (public_ll_b)
    public_ul = (public_ul_b);

Rule find_s_f_s_limits If which_rev_limits = stu_fac_staff Then display "What percentage below expected should the lower limit be for
revenue from students, faculty, and staff? Please do not use decimals." pdisplay "What percentage below expected should the lower limit
be for revenue from students, faculty, and staff? Please do not use decimals."
    pdisplay " "
    find s_f_s_ll
    pdisplay "{s_f_s_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for revenue from students, faculty, and staff? Please do not use
decimals."
    pdisplay "What percentage above expected should the upper limit be for revenue from students, faculty, and staff? Please do not use
decimals."
    pdisplay " "
    find s_f_s_ul
    pdisplay "{s_f_s_ul}"
    pdisplay " "
    s_f_s_limits = found;

Rule dont_find_s_f_s_limits If which_rev_limits < > stu_fac_staff Then s_f_s_limits = found
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b);
```

```
Rule find_interdept_limits If which_rev_limits = interdepartmental Then display "What percentage below expected should the lower limit
be for interdepartmental revenue? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for interdepartmental revenue? Please do not use decimals."
    pdisplay " "
    find interdept_ll
    pdisplay "{interdept_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for interdepartmental revenue? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for interdepartmental revenue? Please do not use decimals."
    pdisplay " "
    find interdept_ul
    pdisplay "{interdept_ul}"
    pdisplay " "
    interdept_limits = found;

Rule dont_find_interdept_limits If which_rev_limits < > interdepartmental Then interdept_limits = found
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b);

Rule find_music_limits If which_rev_limits = music_dept Then display "What percentage below expected should the lower limit be for
music department revenue? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for music department revenue? Please do not use decimals."
    pdisplay " "
    find music_ll
    pdisplay "{music_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for music department revenue? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for music department revenue? Please do not use decimals."
    pdisplay " "
    find music_ul
    pdisplay "{music_ul}"
    pdisplay " "
    music_limits = found;

Rule dont_find_music_limits If which_rev_limits < > music_dept Then music_limits = found
    music_ll = (music_ll_b)
    music_ul = (music_ul_b);

Rule find_state_limits If which_rev_limits = state_related Then display "What percentage below expected should the lower limit be for state
related revenue? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for state related revenue? Please do not use decimals."
    pdisplay " "
    find state_ll
    pdisplay "{state_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for state related revenue? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for state related revenue? Please do not use decimals."
    pdisplay " "
    find state_ul
    pdisplay "{state_ul}"
    pdisplay " "
    state_limits = found;

Rule dont_find_state_limits If which_rev_limits < > state_related Then state_limits = found
    state_ll = (state_ll_b)
    state_ul = (state_ul_b);

Rule find_equip_limits If which_cost_limits = equipment Then display "What percentage below expected should the lower limit be for
equipment purchases? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for equipment purchases? Please do not use decimals."
    pdisplay " "
    find equip_ll
    pdisplay "{equip_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for equipment purchases? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for equipment purchases? Please do not use decimals."
    pdisplay " "
    find equip_ul
    pdisplay "{equip_ul}"
    pdisplay " "
    equip_limits = found;

Rule dont_find_equip_limits If which_cost_limits < > equipment Then equip_limits = found
    equip_ll = (equip_ll_b)
    equip_ul = (equip_ul_b);

Rule find_uniform_limits If which_cost_limits = uniforms Then display "What percentage below expected should the lower limit be for
uniform purchases? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for uniform purchases? Please do not use decimals."
    pdisplay " "
```

```
    find uniforms_ll
    pdisplay "{uniforms_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for uniform purchases? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for uniform purchases? Please do not use decimals."
    pdisplay " "
    find uniforms_ul
    pdisplay "{uniforms_ul}"
    pdisplay " "
    uniforms_limits = found;

Rule dont_find_uniform_limits If which_cost_limits < > uniforms Then uniforms_limits = found
    uniforms_ll = (uniforms_ll_b)
    uniforms_ul = (uniforms_ul_b);

Rule find_personal_limits If which_cost_limits = personal Then display "What percentage below expected should the lower limit be for
personal expenses? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for personal expenses? Please do not use decimals."
    pdisplay " "
    find total_personal_ll
    pdisplay "{total_personal_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for personal expenses? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for personal expenses? Please do not use decimals."
    pdisplay " "
    find total_personal_ul
    pdisplay "{total_personal_ul}"
    pdisplay " "
    personal_limits = found
    find finish_personal_limits;

Rule dont_find_personal_limits If which_cost_limits < > personal Then personal_limits = found
    total_personal_ll = (total_personal_ll_b)
    total_personal_ul = (total_personal_ul_b)
    fringes_ll = (fringes_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ll = (salaries_ll_b)
    salaries_ul = (salaries_ul_b)
    wages_ll = (wages_ll_b)
    wages_ul = (wages_ul_b);

Rule make_all_personal_limits_same    ! simplifying assumption If todo = budget_analysis            ! within any category, the upper
                                      ! and lower limits considered to Then fringes_ll = (total_personal_ll)   ! be acceptable are the same.
    fringes_ul = (total_personal_ul)  ! It was felt that placing one
    salaries_ll = (total_personal_ll) ! set of limits on salaries and
    salaries_ul = (total_personal_ul) ! another on wages, for example,
    wages_ll = (total_personal_ll)    ! would be highly unlikely
    wages_ul = (total_personal_ul)
    finish_personal_limits = done;

Rule find_contract_limits If which_cost_limits = contractual Then display "What percentage below expected should the lower limit be for
contractual expenses? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for contractual expenses? Please do not use decimals."
    pdisplay " "
    find total_contract_ll
    pdisplay "{total_contract_ll}"
    pdisplay " "
    display "What percentage above expected should the upper limit be for contractual expenses? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for contractual expenses? Please do not use decimals."
    pdisplay " "
    find total_contract_ul
    pdisplay "{total_contract_ul}"
    pdisplay " "
    contract_limits = found
    find finish_contract_limits;

Rule dont_find_contract_limits If which_cost_limits < > contractual Then contract_limits = found
    total_contract_ll = (total_contract_ll_b)
    total_contract_ul = (total_contract_ul_b)
    tele_ll = (tele_ll_b)
    tele_ul = (tele_ul_b)
    R_and_M_ll = (R_and_M_ll_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ll = (travel_ll_b)
    travel_ul = (travel_ul_b)
    other_contract_ll = (other_contract_ll_b)
    other_contract_ul = (other_contract_ul_b);

Rule make_all_contract_limits_same If todo = budget_analysis Then tele_ll = (total_contract_ll)
    tele_ul = (total_contract_ul)
```

```
    R_and_M_ll = (total_contract_ll)
    R_and_M_ul = (total_contract_ul)
    travel_ll = (total_contract_ll)
    travel_ul = (total_contract_ul)
    other_contract_ll = (total_contract_ll)
    other_contract_ul = (total_contract_ul)
    finish_contract_limits = done;

Rule find_s_and_m_limits If which_cost_limits = supplies_materials Then display "What percentage below expected should the lower limit
be for supplies & materials? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for supplies & materials? Please do not use decimals."
    pdisplay " "
    find total_s_and_m_ll
    pdisplay "(total_s_and_m_ll)"
    pdisplay " "
    display "What percentage above expected should the upper limit be for supplies & materials? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for supplies & materials? Please do not use decimals."
    pdisplay " "
    find total_s_and_m_ul
    pdisplay "(total_s_and_m_ul)"
    pdisplay " "
    s_and_m_limits = found
    find finish_s_and_m_limits;

Rule dont_find_s_and_m_limits If which_cost_limits < > supplies_materials Then s_and_m_limits = found
    total_s_and_m_ll = (total_s_and_m_ll_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    repair_ll = (repair_ll_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    other_s_and_m_ul = (other_s_and_m_ul_b);

Rule make_all_s_and_m_limits_same If todo = budget_analysis Then repair_ll = (total_s_and_m_ll)
    repair_ul = (total_s_and_m_ul)
    other_s_and_m_ll = (total_s_and_m_ll)
    other_s_and_m_ul = (total_s_and_m_ul)
    finish_s_and_m_limits = done;

Rule find_contin_limits If which_cost_limits = continuous Then display "What percentage below expected should the lower limit be for
continuous expenses? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for continuous expenses? Please do not use decimals."
    pdisplay " "
    find total_contin_ll
    pdisplay "(total_contin_ll)"
    pdisplay " "
    display "What percentage above expected should the upper limit be for continuous expenses? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for continuous expenses? Please do not use decimals."
    pdisplay " "
    find total_contin_ul
    pdisplay "(total_contin_ul)"
    pdisplay " "
    contin_limits = found
    find finish_contin_limits;

Rule dont_find_contin_limits If which_cost_limits < > continuous Then contin_limits = found
    total_contin_ll = (total_contin_ll_b)
    total_contin_ul = (total_contin_ul_b)
    elect_ll = (elect_ll_b)
    elect_ul = (elect_ul_b)
    w_and_s_ll = (w_and_s_ll_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ll = (insure_ll_b)
    insure_ul = (insure_ul_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    other_contin_ul = (other_contin_ul_b)
    agency_ul = (agency_ul_b);

Rule make_all_contin_limits_same If todo = budget_analysis Then elect_ll = (total_contin_ll)
    elect_ul = (total_contin_ul)
    w_and_s_ll = (total_contin_ll)
    w_and_s_ul = (total_contin_ul)
    insure_ll = (total_contin_ll)
    insure_ul = (total_contin_ul)
    agency_ll = (total_contin_ll)
    other_contin_ll = (total_contin_ll)
    agency_ul = (total_contin_ul)
    other_contin_ul = (total_contin_ul)
    finish_contin_limits = done;
```

```
!statements block

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis;

ask change_limits:"Would you like to change any of these ranges for the revenue categories?"; choices change_limits: no, yes;

ask change_limits_costs:"Would you like to change any of these ranges for the expense categories?"; choices change_limits_costs: no,yes;

ask which_rev_limits: "Which revenue limits would you like to change?"; choices which_rev_limits: military, public, stu_fac_staff,
interdepartmental,music_dept, state_related;

ask which_cost_limits: "Which expense category limits would you like to change?"; choices which_cost_limits: equipment, uniforms, per-
sonal, contractual, supplies_materials, continuous;

ask military_ll: "Please do not use decimals."; ask military_ul: "Please do not use decimals.";

range military_ll: 1,100; range military_ul: 1,100;

ask s_f_s_ul: ""; ask s_f_s_ll: "";

range s_f_s_ll: 1,100; range s_f_s_ul: 1,100;

ask public_ul: ""; ask public_ll: "";

range public_ll: 1,100; range public_ul: 1,100;

ask interdept_ul: ""; ask interdept_ll: "";

range interdept_ll: 1,100; range interdept_ul: 1,100;

ask music_ul: ""; ask music_ll: "";

range music_ll: 1,100; range music_ul: 1,100;

ask state_ul: ""; ask state_ll: "";

range state_ll: 1,100; range state_ul: 1,100;

ask equip_ll: ""; ask equip_ul: "";

range equip_ll: 1,100; range equip_ul: 1,100;

ask uniforms_ll: ""; ask uniforms_ul: "";

range uniforms_ll: 1,100; range uniforms_ul: 1,100;

ask total_personal_ll: ""; ask total_personal_ul: "";

range total_personal_ll: 1,100; range total_personal_ul: 1,100;

ask total_contract_ll: ""; ask total_contract_ul: "";

range total_contract_ll: 1,100; range total_contract_ul: 1,100;

ask total_s_and_m_ll: ""; ask total_s_and_m_ul: "";

range total_s_and_m_ll: 1,100; range total_s_and_m_ul: 1,100;

ask total_contin_ll: ""; ask total_contin_ul: "";

range total_contin_ll: 1,100; range total_contin_ul: 1,100;


ask resp_rev_mkt_segments: "input adds up to ${diff}."; choices resp_rev_mkt_segments: military, public, stu_fac_staff, interdepartmental,
music_dept, state_related;

ask resp_rev_mkt_segments_l: "input adds up to ${diff}."; choices resp_rev_mkt_segments_l: military, public, stu_fac_staff, interdepart-
mental, music_dept, state_related;


ask mil_exp_inc_h: "How much is military revenue expected to increase?"; range mil_exp_inc_h: 0,1000000;

ask mil_exp_inc_l: "How much is military revenue expected to decrease?"; range mil_exp_inc_l: 0,1000000;

ask public_exp_inc_h: "How much is public revenue expected to increase?"; range public_exp_inc_h: 0,1000000;

ask s_f_s_exp_inc_h: "How much is student/faculty/staff revenue expected to increase?"; range s_f_s_exp_inc_h: 0,1000000;
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```
ask interdept_exp_inc_h: "How much is interdepartmental revenue expected to increase?"; range interdept_exp_inc_h: 0,1000000;
ask music_exp_inc_h: "How much is music department revenue expected to increase?"; range music_exp_inc_h: 0,1000000;
ask state_exp_inc_h: "How much is state related revenue expected to increase?"; range state_exp_inc_h: 0,1000000;

ask public_exp_inc_l: "How much is public revenue expected to decrease?"; range public_exp_inc_l: 0,1000000;
ask s_f_s_exp_inc_l: "How much is student/faculty/staff revenue expected to decrease?"; range s_f_s_exp_inc_l: 0,1000000;
ask interdept_exp_inc_l: "How much is interdepartmental revenue expected to decrease?"; range interdept_exp_inc_l: 0,1000000;
ask music_exp_inc_l: "How much is music department revenue expected to decrease?"; range music_exp_inc_l: 0,1000000;
ask state_exp_inc_l: "How much is state related revenue expected to decrease?"; range state_exp_inc_l: 0,1000000;

plural:within_budget, over_budget, under_budget, which_rev_limits, resp_rev_mkt_segments, resp_rev_mkt_segments_l; plural:exp_inc, ll,
ul,lb,ub,ex,other_rev_last_yr,bud_personal; plural:bud_contract, bud_s_and_m, bud_contin_this_yr,act_personal, act_contract;
plural:act_s_and_m, act_contin, which_cost_limits,under_lb_personal; plural:over_ub_personal, w_in_personal,
over_ub_contract,under_lb_contract; plural:w_in_contract,over_ub_contin, under_lb_contin, w_in_contin;
plural:w_in_s_and_m,over_ub_s_and_m, under_lb_s_and_m;

bkcolor = 1;
```

```
endoff; execute; runtime;

actions

color = 15 todo = budget_analysis find kill_time_display loadfacts pbuddata find expectations ! find expected values for all revenue categories find cost_expectations ! fill in later cls display "The calculations are now complete. Press any key to examine" display "the revenue part of the analysis.¬" pdisplay "The calculations are now complete. Press any key to examine" pdisplay "the revenue part of the analysis." pdisplay " "

find mil_rev_to_display ! leads to rules which determine whether or find public_rev_to_display ! not each revenue category is within its find s_f_s_rev_to_display ! limits, and then informs the user find interdept_rev_to_display find music_rev_to_display find state_rev_to_display find within_rev_to_display cls display "The revenue section of budgeting anlaysis is now finished. Press any" display "key to examine the expense section.¬"

pdisplay "The revenue section of budgeting anlaysis is now finished. Press any" pdisplay "key to examine the expense section." pdisplay " "

find personal_to_display find contract_to_display find contin_to_display find s_and_m_to_display find uniforms_to_display find equip_to_display

chain pts;

!rules block

Rule display_explanation_and_kill_time If todo = budget_analysis Then kill_time_display = found
    cls
    locate 1,4 display "The following analysis will determine whether or not each revenue and" display "expense category is over budget, under budget, or within budget (i.e., over," display "under, or within the previously prescribed ranges). In this analysis, if" display "an item is over or under budget, this will be indicated along with the " display "percentage by which it is over or under budget. The actual and budget" display "values will not be displayed. Given the annual budget, one must break the" display "budget down into 12 monthly intervals. This is done by using the previous" display "year's actual figures to determine how much of the current year's budget" display "should have been used thus far in any given month. For categories which" display "provide a fairly steady flow of income or expense (e.g. salaries), any" display "exception is important. For other categories however, the flow of funds" display "may be discontinuous. For example, most of the revenue from the corps is" display "booked to the Tailor Shop late in the year, while revenue from the music" display "department is typically paid twice, once in the fall and once in the" display "spring. Repairs and maintenance will be erratic. For categories such " display "as these, an early or late payment will appear as an exception." locate 18,4 display "At this time, calculation of all expected values is in progress. Please" display "be patient as this takes time. You will be instructed when to continue."

pdisplay "  The following analysis will determine whether or not each revenue and" pdisplay "expense category is over budget, under budget, or within budget (i.e., over," pdisplay "under, or within the previously prescribed ranges). In this analysis, if" pdisplay "an item is over or under budget, this will be indicated along with the " pdisplay "percentage by which it is over or under budget. The actual and budget" pdisplay "values will not be displayed. Given the annual budget, one must break the" pdisplay "budget down into 12 monthly intervals. This is done by using the previous" pdisplay "year's actual figures to determine how much of the current year's budget" pdisplay "should have been used thus far in any given month. For categories which" pdisplay "provide a fairly steady flow of income or expense (e.g. salaries), any" pdisplay "exception is important. For other categories however, the flow of funds" pdisplay "may be discontinuous. For example, most of the revenue from the corps is" pdisplay "booked to the Tailor Shop late in the year, while revenue from the music" pdisplay "department is typically paid twice, once in the fall and once in the" pdisplay "spring. Repairs and maintenance will be erratic. For categories such " pdisplay "as these, an early or late payment will appear as an exception." pdisplay " " pdisplay "At this time, calculation of all expected values is in progress. Please" pdisplay "be patient as this takes time. You will be instructed when to continue." pdisplay " ";


Rule current_fringes_lt_lb If act_fringes_this_yr < (lb_fringes) and
  todo = budget_analysis Then personal_to_display = found
    under_lb_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_gt_ub If act_fringes_this_yr > (ub_fringes) and
  todo = budget_analysis Then personal_to_display = found
    over_ub_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_w_in_bounds If act_fringes_this_yr > = (lb_fringes) and
  act_fringes_this_yr < = (ub_fringes) Then personal_to_display = found
    w_in_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;
```

```
Rule current_salaries_lt_lb If act_salaries_this_yr < (lb_salaries) Then salaries_to_display = found
    under_lb_personal = salaries;

Rule current_salaries_gt_ub If act_salaries_this_yr > (ub_salaries) Then salaries_to_display = found
    over_ub_personal = salaries;

Rule current_salaries_w_in_bounds If act_salaries_this_yr > = (lb_salaries) and
  act_salaries_this_yr < = (ub_salaries) Then salaries_to_display = found
    w_in_personal = salaries;

Rule current_wages_lt_lb If act_wages_this_yr < (lb_wages) Then wages_to_display = found
    under_lb_personal = wages;

Rule current_wages_gt_ub If act_wages_this_yr > (ub_wages) Then wages_to_display = found
    over_ub_personal = wages;

Rule current_wages_w_in_bounds If act_wages_this_yr > = (lb_wages) and
  act_wages_this_yr < = (ub_wages) Then wages_to_display = found
    w_in_personal = wages;

Rule total_personal_lt_lb If act_total_personal_this_yr < (lb_total_personal) Then personal_total_to_display = found
    total_personal = under;

Rule total_personal_gt_ub If act_total_personal_this_yr > (ub_total_personal) Then personal_total_to_display = found
    total_personal = over;

Rule total_personal_w_in_bounds If act_total_personal_this_yr > = (lb_total_personal) and
  act_total_personal_this_yr < = (ub_total_personal) Then personal_total_to_display = found
    total_personal = within;

Rule display_total_personal_under If total_personal = under and
  under_lb_personal < > unknown Then actual_display_personal = found
    color = 14
    display ' '
    display "Total Personal expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is (are)
under budget:" display "{under_lb_personal} ¬"
    pdisplay "Total Personal expenses are under budget. This is due to the fact" pdisplay "that the following individual expense item(s) is
(are) under budget:" pdisplay "{under_lb_personal}" pdisplay ' '
    color = 15;

Rule display_total_personal_over If total_personal = over and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display ' '
    display "Total Personal expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is (are)
over budget:" display "{over_ub_personal} ¬"
    pdisplay "Total Personal expenses are over budget. This is due to the fact" pdisplay "that the following individual expense item(s) is
(are) over budget:" pdisplay "{over_ub_personal}" pdisplay ' '
    color = 15;


Rule display_total_personal_within If total_personal = within and
  under_lb_personal = unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 10
    display ' '
    display "Personal expenses are all within budget. ¬"
    pdisplay ' '
    pdisplay "Personal expenses are all within budget."
    pdisplay ' '
    color = 15;

Rule display_personal_within_w_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display ' '
    display "Total personal expenses are within budget. However, the following are" display "under budget," display "{under_lb_personal}"
display "and the following are over budget," display "{over_ub_personal} ¬"
    pdisplay ' '
    pdisplay "Total personal expenses are within budget. However, the following are" pdisplay "under budget," pdisplay
"{under_lb_personal}" pdisplay "and the following are over budget," pdisplay "{over_ub_personal}"
    color = 15;



Rule display_personal_within_high_outliers If total_personal = within and
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```
  under_lb_personal = unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display " "
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "{over_ub_personal}"
    color = 15;

Rule display_personal_within_w_low_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 14
    display " "
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "{under_lb_personal}"
    color = 15;

!!!!!!!!!!!!!!!!!! contract begins

Rule current_tele_lt_lb If act_tele_this_yr < (lb_tele) and
  todo = budget_analysis Then contract_to_display = found
    under_lb_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_teles_gt_ub If act_tele_this_yr > (ub_tele) and
  todo = budget_analysis Then contract_to_display = found
    over_ub_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_tele_w_in_bounds If act_tele_this_yr > = (lb_tele) and
  act_tele_this_yr < = (ub_tele) Then contract_to_display = found
    w_in_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_R_and_M_lt_lb If act_R_and_M_this_yr < (lb_R_and_M) Then R_and_M_to_display = found
    under_lb_contract = repair_and_maintenance;

Rule current_R_and_M_gt_ub If act_R_and_M_this_yr > (ub_R_and_M) Then R_and_M_to_display = found
    over_ub_contract = repair_and_maintenance;

Rule current_R_and_M_w_in_bounds If act_R_and_M_this_yr > = (lb_R_and_M) and
  act_R_and_M_this_yr < = (ub_R_and_M) Then R_and_M_to_display = found
    w_in_contract = repair_and_maintenance;

Rule current_travel_lt_lb If act_travel_this_yr < (lb_travel) Then travel_to_display = found
    under_lb_contract = travel;

Rule current_travel_gt_ub If act_travel_this_yr > (ub_travel) Then travel_to_display = found
    over_ub_contract = travel;

Rule current_travel_w_in_bounds If act_travel_this_yr > = (lb_travel) and
  act_travel_this_yr < = (ub_travel) Then travel_to_display = found
    w_in_contract = travel;

Rule current_other_contract_lt_lb If act_contract_other_this_yr < (lb_other_contract) Then other_contract_to_display = found
    under_lb_contract = other_contractual;

Rule current_other_contract_gt_ub If act_contract_other_this_yr > (ub_other_contract) Then other_contract_to_display = found
    over_ub_contract = other_contractual;

Rule other_contract_w_in_bounds If act_contract_other_this_yr > = (lb_other_contract) and
  act_contract_other_this_yr < = (ub_other_contract) Then other_contract_to_display = found
    w_in_contract = other_contractual;
```

```
Rule total_contract_lt_lb If act_total_contract_this_yr < (lb_total_contract) Then contract_total_to_display = found
    total_contract = under;

Rule total_contract_gt_ub If act_total_contract_this_yr > (ub_total_contract) Then contract_total_to_display = found
    total_contract = over;

Rule total_contract_w_in_bounds If act_total_contract_this_yr > = (lb_total_contract) and
  act_total_contract_this_yr < = (ub_total_contract) Then contract_total_to_display = found
    total_contract = within;

Rule display_total_contract_under If total_contract = under and
  under_lb_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "{under_lb_contract} ¬" pdisplay ' '
    pdisplay "Total contractual expenses are under budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) under budget:" pdisplay "{under_lb_contract}" pdisplay ' '

    color = 15;

Rule display_total_contract_over If total_contract = over and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display ' '
    display "Total contractual expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "{over_ub_contract} ¬"
    pdisplay ' '
    pdisplay "Total contractual expenses are over budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) over budget:" pdisplay "{over_ub_contract}" pdisplay ' '


    color = 15;

Rule display_total_contract_within If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 10
    display ' '
    display "Contractual expenses are all within budget. ¬"
    pdisplay ' '
    pdisplay "Contractual expenses are all within budget."
    pdisplay ' '

    color = 15;

Rule display_contract_within_w_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are within budget. However, the following are" display "under budget," display
"{under_lb_contract}" display "and the following are over budget," display "{over_ub_contract} ¬"
    pdisplay ' '
    pdisplay "Total contractual expenses are within budget. However, the following are" pdisplay "under budget," pdisplay
"{under_lb_contract}" pdisplay "and the following are over budget," pdisplay "{over_ub_contract}" pdisplay ' '

    color = 15;

Rule display_contract_within_high_outliers If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display ' '
    display "Total contractual expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_contract} ¬"
    pdisplay ' '
    pdisplay "Total contractual expenses are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "{over_ub_contract}" pdisplay ' '


    color = 15;

Rule display_contract_within_w_low_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_contract} ¬"
```

```
    pdisplay " "
    pdisplay "Total contractual expenses are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "(under_lb_contract)" pdisplay " "


    color = 15;

!!!!!!!!!!!!!!contin starts


Rule current_elect_lt_lb If act_elect_this_yr < (lb_elect) and
  todo = budget_analysis Then contin_to_display = found
    under_lb_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_gt_ub If act_elect_this_yr > (ub_elect) and
  todo = budget_analysis Then contin_to_display = found
    over_ub_contract = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_w_in_bounds If act_elect_this_yr > = (lb_elect) and
  act_elect_this_yr < = (ub_elect) Then contin_to_display = found
    w_in_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find other_contin_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_w_and_s_lt_lb If act_w_and_s_this_yr < (lb_w_and_s) Then w_and_s_to_display = found
    under_lb_contin = water_and_sewer;

Rule current_w_and_s_gt_ub If act_w_and_s_this_yr > (ub_w_and_s) Then w_and_s_to_display = found
    over_ub_contin = water_and_sewer;

Rule current_w_and_s_w_in_bounds If act_w_and_s_this_yr > = (lb_w_and_s) and
  act_w_and_s_this_yr < = (ub_w_and_s) Then w_and_s_to_display = found
    w_in_contin = water_and_sewer;

Rule current_insure_lt_lb If act_insure_this_yr < (lb_insure) Then insure_to_display = found
    under_lb_contin = insurance;

Rule current_insure_gt_ub If act_insure_this_yr > (ub_insure) Then insure_to_display = found
    over_ub_contin = insurance;

Rule current_insure_w_in_bounds If act_insure_this_yr > = (lb_insure) and
  act_insure_this_yr < = (ub_insure) Then insure_to_display = found
    w_in_contin = travel;

Rule current_agency_lt_lb If act_agency_this_yr < (lb_agency) Then agency_to_display = found
    under_lb_contin = agency_charges;

Rule current_agency_gt_ub If act_agency_this_yr > (ub_agency) Then agency_to_display = found
    over_ub_contin = agency_charges;

Rule agency_w_in_bounds If act_agency_this_yr > = (lb_agency) and
  act_agency_this_yr < = (ub_agency) Then agency_to_display = found
    w_in_contin = agency;

Rule current_other_contin_lt_lb If act_comp_perp_this_yr < (lb_other_contin) Then other_contin_to_display = found
    under_lb_contin = other_continuous_charges;

Rule current_other_contin_gt_ub If act_comp_perp_this_yr > (ub_other_contin) Then other_contin_to_display = found
    over_ub_contin = computer_peripheral;

Rule other_contin_w_in_bounds If act_comp_perp_this_yr > = (lb_other_contin) and
  act_comp_perp_this_yr < = (ub_other_contin) Then other_contin_to_display = found
    w_in_contin = other;
```

```
Rule total_contin_lt_lb If act_total_contin_this_yr < (lb_total_contin) Then contin_total_to_display = found
    total_contin = under;

Rule total_contin_gt_ub If act_total_contin_this_yr > (ub_total_contin) Then contin_total_to_display = found
    total_contin = over;

Rule total_contin_w_in_bounds If act_total_contin_this_yr > = (lb_total_contin) and
  act_total_contin_this_yr < = (ub_total_contin) Then contin_total_to_display = found
    total_contin = within;

Rule display_total_contin_under If total_contin = under and
  under_lb_contin < > unknown Then actual_display_contin = found
    color = 14
    display ' '
    display "Total continuous expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_contin) ¬" pdisplay ' '
    pdisplay "Total continuous expenses are under budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) under budget:" pdisplay "(under_lb_contin)" pdisplay ' '

    color = 15;

Rule display_total_contin_over If total_contin = over and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "(over_ub_contin) ¬"
    pdisplay ' '
    pdisplay "Total continuous expenses are over budget. This is due to the fact" pdisplay "that the following individual expense item(s) is
(are) over budget:" pdisplay "(over_ub_contin)" pdisplay ' '


    color = 15;

Rule display_total_contin_within If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin = unknown Then actual_display_contin = found
    color = 10
    display ' '
    display "Continuous expenses are all within budget. ¬"
    pdisplay ' '
    pdisplay "Continuous expenses are all within budget."
    pdisplay ' '

    color = 15;

Rule display_contin_within_w_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are within budget. However, the following are" display "under budget," display "(under_lb_contin)"
display "and the following are over budget," display "(over_ub_contin) ¬"

    pdisplay ' '
    pdisplay "Total continuous expenses are within budget. However, the following are" pdisplay "under budget," pdisplay
"(under_lb_contin)" pdisplay "and the following are over budget," pdisplay "(over_ub_contin)" pdisplay ' '

    color = 15;

Rule display_contin_within_high_outliers If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "(over_ub_contin) ¬"

    pdisplay ' '
    pdisplay "Total continuous expenses are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "(over_ub_contin)" pdisplay ' '

    color = 15;

Rule display_contin_within_w_low_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin = unknown Then actual_display_contin = found
    color = 14
    display ' '
```

```
    display "Total continuous expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "(under_lb_contin) ¬"
    pdisplay " "
    pdisplay "Total continuous expenses are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "(under_lb_contin)" pdisplay " "


    color = 15;

!!!!!!!!!s & m begins

Rule current_repair_lt_lb If act_repair_this_yr < (lb_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    under_lb_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_gt_ub If act_repair_this_yr > (ub_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    over_ub_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_w_in_bounds If act_repair_this_yr >= (lb_repair) and
  act_repair_this_yr <= (ub_repair) Then s_and_m_to_display = found
    w_in_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_other_s_and_m_lt_lb If act_s_and_m_other_this_yr < (lb_other_s_and_m) Then other_s_and_m_to_display = found
    under_lb_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_M_gt_ub If act_s_and_m_other_this_yr > (ub_other_s_and_m) Then other_s_and_m_to_display = found
    over_ub_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_m_w_in_bounds If act_s_and_m_other_this_yr >= (lb_other_s_and_m) and
  act_s_and_m_other_this_yr <= (ub_other_s_and_m) Then other_s_and_m_to_display = found
    w_in_s_and_m = other_supplies_&_materials;

Rule total_s_and_m_lt_lb If act_total_s_and_m_this_yr < (lb_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = under;

Rule total_s_and_m_gt_ub If act_total_s_and_m_this_yr > (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = over;

Rule total_s_and_m_w_in_bounds If act_total_s_and_m_this_yr >= (lb_total_s_and_m) and
  act_total_s_and_m_this_yr <= (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = within;

Rule display_total_s_and_m_under If total_s_and_m = under and
  under_lb_s_and_m <> unknown Then actual_display_s_and_m = found
    color = 14
    display " "
    display "Total supplies & materials are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_s_and_m) ¬"

pdisplay " "
    pdisplay "Total supplies & materials are under budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) under budget:" pdisplay "(under_lb_s_and_m)" pdisplay " "

    color = 15;

Rule display_total_s_and_m_over If total_s_and_m = over and
  over_ub_s_and_m <> unknown Then actual_display_s_and_m = found
    color = 12
    display " "
    display "Total supplies and materials are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "(over_ub_s_and_m) ¬"

    pdisplay " "
    pdisplay "Total supplies and materials are over budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) over budget:" pdisplay "(over_ub_s_and_m)" pdisplay " "

    color = 15;

Rule display_total_s_and_m_within If total_s_and_m = within and
  under_lb_s_and_m = unknown and
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```
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 10
    display ' '
    display 'Supplies & materials are all within budget.¬'

    pdisplay ' '
    pdisplay 'Supplies & materials are all within budget.'
    pdisplay ' '

    color = 15;

Rule display_s_and_m_within_w_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display ' '
    display 'Total supplies and materials are within budget. However, the following are' display 'under budget,' display
'{under_lb_s_and_m' display 'and the following are over budget,' display '{over_ub_s_and_m}¬'

    pdisplay ' '
    pdisplay 'Total supplies and materials are within budget. However, the following are' pdisplay 'under budget,' pdisplay
'{under_lb_s_and_m' pdisplay 'and the following are over budget,' pdisplay '{over_ub_s_and_m}' pdisplay ' '


    color = 15;

Rule display_s_and_m_within_high_outliers If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display ' '
    display 'Total supplies & materials are within budget. However, the following' display 'individual expense item(s) are over budget:'
display '{over_ub_s_and_m}¬'
    pdisplay ' '
    pdisplay 'Total supplies & materials are within budget. However, the following' pdisplay 'individual expense item(s) are over budget:'
pdisplay '{over_ub_s_and_m}' pdisplay ' '


    color = 15;

Rule display_s_and_m_within_w_low_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 14
    display ' '
    display 'Total supplies & materials are within budget. However, the following' display 'individual expense item(s) are under budget:'
display '{under_lb_contin}¬'

    pdisplay ' '
    pdisplay 'Total supplies & materials are within budget. However, the following' pdisplay 'individual expense item(s) are under budget:'
pdisplay '{under_lb_contin}' pdisplay ' '

    color = 15;

!!!!!!!!! uniforms begins

Rule current_uniforms_lt_lb If act_uniforms_this_yr < (lb_uniforms) and
  todo = budget_analysis Then uniforms_to_display = found
    under_uniforms = yes
    color = 14
    percent = (((exp_uniforms - act_uniforms_this_yr)/exp_uniforms) * 100)
    format percent, 6.2
    display ' '
    display 'Expenses for uniforms so far this year are under budget by {percent}%.¬'

    pdisplay ' '
    pdisplay 'Expenses for uniforms so far this year are under budget by {percent}%.'
    pdisplay ' '

    color = 15;

Rule current_uniforms_gt_ub If act_uniforms_this_yr > (ub_uniforms) and
  todo = budget_analysis Then uniforms_to_display = found
    over_uniforms = yes
     color = 12
     percent = (((act_uniforms_this_yr - exp_uniforms) / exp_uniforms) * 100)
    format percent, 6.2
    display ' '
     display 'Expenses for uniforms are over budget this year by {percent}%.¬'
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```
    pdisplay " "
     pdisplay "Expenses for uniforms are over budget this year by (percent)%."
     pdisplay " "

     color = 15;

Rule current_uniforms_w_in_bounds If act_uniforms_this_yr > = (lb_uniforms) and
  act_uniforms_this_yr < = (ub_uniforms) Then uniforms_to_display = found
    w_in_uniforms = yes
    color = 10
    display " "
    display "Expenses for uniforms are within the budgeted amount. ¬"

    pdisplay " "
    pdisplay "Expenses for uniforms are within the budgeted amount."
    pdisplay " "
    color = 15;

Rule current_equip_lt_budget If act_equip_this_yr < (lb_equip) and
  todo = budget_analysis Then equip_to_display = found
    under_equip = yes
    color = 14
    percent = (((exp_equip - act_equip_this_yr)/exp_equip) * 100)
    left = (bud_equip_this_yr - act_equip_this_yr)
    format percent, 6.2
    display " "
    display "Expenses for equipment so far this year are under budget by (percent)%." display "In fact, there is ${left} left in the budget
for equipment. ¬"

    pdisplay " "
    pdisplay "Expenses for equipment so far this year are under budget by (percent)%." pdisplay "In fact, there is ${left} left in the budget
for equipment." pdisplay " "

    color = 15;

Rule current_equip_gt_ub If act_equips_this_yr > (ub_equip) and
  todo = budget_analysis Then equip_to_display = found
    over_equip = yes
     color = 12
     percent = (((act_equip_this_yr - exp_equip) / exp_equip) * 100)
    actual = (act_equip_this_yr - exp_equip)
    format percent, 6.2
    display " "
     display "Expenses for equipment are over budget this year by (percent)%, i.e., ${actual}. ¬"

    pdisplay " "
     pdisplay "Expenses for equipment are over budget this year by (percent)%, i.e., ${actual}."
     pdisplay " "

     color = 15;

Rule current_equip_w_in_bounds If act_equip_this_yr > = (lb_equip) and
  act_equip_this_yr < = (ub_equip) Then equip_to_display = found
    w_in_equip = yes
    color = 10
    display " "
    display "Expenses for equipment is within the budgeted amount. ¬"

    pdisplay " "
    pdisplay "Expenses for equipment is within the budgeted amount."
    pdisplay " "

    color = 15;


Rule calc_expects_&_bounds_revs If todo = budget_analysis Then exp_inc[1] = (public_exp_inc)
    exp_inc[2] = (s_f_s_exp_inc)
    exp_inc[3] = (interdept_exp_inc)
    exp_inc[4] = (music_exp_inc)
    exp_inc[5] = (state_exp_inc)
    ll[1] = (public_ll)
    ul[1] = (public_ul)
    ll[2] = (s_f_s_ll)
    ul[2] = (s_f_s_ul)
    ll[3] = (interdept_ll)
    ul[3] = (interdept_ul)
    ll[4] = (music_ll)
    ul[4] = (music_ul)
    ll[5] = (state_ll)
    ul[5] = (state_ul)
```

```
    wks mil_rev_this_yr, b12,\vpp\playis
    wks mil_rev_last_yr, n12,\vpp\playis
    wks other_rev_last_yr, n17..n21,\vpp\playis
    wks other_rev_this_yr, b17..b21,\vpp\playis
    mil_rev_exp = (mil_rev_last_yr +((mil_rev_last_yr/budget_rev[2])*mil_exp_inc))
    lb_mil = (mil_rev_exp * (1 - (military_ll/100)))
    ub_mil = (mil_rev_exp * (1 + (military_ul/100)))
    x = 1
    whiletrue x < 6  then
      ex[x] = (other_rev_last_yr[x] + ((other_rev_last_yr[x]/budget_rev[2])*exp_inc[x]))
      lb[x] = (ex[x] * (1 - (ll[x] / 100)))
      ub[x] = (ex[x] * (1 + (ul[x] / 100)))
      x = (x+1)
    end
    expectations = found;

Rule calc_expects_and_bounds_costs If todo = budget_analysis Then wks bud_equip_this_yr, b5,\vpp\playbud
    wks bud_equip_last_yr, c5,\vpp\playbud
    wks bud_personal_this_yr, b7..b10,\vpp\playbud
    wks bud_personal_last_yr, c7..c10,\vpp\playbud
    bud_fringes_this_yr = (bud_personal_this_yr[1])
    bud_salaries_this_yr = (bud_personal_this_yr[2])
    bud_wages_this_yr = (bud_personal_this_yr[3])
    bud_total_personal_this_yr = (bud_personal_this_yr[4])
    bud_fringes_last_yr = (bud_personal_last_yr[1])
    bud_salaries_last_yr = (bud_personal_last_yr[2])
    bud_wages_last_yr = (bud_personal_last_yr[3])
    bud_total_personal_last_yr = (bud_personal_last_yr[4])
    wks bud_contract_this_yr, b12..b16,\vpp\playbud
    wks bud_contract_last_yr, c12..c16,\vpp\playbud
    bud_tele_this_yr = (bud_contract_this_yr[1])
    bud_R_and_M_this_yr = (bud_contract_this_yr[2])
    bud_travel_this_yr = (bud_contract_this_yr[3])
    bud_contract_other_this_yr = (bud_contract_this_yr[4])
    bud_total_contract_this_yr = (bud_contract_this_yr[5])
    bud_tele_last_yr = (bud_contract_last_yr[1])
    bud_R_and_M_last_yr = (bud_contract_last_yr[2])
    bud_travel_last_yr = (bud_contract_last_yr[3])
    bud_contract_other_last_yr = (bud_contract_last_yr[4])
    bud_total_contract_last_yr = (bud_contract_last_yr[5])
    wks bud_s_and_m_this_yr, b18..b20,\vpp\playbud
    wks bud_s_and_m_last_yr, c18..c20,\vpp\playbud
    bud_repair_this_yr = (bud_s_and_m_this_yr[1])
    bud_s_and_m_other_this_yr = (bud_s_and_m_this_yr[2])
    bud_total_s_and_m_this_yr = (bud_s_and_m_this_yr[3])
    bud_repair_last_yr = (bud_s_and_m_last_yr[1])
    bud_s_and_m_other_last_yr = (bud_s_and_m_last_yr[2])
    bud_total_s_and_m_last_yr = (bud_s_and_m_last_yr[3])
    wks bud_contin_this_yr, b22..b27,\vpp\playbud
    wks bud_contin_last_yr, c22..c27,\vpp\playbud
    bud_elect_this_yr = (bud_contin_this_yr[1])
    bud_w_and_s_this_yr = (bud_contin_this_yr[2])
    bud_agency_this_yr = (bud_contin_this_yr[3])
    bud_insure_this_yr = (bud_contin_this_yr[4])
    bud_contin_other_this_yr = (bud_contin_this_yr[5])
    bud_total_contin_this_yr = (bud_contin_this_yr[6])
    bud_elect_last_yr = (bud_contin_last_yr[1])
    bud_w_and_s_last_yr = (bud_contin_last_yr[2])
    bud_agency_last_yr = (bud_contin_last_yr[3])
    bud_insure_last_yr = (bud_contin_last_yr[4])
    bud_contin_other_last_yr = (bud_contin_last_yr[5])
    bud_total_contin_last_yr = (bud_contin_last_yr[6])
    wks bud_uniforms_this_yr, b29,\vpp\playbud
    wks bud_uniforms_last_yr, c29,\vpp\playbud
    wks act_personal_this_yr, b26..b34,\vpp\playis
    wks act_personal_last_yr, n26..n34,\vpp\playis
    act_fringes_this_yr_a = (act_personal_this_yr[1] + act_personal_this_yr[2] + act_personal_this_yr[3])
    act_fringes_this_yr_b = (act_personal_this_yr[4] + act_personal_this_yr[5])
    act_fringes_this_yr = (act_fringes_this_yr_a + act_fringes_this_yr_b)
    act_salaries_this_yr = (act_personal_this_yr[6])
    act_wages_this_yr = (act_personal_this_yr[7] + act_personal_this_yr[8])
    act_total_personal_this_yr = (act_personal_this_yr[9])
    act_fringes_last_yr_a = (act_personal_last_yr[1] + act_personal_last_yr[2] + act_personal_last_yr[3])
    act_fringes_last_yr_b = (act_personal_last_yr[4] + act_personal_last_yr[5])
    act_fringes_last_yr = (act_fringes_last_yr_a + act_fringes_last_yr_b)
    act_salaries_last_yr = (act_personal_last_yr[6])
    act_wages_last_yr = (act_personal_last_yr[7] + act_personal_last_yr[8])
    act_total_personal_last_yr = (act_personal_last_yr[9])
    wks act_contract_this_yr, b36..b45,\vpp\playis
    wks act_contract_last_yr, n36..n45,\vpp\playis
```

```
act_tele_this_yr = (act_contract_this_yr[1])
act_R_and_M_this_yr = (act_contract_this_yr[2])
act_travel_this_yr = (act_contract_this_yr[9])
act_contract_other_this_yr_a = (act_contract_this_yr[3] + act_contract_this_yr[4] + act_contract_this_yr[5])
act_contract_other_this_yr_b = (act_contract_this_yr[6] + act_contract_this_yr[7] + act_contract_this_yr[8)
act_contract_other_this_yr = (act_contract_other_this_yr_a + act_contract_other_this_yr_b)
act_total_contract_this_yr = (act_contract_this_yr[10])
act_tele_last_yr = (act_contract_last_yr[1])
act_R_and_M_last_yr = (act_contract_last_yr[2])
act_travel_last_yr = (act_contract_last_yr[9])
act_contract_other_last_yr_a = (act_contract_last_yr[3] + act_contract_last_yr[4] + act_contract_last_yr[5])
act_contract_other_last_yr_b = (act_contract_last_yr[6] + act_contract_last_yr[7] + act_contract_last_yr[8)
act_contract_other_last_yr = (act_contract_other_last_yr_a + act_contract_other_last_yr_b)
act_total_contract_last_yr = (act_contract_last_yr[10])
wks act_s_and_m_this_yr, b47..b52,\vpp\playis
wks act_s_and_m_last_yr, n47..n52,\vpp\playis
act_repair_this_yr = (act_s_and_m_this_yr[4] + act_s_and_m_this_yr[5])
act_s_and_m_other_this_yr = (act_s_and_m_this_yr[1] + act_s_and_m_this_yr[2] + act_s_and_m_this_yr[3])
act_total_s_and_m_this_yr = (act_s_and_m_this_yr[6])
act_repair_last_yr = (act_s_and_m_last_yr[4] + act_s_and_m_last_yr[5])
act_s_and_m_other_last_yr = (act_s_and_m_last_yr[1] + act_s_and_m_last_yr[2] + act_s_and_m_last_yr[3])
act_total_s_and_m_last_yr = (act_s_and_m_last_yr[6])
wks act_contin_this_yr, b54..b60,\vpp\playis
wks act_contin_last_yr, n54..n60,\vpp\playis
act_elect_this_yr = (act_contin_this_yr[1])
act_w_and_s_this_yr = (act_contin_this_yr[2])
act_insure_this_yr = (act_contin_this_yr[3] + act_contin_this_yr[6])
act_agency_this_yr = (act_contin_this_yr[4])
act_comp_perp_this_yr = (act_contin_this_yr[5])
act_total_contin_this_yr = (act_contin_this_yr[7])
act_elect_last_yr = (act_contin_last_yr[1])
act_w_and_s_last_yr = (act_contin_last_yr[2])
act_insure_last_yr = (act_contin_last_yr[3] + act_contin_last_yr[6])
act_agency_last_yr = (act_contin_last_yr[4])
act_comp_perp_last_yr = (act_contin_last_yr[5])
act_total_contin_last_yr = (act_contin_last_yr[7])
wks act_equip_this_yr, b61,\vpp playis
wks act_equip_last_yr, n61,\vpp playis
wks act_uniforms_this_yr, b13,\vpp playis
wks act_uniforms_last_yr, n13,\vpp playis
exp_equip = ((act_equip_last_yr / bud_equip_last_yr) * bud_equip_this_yr)
exp_fringes = ((act_fringes_last_yr / bud_fringes_last_yr) * bud_fringes_this_yr)
exp_salaries = ((act_salaries_last_yr / bud_salaries_last_yr) * bud_salaries_this_yr)
exp_wages = ((act_wages_last_yr / bud_wages_last_yr) * bud_wages_this_yr)
exp_total_personal = ((act_total_personal_last_yr / bud_total_personal_last_yr) * bud_total_personal_this_yr)
exp_tele = ((act_tele_last_yr / bud_tele_last_yr) * bud_tele_this_yr)
exp_R_and_M = ((act_R_and_M_last_yr / bud_R_and_M_last_yr) * bud_R_and_M_this_yr)
exp_travel = ((act_travel_last_yr / bud_travel_last_yr) * bud_travel_this_yr)
exp_contract_other = ((act_contract_other_last_yr / bud_contract_other_last_yr) * bud_contract_other_this_yr)
exp_total_contract = ((act_total_contract_last_yr / bud_total_contract_last_yr) * bud_total_contract_this_yr)
exp_repair = ((act_repair_last_yr / bud_repair_last_yr) * bud_repair_this_yr)
exp_s_and_m_other = ((act_s_and_m_other_last_yr / bud_s_and_m_other_last_yr) * bud_s_and_m_other_this_yr)
exp_total_s_and_m = ((act_total_s_and_m_last_yr / bud_total_s_and_m_last_yr) * bud_total_s_and_m_this_yr)
exp_elect = ((act_elect_last_yr / bud_elect_last_yr) * bud_elect_this_yr)
exp_w_and_s = ((act_w_and_s_last_yr / bud_w_and_s_last_yr) * bud_w_and_s_this_yr)
exp_agency = ((act_agency_last_yr / bud_agency_last_yr) * bud_agency_this_yr)
exp_other_contin = ((act_comp_perp_last_yr / bud_contin_other_last_yr) * bud_contin_other_this_yr)
exp_insure = ((act_insure_last_yr / bud_insure_last_yr) * bud_insure_this_yr)
exp_total_contin = ((act_total_contin_last_yr / bud_total_contin_last_yr) * bud_total_contin_this_yr)
exp_uniforms = ((act_uniforms_last_yr / bud_uniforms_last_yr) * bud_uniforms_this_yr)
lb_fringes = (exp_fringes * (1 - (fringes_ll/100)))
ub_fringes = (exp_fringes * (1 + (fringes_ul/100)))
lb_salaries = (exp_salaries * (1 - (salaries_ll/100)))
ub_salaries = (exp_salaries * (1 + (salaries_ul/100)))
lb_wages = (exp_wages * (1 - (wages_ll/100)))
ub_wages = (exp_wages * (1 + (wages_ul/100)))
lb_total_personal = (exp_total_personal * (1 - (total_personal_ll/100)))
ub_total_personal = (exp_total_personal * (1 + (total_personal_ul/100)))
lb_tele = (exp_tele * (1 - (tele_ll/100)))
ub_tele = (exp_tele * (1 + (tele_ul/100)))
lb_R_and_M = (exp_R_and_M * (1 - (R_and_M_ll/100)))
ub_R_and_M = (exp_R_and_M * (1 + (R_and_M_ul/100)))
lb_travel = (exp_travel * (1 - (travel_ll/100)))
ub_travel = (exp_travel * (1 + (travel_ul/100)))
lb_other_contract = (exp_contract_other * (1 - (other_contract_ll/100)))
ub_other_contract = (exp_contract_other * (1 + (other_contract_ul/100)))
lb_total_contract = (exp_total_contract * (1 - (total_contract_ll/100)))
ub_total_contract = (exp_total_contract * (1 + (total_contract_ul/100)))
lb_repair = (exp_repair * (1 - (repair_ll/100)))
ub_repair = (exp_repair * (1 + (repair_ul/100)))
```

```
    lb_other_s_and_m = (exp_s_and_m_other * (1 - (other_s_and_m_ll/100)))
    ub_other_s_and_m = (exp_s_and_m_other * (1 + (other_s_and_m_ul/100)))
    lb_total_s_and_m = (exp_total_s_and_m * (1 - (total_s_and_m_ll/100)))
    ub_total_s_and_m = (exp_total_s_and_m * (1 + (total_s_and_m_ul/100)))
    lb_equip = (exp_equip * (1 - (equip_ll/100)))
    ub_equip = (exp_equip * (1 + (equip_ul/100)))
    lb_uniforms = (exp_uniforms * (1 - (uniforms_ll/100)))
    ub_uniforms = (exp_uniforms * (1 + (uniforms_ul/100)))
    lb_elect = (exp_elect * (1 - (elect_ll/100)))
    ub_elect = (exp_elect * (1 + (elect_ul/100)))
    lb_w_and_s = (exp_w_and_s * (1 - (w_and_s_ll/100)))
    ub_w_and_s = (exp_w_and_s * (1 + (w_and_s_ul/100)))
    lb_insure = (exp_insure * (1 - (insure_ll/100)))
    ub_insure = (exp_insure * (1 + (insure_ul/100)))
    lb_agency = (exp_agency * (1 - (agency_ll/100)))
    lb_other_contin = (exp_other_contin * (1 - (other_contin_ll/100)))
    ub_agency = (exp_agency * (1 + (agency_ul/100)))
    ub_other_contin = (exp_other_contin * (1 + (other_contin_ul/100)))
    lb_total_contin = (exp_total_contin * (1 - (total_contin_ll/100)))
    ub_total_contin = (exp_total_contin * (1 + (total_contin_ul/100)))
    cost_expectations = found;


Rule current_public_lt_lb If other_rev_this_yr[1] < (lb[1]) Then public_rev_to_display = under
    find public_display;

Rule current_public_gt_ub If other_rev_this_yr[1] > (ub[1]) Then public_rev_to_display = over
    find public_display;

Rule current_public_w_in_bounds If other_rev_this_yr[1] > = (lb[1]) and
  other_rev_this_yr[1] < = (ub[1]) Then public_rev_to_display = within
    within_budget = public;


Rule display_public_under If public_rev_to_display = under Then percent = (((ex[1] - other_rev_this_yr[1]) / ex[1]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is {percent}% less than expected.¬"
    display " "
    pdisplay "The revenue collected from the public so far"
    pdisplay "this year is {percent}% less than expected."
    pdisplay " "
    color = 15
    public_display = done;

Rule display_public_over If public_rev_to_display = over Then percent = (((other_rev_this_yr[1] - ex[1]) / ex[1]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is {percent}% more than expected.¬"
    display " "
    pdisplay "The revenue collected from the public so far"
    pdisplay "this year is {percent}% more than expected."
    pdisplay " "
    color = 15
    public_display = done;

Rule current_s_f_s_lt_lb If other_rev_this_yr[2] < (lb[2]) Then s_f_s_rev_to_display = under
    find s_f_s_display;

Rule current_s_f_s_gt_ub If other_rev_this_yr[2] > (ub[2]) Then s_f_s_rev_to_display = over
    find s_f_s_display;

Rule current_s_f_s_w_in_bounds If other_rev_this_yr[2] > = (lb[2]) and
  other_rev_this_yr[2] < = (ub[2]) Then s_f_s_rev_to_display = within
    within_budget = stu_fac_staff;

Rule display_s_f_s_under If s_f_s_rev_to_display = under Then percent = (((ex[2] - other_rev_this_yr[2]) / ex[2]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is {percent}% less than expected.¬"
    display " "
    pdisplay "The revenue collected from students, faculty, and staff so"
    pdisplay "far this year is {percent}% less than expected."
    pdisplay " "
    color = 15
    s_f_s_display = done;
```

```
Rule display_s_f_s_over If s_f_s_rev_to_display = over Then percent = (((other_rev_this_yr[2] - ex[2]) / ex[2]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from students, faculty, and staff so"
    pdisplay "far this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    s_f_s_display = done;

Rule current_interdept_lt_lb If other_rev_this_yr[3] < (lb[3]) Then interdept_rev_to_display = under
    find interdept_display;

Rule current_interdept_gt_ub If other_rev_this_yr[3] > (ub[3]) Then interdept_rev_to_display = over
    find interdept_display;

Rule current_interdept_w_in_bounds If other_rev_this_yr[3] >= (lb[3]) and
  other_rev_this_yr[3] <= (ub[3]) Then interdept_rev_to_display = within
    within_budget = interdepartmental;

Rule display_public_under If interdept_rev_to_display = under Then percent = (((ex[3] - other_rev_this_yr[3]) / ex[3]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from other departments so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from other departments so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    interdept_display = done;

Rule interdept_public_over If interdept_rev_to_display = over Then percent = (((other_rev_this_yr[3] - ex[3]) / ex[3]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from other departments so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from other departments so far"
    pdisplay "this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    interdept_display = done;

Rule music_public_lt_lb If other_rev_this_yr[4] < (lb[4]) Then music_rev_to_display = under
    find music_display;

Rule current_music_gt_ub If other_rev_this_yr[4] > (ub[4]) Then music_rev_to_display = over
    find music_display;

Rule current_music_w_in_bounds If other_rev_this_yr[4] >= (lb[4]) and
  other_rev_this_yr[4] <= (ub[4]) Then music_rev_to_display = within
    within_budget = music;

Rule display_music_under If music_rev_to_display = under Then percent = (((ex[4] - other_rev_this_yr[4]) / ex[4]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from the music department so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    music_display = done;

Rule display_music_over If music_rev_to_display = over Then percent = (((other_rev_this_yr[4] - ex[4]) / ex[4]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from the music department so far"
    pdisplay "this year is (percent)% more than expected. ¬"
    pdisplay " "
    color = 15
    music_display = done;
```

```
Rule current_state_lt_lb If other_rev_this_yr[5] < (lb[5]) Then state_rev_to_display = under
    find state_display;

Rule current_state_gt_ub If other_rev_this_yr[5] > (ub[5]) Then state_rev_to_display = over
    find state_display;

Rule current_state_w_in_bounds If other_rev_this_yr[5] > = (lb[5]) and
  other_rev_this_yr[5] < = (ub[5]) Then state_rev_to_display = within
    within_budget = state;

Rule display_state_under If state_rev_to_display = under Then percent = (((ex[5] - other_rev_this_yr[5]) / ex[5]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from state related activities so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from state related activities so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    state_display = done;

Rule display_state_over If state_rev_to_display = over Then percent = (((other_rev_this_yr[5] - ex[5]) / ex[5]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from state related activities so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from state related activities so far"
    pdisplay "this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    state_display = done;

Rule current_mil_lt_lb If mil_rev_this_yr < (lb_mil) Then mil_rev_to_display = under
    find mil_display;

Rule current_mil_gt_ub If mil_rev_this_yr > (ub_mil) Then mil_rev_to_display = over
    find mil_display;

Rule current_mil_w_in_bounds If mil_rev_this_yr > = (lb_mil) and
  mil_rev_this_yr < = (ub_mil) Then mil_rev_to_display = within
    within_budget = the_corps;

Rule display_mil_under If mil_rev_to_display = under Then percent = (((mil_rev_exp - mil_rev_this_yr) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 12
    display " "
    display "The revenue collected from the corps so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    pdisplay " "
    pdisplay "The revenue collected from the corps so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    mil_display = done;

Rule display_mil_over If mil_rev_to_display = over Then percent = (((mil_rev_this_yr - mil_rev_exp) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 10
    display " "
    display "The revenue collected from the corps so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
    pdisplay " "
    pdisplay "The revenue collected from the corps so far"
    pdisplay "this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    mil_display = done;

Rule none_w_in_budget If within_budget = unknown Then within_rev_to_display = found;

Rule display_those_w_in_budget If todo = budget_analysis Then within_rev_to_display = found
    display " "
    color = 14
    display "The following revenue categories are within budget:"
      display "(within_budget)"
    color = 15
```

```
    display "   ¬"
    pdisplay "The following revenue categories are within budget:"
      pdisplay "(within_budget)"
    pdisplay "   ";
```

!statements block

```
ask todo:"What would you like to do?  Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis;

ask change_limits:"Would you like to change any of these ranges for the revenue categories?"; choices change_limits: no, yes;

ask change_limits_costs:"Would you like to change any of these ranges for the expense categories?"; choices change_limits_costs: no,yes;

ask which_rev_limits:  "Which revenue limits would you like to change?"; choices which_rev_limits: military, public, stu_fac_staff,
interdepartmental,music_dept, state_related;

ask which_cost_limits:  "Which expense category limits would you like to change?"; choices which_cost_limits: equipment, uniforms, per-
sonal, contractual, supplies_materials, continuous;

ask military_ll: "Please do not use decimals."; ask military_ul: "Please do not use decimals.";

range military_ll: 1,100; range military_ul: 1,100;

ask s_f_s_ul: ""; ask s_f_s_ll: "";

range s_f_s_ll: 1,100; range s_f_s_ul: 1,100;

ask public_ul: ""; ask public_ll: "";

range public_ll: 1,100; range public_ul: 1,100;

ask interdept_ul: ""; ask interdept_ll: "";

range interdept_ll: 1,100; range interdept_ul: 1,100;

ask music_ul: ""; ask music_ll: "";

range music_ll: 1,100; range music_ul: 1,100;

ask state_ul: ""; ask state_ll: "";

range state_ll: 1,100; range state_ul: 1,100;

ask equip_ll: ""; ask equip_ul: "";

range equip_ll: 1,100; range equip_ul: 1,100;

ask uniforms_ll: ""; ask uniforms_ul: "";

range uniforms_ll: 1,100; range uniforms_ul: 1,100;

ask total_personal_ll: ""; ask total_personal_ul: "";

range total_personal_ll: 1,100; range total_personal_ul: 1,100;

ask total_contract_ll: ""; ask total_contract_ul: "";

range total_contract_ll: 1,100; range total_contract_ul: 1,100;

ask total_s_and_m_ll: ""; ask total_s_and_m_ul: "";

range total_s_and_m_ll: 1,100; range total_s_and_m_ul: 1,100;

ask total_contin_ll: ""; ask total_contin_ul: "";

range total_contin_ll: 1,100; range total_contin_ul: 1,100;


ask resp_rev_mkt_segments: "input adds up to ${diff}."; choices resp_rev_mkt_segments: military, public, stu_fac_staff, interdepartmental,
music_dept, state_related;

ask resp_rev_mkt_segments_l: "input adds up to ${diff}."; choices resp_rev_mkt_segments_l: military, public, stu_fac_staff, interdepart-
mental, music_dept, state_related;


ask mil_exp_inc_h: "How much is military revenue expected to increase?"; range mil_exp_inc_h: 0,1000000;

ask mil_exp_inc_l: "How much is military revenue expected to decrease?"; range mil_exp_inc_l: 0,1000000;
```

```
ask public_exp_inc_h: "How much is public revenue expected to increase?"; range public_exp_inc_h: 0,1000000;
ask s_f_s_exp_inc_h: "How much is student/faculty/staff revenue expected to increase?"; range s_f_s_exp_inc_h: 0,1000000;
ask interdept_exp_inc_h: "How much is interdepartmental revenue expected to increase?"; range interdept_exp_inc_h: 0,1000000;
ask music_exp_inc_h: "How much is music department revenue expected to increase?"; range music_exp_inc_h: 0,1000000;
ask state_exp_inc_h: "How much is state related revenue expected to increase?"; range state_exp_inc_h: 0,1000000;

ask public_exp_inc_l: "How much is public revenue expected to decrease?"; range public_exp_inc_l: 0,1000000;
ask s_f_s_exp_inc_l: "How much is student/faculty/staff revenue expected to decrease?"; range s_f_s_exp_inc_l: 0,1000000;
ask interdept_exp_inc_l: "How much is interdepartmental revenue expected to decrease?"; range interdept_exp_inc_l: 0,1000000;
ask music_exp_inc_l: "How much is music department revenue expected to decrease?"; range music_exp_inc_l: 0,1000000;
ask state_exp_inc_l: "How much is state related revenue expected to decrease?"; range state_exp_inc_l: 0,1000000;

plural:within_budget, over_budget, under_budget, which_rev_limits, resp_rev_mkt_segments, resp_rev_mkt_segments_l; plural:exp_inc, ll,
ul,lb,ub,ex,other_rev_last_yr,bud_personal; plural:bud_contract, bud_s_and_m, bud_contin_this_yr,act_personal, act_contract;
plural:act_s_and_m, act_contin, which_cost_limits,under_lb_personal; plural:over_ub_personal, w_in_personal,
over_ub_contract,under_lb_contract; plural:w_in_contract,over_ub_contin, under_lb_contin, w_in_contin;
plural:w_in_s_and_m,over_ub_s_and_m, under_lb_s_and_m;

bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 bcall killwi todo = what_if_analysis find what_if_display find get_data locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay "                    Press any key to continue" savefacts widata chain pwhat1;

Rule what_if_display If todo = what_if_analysis Then color = 11
    what_if_display = found
    locate 1,30 display "WHAT-IF ANALYSIS" locate 3,6 display "In order to see the effects of changes, this section of the expert " display "system allows changes to be made to many of the parameters of importance " display "in the Tailor Shop. For example, it is possible to change the composition" display "of the corps, increase or decrease specific costs and revenues, or " display "eliminate an entire market segment. On the following screen several " display "options will be presented. Although many changes can be made at once, " display "please select the change options one at a time as each option will ask " display "for specifics. After making all of the changes desired, select option 9" display "to perform the analysis. The system will then proceed to a menu where" display "you can choose any of the analyses desired. Note however that this" display "is not the main menu, and therefore, when you want to exit what-if" display "analysis, choose 'return to main menu' from the menu." locate 17,31 display "*** NOTICE ***" locate 19,1 display "Processing is now in progress, please wait until you are told to continue." pdisplay " " pdisplay " " pdisplay " " pdisplay "                    WHAT-IF ANALYSIS" pdisplay " " pdisplay "    In order to see the effects of changes, this section of the expert " pdisplay "system allows changes to be made to many of the parameters of importance " pdisplay "in the Tailor Shop. For example, it is possible to change the composition" pdisplay "of the corps, increase or decrease specific costs and revenues, or " pdisplay "eliminate an entire market segment. On the following screen several " pdisplay "options will be presented. Although many changes can be made at once, " pdisplay "please select the change options one at a time as each option will ask " pdisplay "for specifics. After making all of the changes desired, select option 9" pdisplay "to perform the analysis. The system will then proceed to a menu where" pdisplay "you can choose any of the analyses desired. Note however that this" pdisplay "is not the main menu, and therefore, when you want to exit what-if" pdisplay "analysis, choose 'return to main menu' from the menu." pdisplay " " pdisplay " " pdisplay "                    *** NOTICE ***" pdisplay " " pdisplay "Processing is now in progress, please wait until you are told to continue.";

Rule get_necessary_data If get_data = unknown Then get_data = found
    wks bs_this,b1..b14,\vpp\playabbs
    wks is_this,b1..b76,\vpp\playabis
    wks uniforms,b10,\vpp\playcbis
    wks act_equip,b55,\vpp\playcbis
    wks cbis_oper_exp,b56,\vpp\playcbis
    wks cbis_net_income,b57,\vpp\playcbis
    wks cbis_personal,b31,\vpp\playcbis
    wks cbis_corps_rev,b9,\vpp\playcbis
    wks cbis_contract,b41,\vpp\playcbis
    wks cbis_s_&_m,b47,\vpp\playcbis
    wks cbis_contin,b54,\vpp\playcbis
    wks other_rev_wicbis,b14..b18,\vpp\playcbis
    public_wicbis = (other_rev_wicbis[1])
    s_f_s_wicbis = (other_rev_wicbis[2])
    interdept_wicbis = (other_rev_wicbis[3])
    music_wicbis = (other_rev_wicbis[4])
    state_wicbis = (other_rev_wicbis[5])
    cbis_personal_x = (cbis_personal)
    act_equip_x = (act_equip)
    cbis_contract_x = (cbis_contract)
    cbis_s_&_m_x = (cbis_s_&_m)
    cbis_contin_x = (cbis_contin)
    current_year = (bs_this[1])
    total_inv = (bs_this[7])
    new_due_to = (bs_this[12])
    reserves_this = (bs_this[13])
    wks reserves_last,c13,\vpp\playabbs
    t_assets_this = (bs_this[9])
    total_oper_exp = (is_this[64])
    net_income = (is_this[65])
    total_current_value = (bs_this[8])
    t_mil_rev = (is_this[9])
    t_expenses = (is_this[15] + is_this[64])
    cost_uniforms_this = (is_this[15])
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)
    t_other_rev = (is_this[24])
    t_rev_this = (t_mil_rev + t_other_rev)
    t_personal = (is_this[36])
    wages_gen_wiabis = (is_this[34])
    wages_stud_wiabis = (is_this[35])
    t_wages = (wages_gen_wiabis + wages_stud_wiabis)
    contract_this = (is_this[47])
    s_&_m_this = (is_this[54])
    contin_this = (is_this[62])
    deprec_this = (is_this[63])
    public_rev_this = (is_this[19])
    s_f_s_rev_this = (is_this[20])
    interdept_rev_this = (is_this[21])
    music_rev_this = (is_this[22])
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```
    state_rev_this = (is_this[23])
    corps_cost_this = (is_this[68])
    public_cost_this = (is_this[70])
    s_f_s_cost_this = (is_this[71])
    interdept_cost_this = (is_this[72])
    music_cost_this = (is_this[73])
    state_cost_this = (is_this[74])
    wks ca,b1..b16,\vpp\playca
    freshmen_number = (ca[8])
    sophomore_number = (ca[9])
    junior_number = (ca[10])
    senior_number = (ca[11])
    freshmen_ca = (ca[3])
    sophomore_ca = (ca[4])
    junior_ca = (ca[5])
    senior_ca = (ca[6])
    reset ca
    wks bud,b1..b29,\vpp\playbud
    rev_bud = (bud[3])
    equip_bud = (bud[5])
    fringes_bud = (bud[7])
    salaries_bud = (bud[8])
    wages_bud = (bud[9])
    uniforms_bud = (bud[29])
    tele_bud = (bud[12])
    r_&_m_bud = (bud[13])
    travel_bud = (bud[14])
    other_contract_bud = (bud[15])
    repair_s_&_m_bud = (bud[18])
    other_s_&_m_bud = (bud[19])
    elect_bud = (bud[22])
    w_&_s_bud = (bud[23])
    agency_charges_bud = (bud[24])
    insure_bud = (bud[25])
    other_contin_bud = (bud[26])
    reset bud
    wks count_it,b4,\vpp\playis
    find monthly_info;

Rule monthly_info_1 If count_it = 1 Then monthly_info = found
    wks corps_rev_wiis,b12,\vpp\playis
    wks corps_rev_old_wiis,c12..n12,\vpp\playis
    wks uniforms_old_wiis,c13..n13,\vpp\playis
    wks uniforms_wiis,b13,\vpp\playis
    wks public_rev_wiis,b17,\vpp\playis
    wks s_f_s_rev_wiis,b18,\vpp\playis
    wks interdept_rev_wiis,b19,\vpp\playis
    wks music_rev_wiis,b20,\vpp\playis
    wks state_rev_wiis,b21,\vpp\playis
    wks wages_gen,b32,\vpp playis
    wks wages_stud,b33,\vpp\playis
    wks personal_wiis,b34,\vpp\playis
    wks contract_wiis,b45,\vpp\playis
    wks s_&_m_wiis,b52,\vpp playis
    wks contin_wiis,b60,\vpp\playis
    wks equip_wiis,b61,\vpp\playis
    wks corps_cost_wiis,b66,\vpp\playis
    wks public_cost_wiis,b68,\vpp playis
    wks s_f_s_cost_wiis,b69,\vpp\playis
    wks interdept_cost_wiis,b70,\vpp\playis
    wks music_cost_wiis,b71,\vpp\playis
    wks state_cost_wiis,b72,\vpp\playis;

Rule monthly_info_2 If count_it = 2 Then monthly_info = found
    wks corps_rev_wiis,b12..c12,\vpp\playis
    wks corps_rev_old_wiis,d12..o12,\vpp\playis
    wks uniforms_old_wiis,d13..o13,\vpp\playis
    wks uniforms_wiis,b13..c13,\vpp\playis
    wks public_rev_wiis,b17..c17,\vpp\playis
    wks s_f_s_rev_wiis,b18..c18,\vpp\playis
    wks interdept_rev_wiis,b19..c19,\vpp\playis
    wks music_rev_wiis,b20..c20,\vpp\playis
    wks state_rev_wiis,b21..c21,\vpp\playis
    wks wages_gen,b32..c32,\vpp\playis
    wks wages_stud,b33..c33,\vpp\playis
    wks personal_wiis,b34..c34,\vpp\playis
    wks contract_wiis,b45..c45,\vpp\playis
    wks s_&_m_wiis,b52..c52,\vpp\playis
    wks contin_wiis,b60..c60,\vpp\playis
    wks equip_wiis,b61..c61,\vpp\playis
```

```
    wks corps_cost_wiis,b66..c66,\vpp\playis
    wks public_cost_wiis,b68..c68,\vpp\playis
    wks s_f_s_cost_wiis,b69..c69,\vpp\playis
    wks interdept_cost_wiis,b70..c70,\vpp\playis
    wks music_cost_wiis,b71..c71,\vpp\playis
    wks state_cost_wiis,b72..c72,\vpp\playis;

Rule monthly_info_3 If count_it = 3 Then monthly_info = found
    wks corps_rev_wiis,b12..d12,\vpp\playis
    wks corps_rev_old_wiis,e12..p12,\vpp\playis
    wks uniforms_old_wiis,e13..p13,\vpp\playis
    wks uniforms_wiis,b13..d13,\vpp\playis
    wks public_rev_wiis,b17..d17,\vpp\playis
    wks s_f_s_rev_wiis,b18..d18,\vpp\playis
    wks interdept_rev_wiis,b19..d19,\vpp\playis
    wks music_rev_wiis,b20..d20,\vpp\playis
    wks state_rev_wiis,b21..d21,\vpp\playis
    wks wages_gen,b32..d32,\vpp\playis
    wks wages_stud,b33..d33,\vpp\playis
    wks personal_wiis,b34..d34,\vpp\playis
    wks contract_wiis,b45..d45,\vpp\playis
    wks s_&_m_wiis,b52..d52,\vpp\playis
    wks contin_wiis,b60..d60,\vpp\playis
    wks equip_wiis,b61..d61,\vpp\playis
    wks corps_cost_wiis,b66..d66,\vpp\playis
    wks public_cost_wiis,b68..d68,\vpp\playis
    wks s_f_s_cost_wiis,b69..d69,\vpp\playis
    wks interdept_cost_wiis,b70..d70,\vpp\playis
    wks music_cost_wiis,b71..d71,\vpp\playis
    wks state_cost_wiis,b72..d72,\vpp\playis;

Rule monthly_info_4 If count_it = 4 Then monthly_info = found
    wks corps_rev_wiis,b12..e12,\vpp\playis
    wks corps_rev_old_wiis,f12..q12,\vpp playis
    wks uniforms_old_wiis,f13..q13,\vpp playis
    wks uniforms_wiis,b13..e13,\vpp\playis
    wks public_rev_wiis,b17..e17,\vpp playis
    wks s_f_s_rev_wiis,b18..e18,\vpp\playis
    wks interdept_rev_wiis,b19..e19,\vpp playis
    wks music_rev_wiis,b20..e20,\vpp\playis
    wks state_rev_wiis,b21..e21,\vpp\playis
    wks wages_gen,b32..e32,\vpp\playis
    wks wages_stud,b33..e33,\vpp\playis
    wks personal_wiis,b34..e34,\vpp\playis
    wks contract_wiis,b45..e45,\vpp\playis
    wks s_&_m_wiis,b52..e52,\vpp\playis
    wks contin_wiis,b60..e60,\vpp\playis
    wks equip_wiis,b61..e61,\vpp\playis
    wks corps_cost_wiis,b66..e66,\vpp\playis
    wks public_cost_wiis,b68..e68,\vpp\playis
    wks s_f_s_cost_wiis,b69..e69,\vpp\playis
    wks interdept_cost_wiis,b70..e70,\vpp\playis
    wks music_cost_wiis,b71..e71,\vpp\playis
    wks state_cost_wiis,b72..e72,\vpp\playis;

Rule monthly_info_5 If count_it = 5 Then monthly_info = found
    wks corps_rev_wiis,b12..f12,\vpp\playis
    wks corps_rev_old_wiis,g12..r12,\vpp\playis
    wks uniforms_old_wiis,g13..r13,\vpp\playis
    wks uniforms_wiis,b13..f13,\vpp\playis
    wks public_rev_wiis,b17..f17,\vpp\playis
    wks s_f_s_rev_wiis,b18..f18,\vpp\playis
    wks interdept_rev_wiis,b19..f19,\vpp\playis
    wks music_rev_wiis,b20..f20,\vpp\playis
    wks state_rev_wiis,b21..f21,\vpp\playis
    wks wages_gen,b32..f32,\vpp\playis
    wks wages_stud,b33..f33,\vpp\playis
    wks personal&iis,b34..f34,\vpp\playis
    wks contract_wiis,b45..f45,\vpp\playis
    wks s_&_m_wiis,b52..f52,\vpp\playis
    wks contin_wiis,b60..f60,\vpp\playis
    wks equip_wiis,b61..f61,\vpp\playis
    wks corps_cost_wiis,b66..f66,\vpp\playis
    wks public_cost_wiis,b68..f68,\vpp\playis
    wks s_f_s_cost_wiis,b69..f69,\vpp\playis
    wks interdept_cost_wiis,b70..f70,\vpp\playis
    wks music_cost_wiis,b71..f71,\vpp\playis
    wks state_cost_wiis,b72..f72,\vpp\playis;

Rule monthly_info_6 If count_it = 6 Then monthly_info = found
```

```
    wks corps_rev_wiis,b12..g12,\vpp\playis
    wks corps_rev_old_wiis,h12..s12,\vpp\playis
    wks uniforms_old_wiis,h13..s13,\vpp\playis
    wks uniforms_wiis,b13..g13,\vpp\playis
    wks public_rev_wiis,b17..g17,\vpp\playis
    wks s_f_s_rev_wiis,b18..g18,\vpp\playis
    wks interdept_rev_wiis,b19..g19,\vpp\playis
    wks music_rev_wiis,b20..g20,\vpp\playis
    wks state_rev_wiis,b21..g21,\vpp\playis
    wks wages_gen,b32..g32,\vpp\playis
    wks wages_stud,b33..g33,\vpp\playis
    wks personal_wiis,b34..g34,\vpp\playis
    wks contract_wiis,b45..g45,\vpp\playis
    wks s_&_m_wiis,b52..g52,\vpp\playis
    wks contin_wiis,b60..g60,\vpp\playis
    wks equip_wiis,b61..g61,\vpp\playis
    wks corps_cost_wiis,b66..g66,\vppiis
    wks public_cost_wiis,b68..g68,\vpp\playis
    wks s_f_s_cost_wiis,b69..g69,\vpp\playis
    wks interdept_cost_wiis,b70..g70,\vpp\playis
    wks music_cost_wiis,b71..g71,\vpp\playis
    wks state_cost_wiis,b72..g72,\vpp\playis;

Rule monthly_info_7 If count_it = 7 Then monthly_info = found
    wks corps_rev_wiis,b12..h12,\vpp\playis
    wks corps_rev_old_wiis,i12..t12,\vpp\playis
    wks uniforms_old_wiis,i13..t13,\vpp\playis
    wks uniforms_wiis,b13..h13,\vpp\playis
    wks public_rev_wiis,b17..h17,\vpp\playis
    wks s_f_s_rev_wiis,b18..h18,\vpp\playis
    wks interdept_rev_wiis,b19..h19,\vpp\playis
    wks music_rev_wiis,b20..h20,\vpp\playis
    wks state_rev_wi,b21..h21,\vpp\playis
    wks wages_gen,b32..h32,\vpp\playis
    wks wages_stud,b33..h33,\vpp\playis
    wks personal_wiis,b34..h34,\vpp\playis
    wks contract_wiis,b45..h45,\vpp\playis
    wks s_&_m_wiis,b52..h52,\vpp\playis
    wks contin_wiis,b60..h60,\vpp\playis
    wks equip_wiis,b61..h61,\vpp\playis
    wks corps_cost_wiis,b66..h66,\vpp\playis
    wks public_cost_wiis,b68..h68,\vpp\playis
    wks s_f_s_cost_wiis,b69..h69,\vpp\playis
    wks interdept_cost_wiis,b70..h70,\vpp\playis
    wks music_cost_wiis,b71..h71,\vpp\playis
    wks state_cost_wiis,b72..h72,\vpp\playis;

Rule monthly_info_8 If count_it = 8 Then monthly_info = found
    wks corps_rev_wiis,b12..i12,\vpp\playis
    wks corps_rev_old_wiis,j12..u12,\vpp\playis
    wks uniforms_old_wiis,j13..u13,\vpp\playis
    wks uniforms_wiis,b13..i13,\vpp\playis
    wks public_rev_wiis,b17..i17,\vpp\playis
    wks s_f_s_rev_wiis,b18..i18,\vpp\playis
    wks interdept_rev_wiis,b19..i19,\vpp\playis
    wks music_rev_wiis,b20..i20,\vpp\playis
    wks state_rev_wiis,b21..i21,\vpp\playis
    wks wages_gen,b32..i32,\vpp\playis
    wks wages_stud,b33..i33,\vpp\playis
    wks personal_wiis,b34..i34,\vpp\playis
    wks contract_wiis,b45..i45,\vpp\playis
    wks s_&_m_wiis,b52..i52,\vpp\playis
    wks contin_wiis,b60..i60,\vpp\playis
    wks equip_wiis,b61..i61,\vpp\playis
    wks corps_cost_wiis,b66..i66,\vpp\playis
    wks public_cost_wiis,b68..i68,\vpp\playis
    wks s_f_s_cost_wiis,b69..i69,\vpp\playis
    wks interdept_cost_wiis,b70..i70,\vpp\playis
    wks music_cost_wiis,b71..i71,\vpp\playis
    wks state_cost_wiis,b72..i72,\vpp\playis;

Rule monthly_info_9 If count_it = 9 Then monthly_info = found
    wks corps_rev_wiis,b12..j12,\vpp\playis
    wks corps_rev_old_wiis,k12..v12,\vpp\playis
    wks uniforms_old_wiis,k13..v13,\vpp\playis
    wks uniforms_wiis,b13..j13,\vpp\playis
    wks public_rev_wiis,b17..j17,\vpp\playis
    wks s_f_s_rev_wiis,b18..j18,\vpp\playis
    wks interdept_rev_wiis,b19..j19,\vpp\playis
    wks music_rev_wiis,b20..j20,\vpp\playis
```

```
    wks state_rev_wiis,b21..j21,\vpp\playis
    wks wages_gen,b32..j32,\vpp\playis
    wks wages_stud,b33..j33,\vpp\playis
    wks personal_wiis,b34..j34,\vpp\playis
    wks contract_wiis,b45..j45,\vpp\playis
    wks s_&_m_wiis,b52..j52,\vpp\playis
    wks contin_wiis,b60..j60,\vpp\playis
    wks equip_wiis,b61..j61,\vpp\playis
    wks corps_cost_wiis,b66..j66,\vpp\playis
    wks public_cost_wiis,b68..j68,\vpp\playis
    wks s_f_s_cost_wiis,b69..j69,\vpp\playis
    wks interdept_cost_wiis,b70..j70,\vpp\playis
    wks music_cost_wiis,b71..j71,\vpp\playis
    wks state_cost_wiis,b72..j72,\vpp\playis;

Rule monthly_info_10 If count_it = 10 Then monthly_info = found
    wks corps_rev_wiis,b12..k12,\vpp\playis
    wks corps_rev_old_wiis,l12..w12,\vpp\playis
    wks uniforms_old_wiis,l13..w13,\vpp\playis
    wks uniforms_wiis,b13..k13,\vpp\playis
    wks public_rev_wiis,b17..k17,\vpp\playis
    wks s_f_s_rev_wiis,b18..k18,\vpp\playis
    wks interdept_rev_wiis,b19..k19,\vpp\playis
    wks music_rev_wiis,b20..k20,\vpp\playis
    wks state_rev_wiis,b21..k21,\vpp\playis
    wks wages_gen,b32..k32,\vpp\playis
    wks wages_stud,b33..k33,\vpp\playis
    wks personal_wiis,b34..k34,\vpp\playis
    wks contract_wiis,b45..k45,\vpp\playis
    wks s_&_m_wiis,b52..k52,\vpp\playis
    wks contin_wiis,b60..k60,\vpp\playis
    wks equip_wiis,b61..k61,\vpp\playis
    wks corps_cost_wiis,b66..k66,\vpp\playis
    wks public_cost_wiis,b68..k68,\vpp\playis
    wks s_f_s_cost_wiis,b69..k69,\vpp\playis
    wks interdept_cost_wiis,b70..k70,\vpp\playis
    wks music_cost_wiis,b71..k71,\vpp\playis
    wks state_cost_wiis,b72..k72,\vpp\playis;

Rule monthly_info_11 If count_it = 11 Then monthly_info = found
    wks corps_rev_wiis,b12..l12,\vpp\playis
    wks corps_rev_old_wiis,m12..x12,\vpp\playis
    wks uniforms_old_wiis,m13..x13,\vpp\playis
    wks uniforms_wiis,b13..l13,\vpp\playis
    wks public_rev_wiis,b17..l17,\vpp\playis
    wks s_f_s_rev_wiis,b18..l18,\vpp\playis
    wks interdept_rev_wiis,b19..l19,\vpp\playis
    wks music_rev_wiis,b20..l20,\vpp\playis
    wks state_rev_wiis,b21..l21,\vpp\playis
    wks wages_gen,b32..l32,\vpp\playis
    wks wages_stud,b33..l33,\vpp\playis
    wks personal_wiis,b34..l34,\vpp\playis
    wks contract_wiis,b45..l45,\vpp\playis
    wks s_&_m_wiis,b52..l52,\vpp\playis
    wks contin_wiis,b60..l60,\vpp\playis
    wks equip_wiis,b61..l61,\vpp\playis
    wks corps_cost_wiis,b66..l66,\vpp\playis
    wks public_cost_wiis,b68..l68,\vpp\playis
    wks s_f_s_cost_wiis,b69..l69,\vpp\playis
    wks interdept_cost_wiis,b70..l70,\vpp\playis
    wks music_cost_wiis,b71..l71,\vpp\playis
    wks state_cost_wiis,b72..l72,\vpp\playis;

Rule monthly_info_12 If count_it = 12 Then monthly_info = found
    wks corps_rev_wiis,b12..m12,\vpp\playis
    wks corps_rev_old_wiis,n12..y12,\vpp\playis
    wks uniforms_old_wiis,n13..y13,\vpp\playis
    wks uniforms_wiis,b13..m13,\vpp\playis
    wks public_rev_wiis,b17..m17,\vpp\playis
    wks s_f_s_rev_wiis,b18..m18,\vpp\playis
    wks interdept_rev_wiis,b19..m19,\vpp\playis
    wks music_rev_wiis,b20..m20,\vpp\playis
    wks state_rev_wiis,b21..m21,\vpp\playis
    wks wages_gen,b32..m32,\vpp\playis
    wks wages_stud,b33..m33,\vpp\playis
    wks personal_wiis,b34..m34,\vpp\playis
    wks contract_wiis,b45..m45,\vpp\playis
    wks s_&_m_wiis,b52..m52,\vpp\playis
    wks contin_wiis,b60..m60,\vpp\playis
    wks equip_wiis,b61..m61,\vpp\playis
```

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wks corps_cost_wiis,b66..m66,\vpp\playis
wks public_cost_wiis,b68..m68,\vpp\playis
wks s_f_s_cost_wiis,b69..m69,\vpp\playis
wks interdept_cost_wiis,b70..m70,\vpp\playis
wks music_cost_wiis,b71..m71,\vpp\playis
wks state_cost_wiis,b72..m72,\vpp\playis;


! Statement Block

ask stmt_number: " ": choices stmt_number: 1,2,3,4,5,6,7,8,9,10; ask change_freshmen: "leave this number the same?"; ask change_sophomore: "leave this number the same?"; ask change_junior: "leave this number the same?"; ask change_senior: "leave this number the same?"; choices change_freshmen,change_sophomore,change_junior,change_senior: increase, decrease, same;

ask change_freshmen_number: "By how many?"; ask change_sophomore_number: "By how many?"; ask change_junior_number: "By how many?"; ask change_senior_number: "By how many?";

ask change_freshmen_ca: "you like to increase, decrease or leave this amount the same?"; ask change_sophomore_ca: "you like to increase, decrease or leave this amount the same?"; ask change_junior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_senior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_freshmen_number_ca: "By how much?"; ask change_sophomore_number_ca: "By how much?"; ask change_junior_number_ca: "By how much?"; ask change_senior_number_ca: "By how much?"; choices change_freshmen_ca,change_sophomore_ca,change_junior_ca,change_senior_ca: increase, decrease,same;

ask bag_price_direction: "of uniform items?"; choices bag_price_direction: increase, decrease; ask amount_bag_change: "By how much per cadet?";

ask personal_%: "By what percentage? Do not enter as a decimal."; ask contract_%: "By what percentage? Do not enter as a decimal."; ask s_&_m_%: "By what percentage? Do not enter as a decimal."; ask contin_%: "By what percentage? Do not enter as a decimal."; ask equip_%: "By what percentage? Do not enter as a decimal."; ask personal_$: "On an annual basis, how much would you like to change personnel expenses?"; ask contract_$: "On an annual basis, how much would you like to change contractual expenses?"; ask s_&_m_$: "On an annual basis, how much would you like to change supplies & materials?"; ask contin_$: "On an annual basis, how much would you like to change continuous expenses?"; ask equip_$: "On an annual basis, how much would you like to change equipment purchases?";

ask which_expenses: "Choose as many as you like."; choices which_expenses: personnel, contractual, supplies_&_materials, continuous, equipment;

ask personal_direction: "Would you like to increase or decrease personnel expenses?"; ask contract_direction: "Would you like to increase or decrease contractual expenses?"; ask s_&_m_direction: "Would you like to increase or decrease supplies & materials?"; ask contin_direction: "Would you like to increase or decrease continuous expenses?"; ask equip_direction: "Would you like to increase or decrease equipment purchases?"; choices personal_direction,contract_direction,s_&_m_direction,contin_direction,equip_direction: increase, decrease;

ask personal_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contract_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask s_&_m_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contin_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask equip_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices personal_terms,contract_terms,s_&_m_terms,contin_terms,equip_terms: percentage, dollar;

ask seg_drops: "Which market segments should be dropped?"; choices seg_drops:Public, Student_fac_staff, Interdepartmental, Music_Dept, State_related;

plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis, s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;
```

```
runtime; execute;

actions

color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded and a decision made regarding
which knowledge base to enter" display "next. You will be instructed when to continue." display " " loadfacts tempdata

find beg_display find turn_personal x = (exp_personal_c[12]) find personal_display find turn_contract x = (exp_contract_c[12]) find
contract_display find turn_s_&_m x = (exp_s_&_m_c[12]) find s_&_m_display find turn_contin x = (exp_contin_c[12]) find contin_display
find turn_uniforms x = (exp_uniforms_c[12]) find uniforms_display find turn_total x = (exp_total_c[12]) find total_display


;

! Rules Block


Rule show_beginning_display

If beg_display = unknown

Then beg_display = found
    display " "
    display "Press any key to continue.¬"
    cls
    color = 11
    locate 2,20 display "BUDGET VERSUS ACTUAL EXPENSE GRAPHS" locate 5,6 display "The following series of line graphs each
display 2 lines. The first" display "line represents the accumulated amount of each expense for each month," display "given the budget.
This is shown for the entire year. The second line" display "represents the actual amount of accumulated expense to date. There is a"
display "graph for each of the following:" locate 11,25 display "Personal expenses," locate 12,25 display "Contractual expenses," locate
13,25 display "Supplies & materials," locate 14,25 display "Continuous expenses," locate 15,25 display "Uniform purchases, and" locate
16,25 display "Total expenses" locate 19,25 display "Press any key to continue¬";



Rule begin_personal_display

If personal_display = unknown and
  x < = 10000 Then personal_display = found
    savefacts tempdata
    chain smallax1;


Rule begin_personal_display

If personal_display = unknown and
  x > 10000 and
  x < = 200000 Then personal_display = found
    savefacts tempdata
   chain medax1;


Rule begin_personal_display

If personal_display = unknown and
  x > 200000 Then personal_display = found
    savefacts tempdata
    chain largeax1;


Rule begin_contract_display

If contract_display = unknown and
  x < = 10000 Then contract_display = found
    do_personal = found
    savefacts tempdata
    chain smallax1;

Rule begin_contract_display

If contract_display = unknown and
  x > 10000 and
  x < = 200000 Then contract_display = found
    do_personal = found
    savefacts tempdata
```

```
    chain medax1;

Rule begin_contract_display

If contract_display = unknown and
   x > 200000 Then contract_display = found
     do_personal = found
     savefacts tempdata
     chain largeax1;

Rule begin_s_&_m_display

If s_&_m_display = unknown and
   x < = 10000 Then s_&_m_display = found
     do_contract = found
     savefacts tempdata
     chain smallax1;

Rule begin_s_&_m_display

If s_&_m_display = unknown and
   x > 10000 and
   x < = 200000 Then s_&_m_display = found
     do_contract = found
     savefacts tempdata
     chain medax1;

Rule begin_s_&_m_display

If s_&_m_display = unknown and
   x > 200000 Then s_&_m_display = found
     do_contract = found
     savefacts tempdata
     chain largeax1;

Rule begin_contin_display

If contin_display = unknown and
   x < = 10000 Then contin_display = found
     do_s_&_m = found
     savefacts tempdata
     chain smallax2;

Rule begin_contin_display

If contin_display = unknown and
   x > 10000 and
   x < = 200000 Then contin_display = found
     do_S_&_m = found
     savefacts tempdata
     chain medax2;

Rule begin_contin_display

If contin_display = unknown and
   x > 200000 Then contin_display = found
     do_s_&_m = found
     savefacts tempdata
     chain largeax2;

Rule begin_uniforms_display

If uniforms_display = unknown and
   x < = 10000 Then uniforms_display = found
     do_contin = found
     savefacts tempdata
     chain smallax2;

Rule begin_uniforms_display

If uniforms_display = unknown and
   x > 10000 and
   x < = 200000 Then uniforms_display = found
     do_contin = found
     savefacts tempdata
     chain medax2;

Rule begin_uniforms_display

If uniforms_display = unknown and
```

```
  x > 200000 Then uniforms_display = found
    do_contin = found
    savefacts tempdata
    chain largeax2;

Rule begin_total_display

If total_display = unknown and
  x < = 10000 Then total_display = found
    do_uniforms = found
    savefacts tempdata
    chain smallax2;

Rule begin_total_display

If total_display = unknown and
  x > 10000 and
  x < = 200000 Then total_display = found
    do_uniforms = found
    savefacts tempdata
    chain medax2;

Rule begin_total_display

If total_display = unknown and
  x > 200000 Then total_display = found
    do_uniforms = found
    savefacts tempdata
    chain largeax2;


Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x+1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
      x = (x+1)
      y = (y - 1)
    end


;

Rule turn_around_rest_of_exps

If turn_contract = unknown

Then turn_contract = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_contract_c[x] = (exp_contract[y])
      exp_s_&_m_c[x] = (exp_s_&_m[y])
      exp_contin_c[x] = (exp_contin[y])
      exp_uniforms_c[x] = (exp_uniforms[y])
      exp_total_c[x] = (exp_total[y])



      x = (x+1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
```

```
    z = (count_it)
    whiletrue x < = (z) then
      new_contract_c[x] = (new_contract[y])

      new_s_&_m_c[x] = (new_s_&_m[y])
      new_contin_c[x] = (new_contin[y])
      new_uniforms_c[x] = (new_uniforms[y])
      new_total_c[x] = (new_total[y])


      x = (x + 1)
      y = (y - 1)
    end


;

Rule turn_around_s_&_m_array

If turn_s_&_m = unknown

Then turn_s_&_m = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_s_&_m_c[x] = (exp_s_&_m[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_s_&_m_c[x] = (new_s_&_m[y])
      x = (x + 1)
      y = (y - 1)
    end


. ; Rule turn_around_contin_array

If turn_contin = unknown

Then turn_contin = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_contin_c[x] = (exp_contin[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_contin_c[x] = (new_contin[y])
      x = (x + 1)
      y = (y - 1)
    end


; Rule turn_around_uniforms_array

If turn_uniforms = unknown

Then turn_uniforms = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_uniforms_c[x] = (exp_uniforms[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
```

```
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_uniforms_c[x] = (new_uniforms[y])
      x = (x + 1)
      y = (y - 1)
    end ;
```

Rule turn_around_total_array

If turn_total = unknown

Then turn_total = found

```
    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_total_c[x] = (exp_total[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_total_c[x] = (new_total_costs[y])
      x = (x + 1)
      y = (y - 1)
    end ;


!statements block

bkcolor = 1;


plural:  new_personal_c,exp_personal_c,exp_personal;  plural:  new_contract_c,exp_contract_c,exp_contract;  plural:
new_s_&_m_c,exp_s_&_m_c,exp_s_&_m;  plural:  new_contin_c,exp_contin_c,exp_contin;  plural:
new_uniforms_c,exp_uniforms_c,exp_uniforms; plural: new_total_c,exp_total_c,exp_total;
```

```
runtime; execute;

actions

axis_size = small color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." display " " loadfacts tempdata z = (count_it + 1) whiletrue z < =
12 then
    new_personal_c[z] = unknown_dummy
    new_contract_c[z] = unknown_dummy
    new_s_&_m_c[z] = unknown_dummy

    z = (z + 1) end


find do_personal find do_contract find do_s_&_m ;

! Rules Block



Rule begin_contract_display

If do_contract = unknown

Then do_contract = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_contract_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_contract_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_contract_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_contract_c[4])
    find oct_bud
```

```
reset oct_bud
x5 = (exp_contract_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contract_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contract_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contract_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contract_c[9])
find march_bud
reset march_bud
x10 = (exp_contract_c[10])
find april_bud
reset april_bud
x11 = (exp_contract_c[11])
find may_bud
reset may_bud
x12 = (exp_contract_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contract_c[1])
find july_act
reset july_act
a2 = (new_contract_c[2])
find aug_act
reset aug_act
a3 = (new_contract_c[3])
find sept_act
reset sept_act
a4 = (new_contract_c[4])
find oct_act
reset oct_act
a5 = (new_contract_c[5])
find nov_act
reset nov_act
a6 = (new_contract_c[6])
find dec_act
reset dec_act
a7 = (new_contract_c[7])
find jan_act
reset jan_act
a8 = (new_contract_c[8])
find feb_act
reset feb_act
 a9 = (new_contract_c[9])
find march_act
reset march_act
a10 = (new_contract_c[10])
find april_act
reset april_act
a11 = (new_contract_c[11])
find may_act
reset may_act
a12 = (new_contract_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
```

```
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 23,1
    gdisplay "Contractual Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_personal_display

If do_personal = unknown

Then do_personal = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Personal Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
```

```
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_personal_c[1])
find july_bud
reset july_bud
x2 = (exp_personal_c[2])
find aug_bud
reset aug_bud
x3 = (exp_personal_c[3])
find sept_bud
reset sept_bud
x4 = (exp_personal_c[4])
find oct_bud
reset oct_bud
x5 = (exp_personal_c[5])
find nov_bud
reset nov_bud
x6 = (exp_personal_c[6])
find dec_bud
reset dec_bud
x7 = (exp_personal_c[7])
find jan_bud
reset jan_bud
x8 = (exp_personal_c[8])
find feb_bud
reset feb_bud
x9 = (exp_personal_c[9])
find march_bud
reset march_bud
x10 = (exp_personal_c[10])
find april_bud
reset april_bud
x11 = (exp_personal_c[11])
find may_bud
reset may_bud
x12 = (exp_personal_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_personal_c[1])
find july_act
reset july_act
a2 = (new_personal_c[2])
find aug_act
reset aug_act
a3 = (new_personal_c[3])
find sept_act
reset sept_act
a4 = (new_personal_c[4])
find oct_act
reset oct_act
a5 = (new_personal_c[5])
find nov_act
reset nov_act
a6 = (new_personal_c[6])
find dec_act
reset dec_act
a7 = (new_personal_c[7])
find jan_act
reset jan_act
a8 = (new_personal_c[8])
find feb_act
reset feb_act
 a9 = (new_personal_c[9])
find march_act
reset march_act
a10 = (new_personal_c[10])
find april_act
reset april_act
a11 = (new_personal_c[11])
find may_act
```

```
    reset may_act
    a12 = (new_personal_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_s_&_m_display

If do_s_&_m = unknown

Then do_s_&_m = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Supplies & Materials"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
```

```
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_&_m_c[1])
find july_bud
reset july_bud
x2 = (exp_s_&_m_c[2])
find aug_bud
reset aug_bud
x3 = (exp_s_&_m_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_&_m_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_&_m_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_&_m_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_&_m_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_&_m_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_&_m_c[9])
find march_bud
reset march_bud
x10 = (exp_s_&_m_c[10])
find april_bud
reset april_bud
x11 = (exp_s_&_m_c[11])
find may_bud
reset may_bud
x12 = (exp_s_&_m_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_&_m_c[1])
find july_act
reset july_act
a2 = (new_s_&_m_c[2])
find aug_act
reset aug_act
a3 = (new_s_&_m_c[3])
find sept_act
reset sept_act
a4 = (new_s_&_m_c[4])
find oct_act
reset oct_act
a5 = (new_s_&_m_c[5])
find nov_act
reset nov_act
a6 = (new_s_&_m_c[6])
find dec_act
reset dec_act
a7 = (new_s_&_m_c[7])
find jan_act
```

```
reset jan_act
a8 = (new_s_&_m_c[8])
find feb_act
reset feb_act
 a9 = (new_s_&_m_c[9])
find march_act
reset march_act
a10 = (new_s_&_m_c[10])
find april_act
reset april_act
a11 = (new_s_&_m_c[11])
find may_act
reset may_act
a12 = (new_s_&_m_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain expgraph;
```

```
Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy
```

```
If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 0 and
  x1 < = 1000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 1000 and
  x1 < = 2000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 2000 and
  x1 < = 3000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 3000 and
  x1 < = 4000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 4000 and
  x1 < = 5000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 5000 and
  x1 < = 6000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 6000 and
  x1 < = 7000 Then locate 30,180
    lineto 69,77
```

```
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 7000 and
  x1 < = 8000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 8000 and
  x1 < = 9000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 9000 and
  x1 < = 10000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 10000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = small and
  x2 > 0 and
  x2 < = 1000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = small and
  x2 > 1000 and
  x2 < = 2000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = small and
  x2 > 2000 and
  x2 < = 3000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = small and
  x2 > 3000 and
  x2 < = 4000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = small and
  x2 > 4000 and
  x2 < = 5000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = small and
  x2 > 5000 and
  x2 < = 6000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = small and
  x2 > 6000 and
  x2 < = 7000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = small and
  x2 > 7000 and
  x2 < = 8000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = small and
  x2 > 8000 and
  x2 < = 9000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = small and
  x2 > 9000 and
  x2 < = 10000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = small and
```

```
  x2 > 10000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = small and
  x3 > 0 and
  x3 < = 1000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = small and
  x3 > 1000 and
  x3 < = 2000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = small and
  x3 > 2000 and
  x3 < = 3000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = small and
  x3 > 3000 and
  x3 < = 4000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = small and
  x3 > 4000 and
  x3 < = 5000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = small and
  x3 > 5000 and
  x3 < = 6000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = small and
  x3 > 6000 and
  x3 < = 7000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = small and
  x3 > 7000 and
  x3 < = 8000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = small and
  x3 > 8000 and
  x3 < = 9000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = small and
  x3 > 9000 and
  x3 < = 10000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = small and
  x3 > 10000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = small and
  x4 > 0 and
  x4 < = 1000 Then lineto 212,172
    oct_bud = found;
```

```
Rule oct_bud_3

If axis_size = small and
  x4 > 1000 and
  x4 < = 2000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = small and
  x4 > 2000 and
  x4 < = 3000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = small and
  x4 > 3000 and
  x4 < = 4000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = small and
  x4 > 4000 and
  x4 < = 5000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = small and
  x4 > 5000 and
  x4 < = 6000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = small and
  x4 > 6000 and
  x4 < = 7000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = small and
  x4 > 7000 and
  x4 < = 8000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = small and
  x4 > 8000 and
  x4 < = 9000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = small and
  x4 > 9000 and
  x4 < = 10000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = small and
  x4 > 10000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = small and
  x5 > 0 and
  x5 < = 1000 Then lineto 260,172
    nov_bud = found;
```

```
Rule nov_bud_3

If axis_size = small and
  x5 > 1000 and
  x5 < = 2000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = small and
  x5 > 2000 and
  x5 < = 3000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = small and
  x5 > 3000 and
  x5 < = 4000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = small and
  x5 > 4000 and
  x5 < = 5000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = small and
  x5 > 5000 and
  x5 < = 6000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = small and
  x5 > 6000 and
  x5 < = 7000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = small and
  x5 > 7000 and
  x5 < = 8000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = small and
  x5 > 8000 and
  x5 < = 9000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = small and
  x5 > 9000 and
  x5 < = 10000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = small and
  x5 > 10000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = small and
  x6 > 0 and
  x6 < = 1000 Then lineto 308,172
```

```
    dec_bud = found;

Rule dec_bud_3

If axis_size = small and
   x6 > 1000 and
   x6 < = 2000 Then lineto 308,156
     dec_bud = found;

Rule dec_bud_4

If axis_size = small and
   x6 > 2000 and
   x6 < = 3000 Then lineto 308,140
     dec_bud = found;

Rule dec_bud_5

If axis_size = small and
   x6 > 3000 and
   x6 < = 4000 Then lineto 308,124
     dec_bud = found;

Rule dec_bud_6

If axis_size = small and
   x6 > 4000 and
   x6 < = 5000 Then lineto 308,108
     dec_bud = found;

Rule dec_bud_7

If axis_size = small and
   x6 > 5000 and
   x6 < = 6000 Then lineto 308,92
     dec_bud = found;

Rule dec_bud_8

If axis_size = small and
   x6 > 6000 and
   x6 < = 7000 Then lineto 308,77
     dec_bud = found;

Rule dec_bud_9

If axis_size = small and
   x6 > 7000 and
   x6 < = 8000 Then lineto 308,62
     dec_bud = found;

Rule dec_bud_10

If axis_size = small and
   x6 > 8000 and
   x6 < = 9000 Then lineto 308,45
     dec_bud = found;

Rule dec_bud_11

If axis_size = small and
   x6 > 9000 and
   x6 < = 10000 Then lineto 308,29
     dec_bud = found;

Rule dec_bud_12

If axis_size = small and
   x6 > 10000 Then lineto 308,20
     dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
     jan_bud = found;

Rule jan_bud_2

If axis_size = small and
   x7 > 0 and
```

```
  x7 < = 1000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = small and
  x7 > 1000 and
  x7 < = 2000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = small and
  x7 > 2000 and
  x7 < = 3000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = small and
  x7 > 3000 and
  x7 < = 4000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = small and
  x7 > 4000 and
  x7 < = 5000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = small and
  x7 > 5000 and
  x7 < = 6000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = small and
  x7 > 6000 and
  x7 < = 7000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = small and
  x7 > 7000 and
  x7 < = 8000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = small and
  x7 > 8000 and
  x7 < = 9000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = small and
  x7 > 9000 and
  x7 < = 10000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = small and
  x7 > 10000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = small and
```

```
   x8 > 0 and
   x8 < = 1000 Then lineto 404,172
     feb_bud = found;

Rule feb_bud_3

If axis_size = small and
   x8 > 1000 and
   x8 < = 2000 Then lineto 404,156
     feb_bud = found;

Rule feb_bud_4

If axis_size = small and
   x8 > 2000 and
   x8 < = 3000 Then lineto 404,140
     feb_bud = found;

Rule feb_bud_5

If axis_size = small and
   x8 > 3000 and
   x8 < = 4000 Then lineto 404,124
     feb_bud = found;

Rule feb_bud_6

If axis_size = small and
   x8 > 4000 and
   x8 < = 5000 Then lineto 404,108
     feb_bud = found;

Rule feb_bud_7

If axis_size = small and
   x8 > 5000 and
   x8 < = 6000 Then lineto 404,92
     feb_bud = found;

Rule feb_bud_8

If axis_size = small and
   x8 > 6000 and
   x8 < = 7000 Then lineto 404,77
     feb_bud = found;

Rule feb_bud_9

If axis_size = small and
   x8 > 7000 and
   x8 < = 8000 Then lineto 404,62
     feb_bud = found;

Rule feb_bud_10

If axis_size = small and
   x8 > 8000 and
   x8 < = 9000 Then lineto 404,45
     feb_bud = found;

Rule feb_bud_11

If axis_size = small and
   x8 > 9000 and
   x8 < = 10000 Then lineto 404,29
     feb_bud = found;

Rule feb_bud_12

If axis_size = small and
   x8 > 10000 Then lineto 404,20
     feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
     march_bud = found;

Rule march_bud_2
```

```
If axis_size = small and
  x9 > 0 and
  x9 < = 1000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = small and
  x9 > 1000 and
  x9 < = 2000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = small and
  x9 > 2000 and
  x9 < = 3000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = small and
  x9 > 3000 and
  x9 < = 4000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = small and
  x9 > 4000 and
  x9 < = 5000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = small and
  x9 > 5000 and
  x9 < = 6000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = small and
  x9 > 6000 and
  x9 < = 7000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = small and
  x9 > 7000 and
  x9 < = 8000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = small and
  x9 > 8000 and
  x9 < = 9000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = small and
  x9 > 9000 and
  x9 < = 10000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = small and
  x9 > 10000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2
```

```
If axis_size = small and
  x10 > 0 and
  x10 < = 1000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = small and
  x10 > 1000 and
  x10 < = 2000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = small and
  x10 > 2000 and
  x10 < = 3000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = small and
  x10 > 3000 and
  x10 < = 4000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = small and
  x10 > 4000 and
  x10 < = 5000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = small and
  x10 > 5000 and
  x10 < = 6000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = small and
  x10 > 6000 and
  x10 < = 7000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = small and
  x10 > 7000 and
  x10 < = 8000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = small and
  x10 > 8000 and
  x10 < = 9000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = small and
  x10 > 9000 and
  x10 < = 10000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = small and
  x10 > 10000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;
```

```
Rule may_bud_2

If axis_size = small and
  x11 > 0 and
  x11 < = 1000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = small and
  x11 > 1000 and
  x11 < = 2000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = small and
  x11 > 2000 and
  x11 < = 3000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = small and
  x11 > 3000 and
  x11 < = 4000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = small and
  x11 > 4000 and
  x11 < = 5000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = small and
  x11 > 5000 and
  x11 < = 6000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = small and
  x11 > 6000 and
  x11 < = 7000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = small and
  x11 > 7000 and
  x11 < = 8000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = small and
  x11 > 8000 and
  x11 < = 9000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = small and
  x11 > 9000 and
  x11 < = 10000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = small and
  x11 > 10000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
```

```
    june_bud = found;

Rule june_bud_2

If axis_size = small and
  x12 > 0 and
  x12 < = 1000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = small and
  x12 > 1000 and
  x12 < = 2000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = small and
  x12 > 2000 and
  x12 < = 3000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = small and
  x12 > 3000 and
  x12 < = 4000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = small and
  x12 > 4000 and
  x12 < = 5000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = small and
  x12 > 5000 and
  x12 < = 6000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = small and
  x12 > 6000 and
  x12 < = 7000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = small and
  x12 > 7000 and
  x12 < = 8000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = small and
  x12 > 8000 and
  x12 < = 9000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = small and
  x12 > 9000 and
  x12 < = 10000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = small and
  x12 > 10000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
```

```
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 0 and
  a1 < = 1000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 1000 and
  a1 < = 2000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 2000 and
  a1 < = 3000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 3000 and
  a1 < = 4000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 4000 and
  a1 < = 5000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 5000 and
  a1 < = 6000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 6000 and
  a1 < = 7000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 7000 and
  a1 < = 8000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 8000 and
  a1 < = 9000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 9000 and
  a1 < = 10000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 10000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = small and
  a2 > 0 and
  a2 < = 1000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = small and
  a2 > 1000 and
  a2 < = 2000 Then lineto 114,155
    aug_act = found;
```

```
Rule aug_act_4 If axis_size = small and
  a2 > 2000 and
  a2 < = 3000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = small and
  a2 > 3000 and
  a2 < = 4000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = small and
  a2 > 4000 and
  a2 < = 5000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = small and
  a2 > 5000 and
  a2 < = 6000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = small and
  a2 > 6000 and
  a2 < = 7000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = small and
  a2 > 7000 and
  a2 < = 8000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = small and
  a2 > 8000 and
  a2 < = 9000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = small and
  a2 > 9000 and
  a2 < = 10000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = small and
  a2 > 10000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = small and
  a3 > 0 and
  a3 < = 1000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = small and
  a3 > 1000 and
  a3 < = 2000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = small and
  a3 > 2000 and
  a3 < = 3000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = small and
  a3 > 3000 and
  a3 < = 4000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = small and
  a3 > 4000 and
  a3 < = 5000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = small and
  a3 > 5000 and
  a3 < = 6000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = small and
  a3 > 6000 and
  a3 < = 7000 Then lineto 163,76
```

```
    sept_act = found;

Rule sept_act_9

If axis_size = small and
   a3 > 7000 and
   a3 < = 8000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = small and
   a3 > 8000 and
   a3 < = 9000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = small and
   a3 > 9000 and
   a3 < = 10000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = small and
   a3 > 10000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = small and
   a4 > 0 and
   a4 < = 1000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = small and
   a4 > 1000 and
   a4 < = 2000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = small and
   a4 > 2000 and
   a4 < = 3000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = small and
   a4 > 3000 and
   a4 < = 4000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = small and
   a4 > 4000 and
   a4 < = 5000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = small and
   a4 > 5000 and
   a4 < = 6000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = small and
   a4 > 6000 and
```

```
  a4 < = 7000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = small and
  a4 > 7000 and
  a4 < = 8000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = small and
  a4 > 8000 and
  a4 < = 9000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = small and
  a4 > 9000 and
  a4 < = 10000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = small and
  a4 > 10000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = small and
  a5 > 0 and
  a5 < = 1000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = small and
  a5 > 1000 and
  a5 < = 2000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = small and
  a5 > 2000 and
  a5 < = 3000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = small and
  a5 > 3000 and
  a5 < = 4000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = small and
  a5 > 4000 and
  a5 < = 5000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = small and
  a5 > 5000 and
  a5 < = 6000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = small and
```

```
  a5 > 6000 and
  a5 < = 7000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = small and
  a5 > 7000 and
  a5 < = 8000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = small and
  a5 > 8000 and
  a5 < = 9000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = small and
  a5 > 9000 and
  a5 < = 10000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = small and
  a5 > 10000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = small and
  a6 > 0 and
  a6 < = 1000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = small and
  a6 > 1000 and
  a6 < = 2000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = small and
  a6 > 2000 and
  a6 < = 3000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = small and
  a6 > 3000 and
  a6 < = 4000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = small and
  a6 > 4000 and
  a6 < = 5000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = small and
  a6 > 5000 and
  a6 < = 6000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8
```

```
If axis_size = small and
   a6 > 6000 and
   a6 < = 7000 Then lineto 308,76
     dec_act = found;

Rule dec_act_9

If axis_size = small and
   a6 > 7000 and
   a6 < = 8000 Then lineto 308,61
     dec_act = found;

Rule dec_act_10

If axis_size = small and
   a6 > 8000 and
   a6 < = 9000 Then lineto 308,44
     dec_act = found;

Rule dec_act_11

If axis_size = small and
   a6 > 9000 and
   a6 < = 10000 Then lineto 308,28
     dec_act = found;

Rule dec_act_12

If axis_size = small and
   a6 > 10000 Then lineto 308,20
     dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
     jan_act = found;

Rule jan_act_2

If axis_size = small and
   a7 > 0 and
   a7 < = 1000 Then lineto 357,171
     jan_act = found;

Rule jan_act_3

If axis_size = small and
   a7 > 1000 and
   a7 < = 2000 Then lineto 357,155
     jan_act = found;

Rule jan_act_4

If axis_size = small and
   a7 > 2000 and
   a7 < = 3000 Then lineto 357,139
     jan_act = found;

Rule jan_act_5

If axis_size = small and
   a7 > 3000 and
   a7 < = 4000 Then lineto 357,123
     jan_act = found;

Rule jan_act_6

If axis_size = small and
   a7 > 4000 and
   a7 < = 5000 Then lineto 357,107
     jan_act = found;

Rule jan_act_7

If axis_size = small and
   a7 > 5000 and
   a7 < = 6000 Then lineto 357,91
     jan_act = found;

Rule jan_act_8
```

```
If axis_size = small and
   a7 > 6000 and
   a7 < = 7000 Then lineto 357,76
     jan_act = found     ;

Rule jan_act_9

If axis_size = small and
   a7 > 7000 and
   a7 < = 8000 Then lineto 357,61
     jan_act = found     ;

Rule jan_act_10

If axis_size = small and
   a7 > 8000 and
   a7 < = 9000 Then lineto 357,44
     jan_act = found     ;

Rule jan_act_11

If axis_size = small and
   a7 > 9000 and
   a7 < = 10000 Then lineto 357,28
     jan_act = found     ;

Rule jan_act_12

If axis_size = small and
   a7 > 10000 Then lineto 357,20
     jan_act = found     ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
     feb_act = found     ;

Rule feb_act_2

If axis_size = small and
   a8 > 0 and
   a8 < = 1000 Then lineto 404,171
     feb_act = found     ;

Rule feb_act_3

If axis_size = small and
   a8 > 1000 and
   a8 < = 2000 Then lineto 404,155
     feb_act = found     ;

Rule feb_act_4

If axis_size = small and
   a8 > 2000 and
   a8 < = 3000 Then lineto 404,139
     feb_act = found     ;

Rule feb_act_5

If axis_size = small and
   a8 > 3000 and
   a8 < = 4000 Then lineto 404,123
     feb_act = found     ;

Rule feb_act_6

If axis_size = small and
   a8 > 4000 and
   a8 < = 5000 Then lineto 404,107
     feb_act = found     ;

Rule feb_act_7

If axis_size = small and
   a8 > 5000 and
   a8 < = 6000 Then lineto 404,91
     feb_act = found     ;
```

```
Rule feb_act_8

If axis_size = small and
  a8 > 6000 and
  a8 < = 7000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = small and
  a8 > 7000 and
  a8 < = 8000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = small and
  a8 > 8000 and
  a8 < = 9000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = small and
  a8 > 9000 and
  a8 < = 10000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = small and
  a8 > 10000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = small and
  a9 > 0 and
  a9 < = 1000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = small and
  a9 > 1000 and
  a9 < = 2000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = small and
  a9 > 2000 and
  a9 < = 3000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = small and
  a9 > 3000 and
  a9 < = 4000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = small and
  a9 > 4000 and
  a9 < = 5000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = small and
  a9 > 5000 and
  a9 < = 6000 Then lineto 452,91
    march_act = found    ;
```

```
Rule march_act_8

If axis_size = small and
  a9 > 6000 and
  a9 < = 7000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = small and
  a9 > 7000 and
  a9 < = 8000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = small and
  a9 > 8000 and
  a9 < = 9000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = small and
  a9 > 9000 and
  a9 < = 10000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = small and
  a9 > 10000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = small and
  a10 > 0 and
  a10 < = 1000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = small and
  a10 > 1000 and
  a10 < = 2000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = small and
  a10 > 2000 and
  a10 < = 3000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = small and
  a10 > 3000 and
  a10 < = 4000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = small and
  a10 > 4000 and
  a10 < = 5000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = small and
  a10 > 5000 and
  a10 < = 6000 Then lineto 501,91
```

```
    april_act = found    ;

Rule april_act_8

If axis_size = small and
   a10 > 6000 and
   a10 < = 7000 Then lineto 501,76
     april_act = found    ;

Rule april_act_9

If axis_size = small and
   a10 > 7000 and
   a10 < = 8000 Then lineto 501,61
     april_act = found    ;

Rule april_act_10

If axis_size = small and
   a10 > 8000 and
   a10 < = 9000 Then lineto 501,44
     april_act = found    ;

Rule april_act_11

If axis_size = small and
   a10 > 9000 and
   a10 < = 10000 Then lineto 501,28
     april_act = found    ;

Rule april_act_12

If axis_size = small and
   a10 > 10000 Then lineto 501,20
     april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
     may_act = found    ;

Rule may_act_2

If axis_size = small and
   a11 > 0 and
   a11 < = 1000 Then lineto 549,171
     may_act = found    ;

Rule may_act_3

If axis_size = small and
   a11 > 1000 and
   a11 < = 2000 Then lineto 549,155
     may_act = found    ;

Rule may_act_4

If axis_size = small and
   a11 > 2000 and
   a11 < = 3000 Then lineto 549,139
     may_act = found    ;

Rule may_act_5

If axis_size = small and
   a11 > 3000 and
   a11 < = 4000 Then lineto 549,123
     may_act = found    ;

Rule may_act_6

If axis_size = small and
   a11 > 4000 and
   a11 < = 5000 Then lineto 549,107
     may_act = found    ;

Rule may_act_7

If axis_size = small and
   a11 > 5000 and
```

```
   a11 < = 6000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = small and
   a11 > 6000 and
   a11 < = 7000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = small and
   a11 > 7000 and
   a11 < = 8000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = small and
   a11 > 8000 and
   a11 < = 9000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = small and
   a11 > 9000 and
   a11 < = 10000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = small and
   a11 > 10000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = small and
   a12 > 0 and
   a12 < = 1000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = small and
   a12 > 1000 and
   a12 < = 2000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = small and
   a12 > 2000 and
   a12 < = 3000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = small and
   a12 > 3000 and
   a12 < = 4000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = small and
   a12 > 4000 and
   a12 < = 5000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = small and
```

```
  a12 > 5000 and
  a12 < = 6000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = small and
  a12 > 6000 and
  a12 < = 7000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = small and
  a12 > 7000 and
  a12 < = 8000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = small and
  a12 > 8000 and
  a12 < = 9000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = small and
  a12 > 9000 and
  a12 < = 10000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = small and
  a12 > 10000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_small

If axis_display = unknown

Then axis_display = found
    glocate 2,3
    gdisplay "10"
    glocate 3,7
    gdisplay "8"
    glocate 3,11
    gdisplay "6"
    glocate 3,15
    gdisplay "4"
    glocate 3,19
    gdisplay "2";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
      x = (x + 1)
```

```
    y = (y - 1)
  end

;

!statements block

bkcolor = 1;

!button exitbutton1: 10,2,14,14,exit; !button exitbutton2: 10,2,14,14,exit; !button exitbutton3: 10,2,14,14,exit; !button exitbutton4: 10,2,14,14,exit; !button exitbutton5: 10,2,14,14,exit; !button exitbutton6: 10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph."

loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_contin_c[z] = unknown_dummy
    new_uniforms_c[z] = unknown_dummy
    new_total_c[z] = unknown_dummy
    z = (z + 1) end

find do_contin find do_uniforms find do_total_costs

;

! Rules Block

Rule begin_contin_display

If do_contin = unknown

Then do_contin = found

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Continuous Charges"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 11
    moveto 30,180
    x1 = (exp_contin_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_contin_c[2])
    find aug_bud
    reset aug_bud
```

```
x3 = (exp_contin_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contin_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contin_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contin_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contin_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contin_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contin_c[9])
find march_bud
reset march_bud
x10 = (exp_contin_c[10])
find april_bud
reset april_bud
x11 = (exp_contin_c[11])
find may_bud
reset may_bud
x12 = (exp_contin_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contin_c[1])
find july_act
reset july_act
a2 = (new_contin_c[2])
find aug_act
reset aug_act
a3 = (new_contin_c[3])
find sept_act
reset sept_act
a4 = (new_contin_c[4])
find oct_act
reset oct_act
a5 = (new_contin_c[5])
find nov_act
reset nov_act
a6 = (new_contin_c[6])
find dec_act
reset dec_act
a7 = (new_contin_c[7])
find jan_act
reset jan_act
a8 = (new_contin_c[8])
find feb_act
reset feb_act
 a9 = (new_contin_c[9])
find march_act
reset march_act
a10 = (new_contin_c[10])
find april_act
reset april_act
a11 = (new_contin_c[11])
find may_act
reset may_act
a12 = (new_contin_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
```

```
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_uniforms_display

If do_uniforms = unknown

Then do_uniforms = found

    gmode 14
    exitbutton5 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Uniform Purchases"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"


    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
```

```
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_uniforms_c[1])
find july_bud
reset july_bud
x2 = (exp_uniforms_c[2])
find aug_bud
reset aug_bud
x3 = (exp_uniforms_c[3])
find sept_bud
reset sept_bud
x4 = (exp_uniforms_c[4])
find oct_bud
reset oct_bud
x5 = (exp_uniforms_c[5])
find nov_bud
reset nov_bud
x6 = (exp_uniforms_c[6])
find dec_bud
reset dec_bud
x7 = (exp_uniforms_c[7])
find jan_bud
reset jan_bud
x8 = (exp_uniforms_c[8])
find feb_bud
reset feb_bud
x9 = (exp_uniforms_c[9])
find march_bud
reset march_bud
x10 = (exp_uniforms_c[10])
find april_bud
reset april_bud
x11 = (exp_uniforms_c[11])
find may_bud
reset may_bud
x12 = (exp_uniforms_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_uniforms_c[1])
find july_act
reset july_act
a2 = (new_uniforms_c[2])
find aug_act
reset aug_act
a3 = (new_uniforms_c[3])
find sept_act
reset sept_act
a4 = (new_uniforms_c[4])
find oct_act
reset oct_act
a5 = (new_uniforms_c[5])
find nov_act
reset nov_act
a6 = (new_uniforms_c[6])
find dec_act
reset dec_act
a7 = (new_uniforms_c[7])
find jan_act
reset jan_act
a8 = (new_uniforms_c[8])
find feb_act
reset feb_act
 a9 = (new_uniforms_c[9])
find march_act
reset march_act
a10 = (new_uniforms_c[10])
find april_act
reset april_act
a11 = (new_uniforms_c[11])
find may_act
```

```
    reset may_act
    a12 = (new_uniforms_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton5 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_total_costs_display

If do_total_costs = unknown

Then do_total_costs = found

    gmode 14
    exitbutton6 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Total Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
```

```
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_c[1])
find july_bud
reset july_bud
x2 = (exp_total_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_c[9])
find march_bud
reset march_bud
x10 = (exp_total_c[10])
find april_bud
reset april_bud
x11 = (exp_total_c[11])
find may_bud
reset may_bud
x12 = (exp_total_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_c[1])
find july_act
reset july_act
a2 = (new_total_c[2])
find aug_act
reset aug_act
a3 = (new_total_c[3])
find sept_act
reset sept_act
a4 = (new_total_c[4])
find oct_act
reset oct_act
a5 = (new_total_c[5])
find nov_act
reset nov_act
a6 = (new_total_c[6])
find dec_act
reset dec_act
a7 = (new_total_c[7])
```

```
find jan_act
reset jan_act
a8 = (new_total_c[8])
find feb_act
reset feb_act
 a9 = (new_total_c[9])
find march_act
reset march_act
a10 = (new_total_c[10])
find april_act
reset april_act
a11 = (new_total_c[11])
find may_act
reset may_act
a12 = (new_total_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton6 = no then end

reset axis_display
tmode
savefacts tempdata
chain graph1;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

```
Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 <= 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 <= 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 70000 and
  x1 <= 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 <= 140000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 <= 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
  x1 <= 210000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 <= 245000 Then locate 30,180
```

```
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 < = 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 < = 315000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 < = 350000 Then lineto 114,29
    aug_bud = found;
```

```
Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 < = 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 < = 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 < = 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 < = 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 < = 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 < = 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 < = 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 < = 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 < = 315000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 < = 350000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;
```

```
Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
  x4 > 350000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = large and
  x5 > 0 and
  x5 < = 35000 Then lineto 260,172
```

```
    nov_bud = found;

Rule nov_bud_3

If axis_size = large and
  x5 > 35000 and
  x5 < = 70000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = large and
  x5 > 70000 and
  x5 < = 105000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = large and
  x5 > 105000 and
  x5 < = 140000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = large and
  x5 > 140000 and
  x5 < = 175000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = large and
  x5 > 175000 and
  x5 < = 210000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = large and
  x5 > 210000 and
  x5 < = 245000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = large and
  x5 > 245000 and
  x5 < = 280000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = large and
  x5 > 280000 and
  x5 < = 315000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = large and
  x5 > 315000 and
  x5 < = 350000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = large and
  x5 > 350000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = large and
  x6 > 0 and
```

```
  x6 < = 35000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = large and
  x6 > 35000 and
  x6 < = 70000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = large and
  x6 > 70000 and
  x6 < = 105000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = large and
  x6 > 105000 and
  x6 < = 140000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = large and
  x6 > 140000 and
  x6 < = 175000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = large and
  x6 > 175000 and
  x6 < = 210000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = large and
  x6 > 210000 and
  x6 < = 245000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = large and
  x6 > 245000 and
  x6 < = 280000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = large and
  x6 > 280000 and
  x6 < = 315000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = large and
  x6 > 315000 and
  x6 < = 350000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = large and
  x6 > 350000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
```

```
   x7 > 0 and
   x7 < = 35000 Then lineto 357,172
     jan_bud = found;

Rule jan_bud_3

If axis_size = large and
   x7 > 35000 and
   x7 < = 70000 Then lineto 357,156
     jan_bud = found;

Rule jan_bud_4

If axis_size = large and
   x7 > 70000 and
   x7 < = 105000 Then lineto 357,140
     jan_bud = found;

Rule jan_bud_5

If axis_size = large and
   x7 > 105000 and
   x7 < = 140000 Then lineto 357,124
     jan_bud = found;

Rule jan_bud_6

If axis_size = large and
   x7 > 140000 and
   x7 < = 175000 Then lineto 357,108
     jan_bud = found;

Rule jan_bud_7

If axis_size = large and
   x7 > 175000 and
   x7 < = 210000 Then lineto 357,92
     jan_bud = found;

Rule jan_bud_8

If axis_size = large and
   x7 > 210000 and
   x7 < = 245000 Then lineto 357,77
     jan_bud = found;

Rule jan_bud_9

If axis_size = large and
   x7 > 245000 and
   x7 < = 280000 Then lineto 357,62
     jan_bud = found;

Rule jan_bud_10

If axis_size = large and
   x7 > 280000 and
   x7 < = 315000 Then lineto 357,45
     jan_bud = found;

Rule jan_bud_11

If axis_size = large and
   x7 > 315000 and
   x7 < = 350000 Then lineto 357,29
     jan_bud = found;

Rule jan_bud_12

If axis_size = large and
   x7 > 350000 Then lineto 357,20
     jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
     feb_bud = found;

Rule feb_bud_2
```

```
If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2
```

```
If axis_size = large and
   x9 > 0 and
   x9 < = 35000 Then lineto 452,172
     march_bud = found;

Rule march_bud_3

If axis_size = large and
   x9 > 35000 and
   x9 < = 70000 Then lineto 452,156
     march_bud = found;

Rule march_bud_4

If axis_size = large and
   x9 > 70000 and
   x9 < = 105000 Then lineto 452,140
     march_bud = found;

Rule march_bud_5

If axis_size = large and
   x9 > 105000 and
   x9 < = 140000 Then lineto 452,124
     march_bud = found;

Rule march_bud_6

If axis_size = large and
   x9 > 140000 and
   x9 < = 175000 Then lineto 452,108
     march_bud = found;

Rule march_bud_7

If axis_size = large and
   x9 > 175000 and
   x9 < = 210000 Then lineto 452,92
     march_bud = found;

Rule march_bud_8

If axis_size = large and
   x9 > 210000 and
   x9 < = 245000 Then lineto 452,77
     march_bud = found;

Rule march_bud_9

If axis_size = large and
   x9 > 245000 and
   x9 < = 280000 Then lineto 452,62
     march_bud = found;

Rule march_bud_10

If axis_size = large and
   x9 > 280000 and
   x9 < = 315000 Then lineto 452,45
     march_bud = found;

Rule march_bud_11

If axis_size = large and
   x9 > 315000 and
   x9 < = 350000 Then lineto 452,29
     march_bud = found;

Rule march_bud_12

If axis_size = large and
   x9 > 350000 Then lineto 452,20
     march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
     april_bud = found;
```

```
Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
  x10 > 350000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
```

```
    may_bud = found;

Rule may_bud_2

If axis_size = large and
  x11 > 0 and
  x11 < = 35000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = large and
  x11 > 35000 and
  x11 < = 70000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = large and
  x11 > 70000 and
  x11 < = 105000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = large and
  x11 > 105000 and
  x11 < = 140000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = large and
  x11 > 140000 and
  x11 < = 175000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = large and
  x11 > 175000 and
  x11 < = 210000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = large and
  x11 > 210000 and
  x11 < = 245000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = large and
  x11 > 245000 and
  x11 < = 280000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = large and
  x11 > 280000 and
  x11 < = 315000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = large and
  x11 > 315000 and
  x11 < = 350000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = large and
  x11 > 350000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1
```

```
If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = large and
  x12 > 0 and
  x12 < = 35000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = large and
  x12 > 35000 and
  x12 < = 70000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = large and
  x12 > 70000 and
  x12 < = 105000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = large and
  x12 > 105000 and
  x12 < = 140000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = large and
  x12 > 140000 and
  x12 < = 175000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = large and
  x12 > 175000 and
  x12 < = 210000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = large and
  x12 > 210000 and
  x12 < = 245000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;
```

```
Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  a2 > 0 and
  a2 < = 35000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;
```

```
Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
  a3 > 35000 and
  a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
  a3 > 70000 and
  a3 < = 105000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = large and
  a3 > 105000 and
  a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
  a3 > 140000 and
  a3 < = 175000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = large and
  a3 > 175000 and
  a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
  a3 > 210000 and
```

```
  a3 < = 245000 Then lineto 163,76
   sept_act = found;

Rule sept_act_9

If axis_size = large and
  a3 > 245000 and
  a3 < = 280000 Then lineto 163,61
   sept_act = found;

Rule sept_act_10

If axis_size = large and
  a3 > 280000 and
  a3 < = 315000 Then lineto 163,44
   sept_act = found;

Rule sept_act_11

If axis_size = large and
  a3 > 315000 and
  a3 < = 350000 Then lineto 163,28
   sept_act = found;

Rule sept_act_12

If axis_size = large and
  a3 > 350000 Then lineto 163,20
   sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
   oct_act = found;

Rule oct_act_2

If axis_size = large and
  a4 > 0 and
  a4 < = 35000 Then lineto 212,171
   oct_act = found;

Rule oct_act_3

If axis_size = large and
  a4 > 35000 and
  a4 < = 70000 Then lineto 212,155
   oct_act = found;

Rule oct_act_4

If axis_size = large and
  a4 > 70000 and
  a4 < = 105000 Then lineto 212,139
   oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
   oct_act = found;

Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
   oct_act = found;

Rule oct_act_7

If axis_size = large and
  a4 > 175000 and
  a4 < = 210000 Then lineto 212,91
   oct_act = found;

Rule oct_act_8

If axis_size = large and
```

```
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
   oct_act = found;

Rule oct_act_9

If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
   oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
   oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
   oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
   oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
   nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
   nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
   nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
  a5 < = 105000 Then lineto 260,139
   nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
   nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
   nov_act = found;

Rule nov_act_7

If axis_size = large and
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
   nov_act = found ;

Rule nov_act_8
```

```
If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8
```

```
If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = large and
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
    jan_act = found;
```

```
Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;
```

```
Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
```

```
    march_act = found    ;

Rule march_act_8

If axis_size = large and
  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
  a10 < = 175000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
```

```
  a10 < = 210000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  a11 > 70000 and
  a11 < = 105000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = large and
  a11 > 105000 and
  a11 < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
  a11 > 140000 and
  a11 < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
```

```
  a11 > 175000 and
  a11 < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = large and
  a11 > 210000 and
  a11 < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
  a11 > 245000 and
  a11 < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
  a11 > 280000 and
  a11 < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
  a11 > 315000 and
  a11 < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
  a11 > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
  a12 > 0 and
  a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
  a12 > 35000 and
  a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
  a12 > 70000 and
  a12 < = 105000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = large and
  a12 > 105000 and
  a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = large and
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7
```

```
If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x+1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
```

```
      x = (x + 1)
      y = (y - 1)
    end

;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4: 10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_personal_c[z] = unknown_dummy
    new_contract_c[z] = unknown_dummy
    new_s_&_m_c[z] = unknown_dummy

!display "z = (z) ¬" !display "new_personal_c[z] = (new_personal_c[z])" !display "new_contract_c[z] = (new_contract_c[z])" !display "new_s_&_m_c[z] = (new_s_&_m_c[z])"
    z = (z + 1) end


find do_personal find do_contract find do_s_&_m ;

! Rules Block



Rule begin_contract_display

If do_contract = unknown

Then do_contract = found

    x1 = (exp_contract_c[1])
    display "exp_contract_c[1] = (exp_contract_c[1]) ¬"
    display "x1 = (x1) ¬"
    a1 = (new_contract_c[1])
    display "new_contract_c[1]] = (new_contract_c[1])"
    display "a1 = (a1) ¬"

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_contract_c[1])
    find july_bud
```

```
reset july_bud
x2 = (exp_contract_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contract_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contract_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contract_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contract_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contract_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contract_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contract_c[9])
find march_bud
reset march_bud
x10 = (exp_contract_c[10])
find april_bud
reset april_bud
x11 = (exp_contract_c[11])
find may_bud
reset may_bud
x12 = (exp_contract_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contract_c[1])
find july_act
reset july_act
a2 = (new_contract_c[2])
find aug_act
reset aug_act
a3 = (new_contract_c[3])
find sept_act
reset sept_act
a4 = (new_contract_c[4])
find oct_act
reset oct_act
a5 = (new_contract_c[5])
find nov_act
reset nov_act
a6 = (new_contract_c[6])
find dec_act
reset dec_act
a7 = (new_contract_c[7])
find jan_act
reset jan_act
a8 = (new_contract_c[8])
find feb_act
reset feb_act
 a9 = (new_contract_c[9])
find march_act
reset march_act
a10 = (new_contract_c[10])
find april_act
reset april_act
a11 = (new_contract_c[11])
find may_act
reset may_act
a12 = (new_contract_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
```

```
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 23,1
    gdisplay "Contractual Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_personal_display

If do_personal = unknown

Then do_personal = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Personal Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
```

```
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_personal_c[1])
find july_bud
reset july_bud
x2 = (exp_personal_c[2])
find aug_bud
reset aug_bud
x3 = (exp_personal_c[3])
find sept_bud
reset sept_bud
x4 = (exp_personal_c[4])
find oct_bud
reset oct_bud
x5 = (exp_personal_c[5])
find nov_bud
reset nov_bud
x6 = (exp_personal_c[6])
find dec_bud
reset dec_bud
x7 = (exp_personal_c[7])
find jan_bud
reset jan_bud
x8 = (exp_personal_c[8])
find feb_bud
reset feb_bud
x9 = (exp_personal_c[9])
find march_bud
reset march_bud
x10 = (exp_personal_c[10])
find april_bud
reset april_bud
x11 = (exp_personal_c[11])
find may_bud
reset may_bud
x12 = (exp_personal_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_personal_c[1])
find july_act
reset july_act
a2 = (new_personal_c[2])
find aug_act
reset aug_act
a3 = (new_personal_c[3])
find sept_act
reset sept_act
a4 = (new_personal_c[4])
find oct_act
reset oct_act
a5 = (new_personal_c[5])
find nov_act
reset nov_act
a6 = (new_personal_c[6])
find dec_act
reset dec_act
a7 = (new_personal_c[7])
find jan_act
reset jan_act
a8 = (new_personal_c[8])
find feb_act
```

```
    reset feb_act
     a9 = (new_personal_c[9])
    find march_act
    reset march_act
    a10 = (new_personal_c[10])
    find april_act
    reset april_act
    a11 = (new_personal_c[11])
    find may_act
    reset may_act
    a12 = (new_personal_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_s_&_m_display

If do_s_&_m = unknown

Then do_s_&_m = found

    x1 = (exp_s_&_m_c[1]) display "exp_s_&_m_c[1] = (exp_s_&_m_c[1])" display "x1 = (x1) ¬"
    a1 = (new_s_&_m_c[1])
    display "new_s_&_m_c[1]] = (new_s_&_m_c[1])"
    display "a1 = (a1) ¬"

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Supplies & Materials"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"
```

```
glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_&_m_c[1])
find july_bud
reset july_bud
x2 = (exp_s_&_m_c[2])
find aug_bud
reset aug_bud
x3 = (exp_s_&_m_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_&_m_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_&_m_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_&_m_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_&_m_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_&_m_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_&_m_c[9])
find march_bud
reset march_bud
x10 = (exp_s_&_m_c[10])
find april_bud
reset april_bud
x11 = (exp_s_&_m_c[11])
find may_bud
reset may_bud
x12 = (exp_s_&_m_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_&_m_c[1])
find july_act
reset july_act
a2 = (new_s_&_m_c[2])
find aug_act
reset aug_act
```

```
a3 = (new_s_&_m_c[3])
find sept_act
reset sept_act
a4 = (new_s_&_m_c[4])
find oct_act
reset oct_act
a5 = (new_s_&_m_c[5])
find nov_act
reset nov_act
a6 = (new_s_&_m_c[6])
find dec_act
reset dec_act
a7 = (new_s_&_m_c[7])
find jan_act
reset jan_act
a8 = (new_s_&_m_c[8])
find feb_act
reset feb_act
 a9 = (new_s_&_m_c[9])
find march_act
reset march_act
a10 = (new_s_&_m_c[10])
find april_act
reset april_act
a11 = (new_s_&_m_c[11])
find may_act
reset may_act
a12 = (new_s_&_m_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain expgraph;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

```
Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 < = 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 < = 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 < = 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 < = 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 < = 100000 Then locate 30,180
```

```
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
```

```
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;
```

```
Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
```

```
  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 < = 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 < = 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 < = 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 < = 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 < = 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 < = 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 < = 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 < = 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 < = 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 < = 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12
```

```
If axis_size = medium and
  x6 > 200000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
  x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
  x7 > 160000 and
  x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12
```

```
If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;
```

```
Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;
```

```
Rule march_bud_12

If axis_size = medium and
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
```

```
    april_bud = found;

Rule april_bud_12

If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
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```
  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11
```

```
If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;
```

```
Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
  a2 > 0 and
  a2 <= 20000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 <= 40000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 <= 60000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 <= 80000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 <= 100000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 <= 120000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 <= 140000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 <= 160000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 <= 180000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 <= 200000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 <= 20000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 <= 40000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 <= 60000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 <= 80000 Then lineto 163,123
    sept_act = found;
```

```
Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
```

```
    oct_act = found;

Rule oct_act_7

If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
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  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
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  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6
```

```
If axis_size = medium and
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6
```

```
If axis_size = medium and
   a8 > 80000 and
   a8 < = 100000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
   a8 > 100000 and
   a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
   a8 > 120000 and
   a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
   a8 > 140000 and
   a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
   a8 > 160000 and
   a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
   a8 > 180000 and
   a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
   a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
   a9 > 0 and
   a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
   a9 > 20000 and
   a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
   a9 > 40000 and
   a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
   a9 > 60000 and
   a9 < = 80000 Then lineto 452,123
    march_act = found    ;
```

```
Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
  a9 < = 100000 Then lineto 452,107
   march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
   march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
   march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
   march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
   march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
   march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
   march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
   april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
   april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
   april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
   april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
   april_act = found    ;
```

```
Rule april_act_6

If axis_size = medium and
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
```

```
    may_act = found    ;

Rule may_act_6

If axis_size = medium and
   a11 > 80000 and
   a11 < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
   a11 > 100000 and
   a11 < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
   a11 > 120000 and
   a11 < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
   a11 > 140000 and
   a11 < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
   a11 > 160000 and
   a11 < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
   a11 > 180000 and
   a11 < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
   a11 > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
   a12 > 0 and
   a12 < = 20000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = medium and
   a12 > 20000 and
   a12 < = 40000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = medium and
   a12 > 40000 and
   a12 < = 60000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = medium and
   a12 > 60000 and
```

```
  a12 < = 80000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
```

```
y = 12
whiletrue x < = 12 then
  exp_personal_c[x] = (exp_personal[y])
  x = (x + 1)
  y = (y - 1)
end

x = 1
y = (count_it)
z = (count_it)
whiletrue x < = (z) then
  new_personal_c[x] = (new_personal[y])
  x = (x + 1)
  y = (y - 1)
end


!display 'exp_personal_c[1] = (exp_personal_c[1])'

!display 'new_personal_c[1] = (new_personal_c[1]) ¬ ' ;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_contin_c[z] = unknown_dummy
    new_uniforms_c[z] = unknown_dummy
    new_total_c[z] = unknown_dummy


!display "z = (z) ¬" !display "new_contin_c[z] = (new_contin_c[z])" !display "new_uniforms_c[z] = (new_uniforms_c[z])" !display "new_total_c[z] = (new_total_c[z]) ¬"
    z = (z + 1) end

find do_contin find do_uniforms find do_total_costs

;

! Rules Block

Rule begin_contin_display

If do_contin = unknown

Then do_contin = found

    x1 = (exp_contin_c[1]) !display "exp_contin_c[1] = (exp_contin_c[1])" !display "x1 = (x1) ¬"

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Continuous Charges"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 11
    moveto 30,180
    x1 = (exp_contin_c[1])
```

```
find july_bud
reset july_bud
x2 = (exp_contin_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contin_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contin_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contin_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contin_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contin_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contin_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contin_c[9])
find march_bud
reset march_bud
x10 = (exp_contin_c[10])
find april_bud
reset april_bud
x11 = (exp_contin_c[11])
find may_bud
reset may_bud
x12 = (exp_contin_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contin_c[1])
find july_act
reset july_act
a2 = (new_contin_c[2])
find aug_act
reset aug_act
a3 = (new_contin_c[3])
find sept_act
reset sept_act
a4 = (new_contin_c[4])
find oct_act
reset oct_act
a5 = (new_contin_c[5])
find nov_act
reset nov_act
a6 = (new_contin_c[6])
find dec_act
reset dec_act
a7 = (new_contin_c[7])
find jan_act
reset jan_act
a8 = (new_contin_c[8])
find feb_act
reset feb_act
 a9 = (new_contin_c[9])
find march_act
reset march_act
a10 = (new_contin_c[10])
find april_act
reset april_act
a11 = (new_contin_c[11])
find may_act
reset may_act
a12 = (new_contin_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
```

```
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_uniforms_display

If do_uniforms = unknown

Then do_uniforms = found

    x1 = (exp_uniforms_c[1]) !display "exp_uniforms_c[1] = (exp_uniforms_c[1])" !display "x1 = (x1) ¬"

    gmode 14
    exitbutton5 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Uniform Purchases"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"


    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
```

```
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_uniforms_c[1])
find july_bud
reset july_bud
x2 = (exp_uniforms_c[2])
find aug_bud
reset aug_bud
x3 = (exp_uniforms_c[3])
find sept_bud
reset sept_bud
x4 = (exp_uniforms_c[4])
find oct_bud
reset oct_bud
x5 = (exp_uniforms_c[5])
find nov_bud
reset nov_bud
x6 = (exp_uniforms_c[6])
find dec_bud
reset dec_bud
x7 = (exp_uniforms_c[7])
find jan_bud
reset jan_bud
x8 = (exp_uniforms_c[8])
find feb_bud
reset feb_bud
x9 = (exp_uniforms_c[9])
find march_bud
reset march_bud
x10 = (exp_uniforms_c[10])
find april_bud
reset april_bud
x11 = (exp_uniforms_c[11])
find may_bud
reset may_bud
x12 = (exp_uniforms_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_uniforms_c[1])
find july_act
reset july_act
a2 = (new_uniforms_c[2])
find aug_act
reset aug_act
a3 = (new_uniforms_c[3])
find sept_act
reset sept_act
a4 = (new_uniforms_c[4])
find oct_act
reset oct_act
a5 = (new_uniforms_c[5])
find nov_act
reset nov_act
a6 = (new_uniforms_c[6])
find dec_act
reset dec_act
a7 = (new_uniforms_c[7])
find jan_act
reset jan_act
a8 = (new_uniforms_c[8])
find feb_act
reset feb_act
 a9 = (new_uniforms_c[9])
```

```
    find march_act
    reset march_act
    a10 = (new_uniforms_c[10])
    find april_act
    reset april_act
    a11 = (new_uniforms_c[11])
    find may_act
    reset may_act
    a12 = (new_uniforms_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton5 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_total_costs_display

If do_total_costs = unknown

Then do_total_costs = found

    x1 = (exp_total_c[1]) !display "exp_total_c[1] = (exp_total_c[1])" !display "x1 = (x1)¬"

    gmode 14
    exitbutton6 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Total Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
```

```
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_c[1])
find july_bud
reset july_bud
x2 = (exp_total_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_c[9])
find march_bud
reset march_bud
x10 = (exp_total_c[10])
find april_bud
reset april_bud
x11 = (exp_total_c[11])
find may_bud
reset may_bud
x12 = (exp_total_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_c[1])
find july_act
reset july_act
a2 = (new_total_c[2])
find aug_act
reset aug_act
a3 = (new_total_c[3])
find sept_act
reset sept_act
a4 = (new_total_c[4])
```

```
    find oct_act
    reset oct_act
    a5 = (new_total_c[5])
    find nov_act
    reset nov_act
    a6 = (new_total_c[6])
    find dec_act
    reset dec_act
    a7 = (new_total_c[7])
    find jan_act
    reset jan_act
    a8 = (new_total_c[8])
    find feb_act
    reset feb_act
     a9 = (new_total_c[9])
    find march_act
    reset march_act
    a10 = (new_total_c[10])
    find april_act
    reset april_act
    a11 = (new_total_c[11])
    find may_act
    reset may_act
    a12 = (new_total_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton6 = no then end

    reset axis_display
    tmode
    chain graph1;

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy
```

```
Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 <= 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 <= 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 <= 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 <= 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 <= 100000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
```

```
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
  ` lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
```

```
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
```

```
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1
```

```
If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1
```

```
If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 <= 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 <= 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 <= 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 <= 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 <= 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 <= 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 <= 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 <= 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 <= 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 <= 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = medium and
  x6 > 200000 Then lineto 308,20
    dec_bud = found;
```

```
Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
  x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
  x7 > 160000 and
  x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;
```

```
Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
```

```
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = medium and
```

```
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12
```

```
If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;
```

```
Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;
```

```
Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
```

```
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
   aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
   aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
   aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
   aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
   aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
   aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
   aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
   aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
   aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
   aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
   aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
   sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 < = 20000 Then lineto 163,171
   sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
   sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
   sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
   sept_act = found;

Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
   sept_act = found;
```

```
Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
   sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
   sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
   sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
   sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
   sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
   sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
   oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
   oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
   oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
   oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
   oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
   oct_act = found;

Rule oct_act_7
```

```
If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7
```

```
If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;
```

```
Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = medium and
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;
```

```
Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
```

```
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
```

```
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = medium and
```

```
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6
```

```
If axis_size = medium and
   all > 80000 and
   all < = 100000 Then lineto 549,107
     may_act = found    ;

Rule may_act_7

If axis_size = medium and
   all > 100000 and
   all < = 120000 Then lineto 549,91
     may_act = found    ;

Rule may_act_8

If axis_size = medium and
   all > 120000 and
   all < = 140000 Then lineto 549,76
     may_act = found    ;

Rule may_act_9

If axis_size = medium and
   all > 140000 and
   all < = 160000 Then lineto 549,61
     may_act = found    ;

Rule may_act_10

If axis_size = medium and
   all > 160000 and
   all < = 180000 Then lineto 549,44
     may_act = found    ;

Rule may_act_11

If axis_size = medium and
   all > 180000 and
   all < = 200000 Then lineto 549,28
     may_act = found    ;

Rule may_act_12

If axis_size = medium and
   all > 200000 Then lineto 549,20
     may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
     june_act = found    ;

Rule june_act_2

If axis_size = medium and
   a12 > 0 and
   a12 < = 20000 Then lineto 597,171
     june_act = found    ;

Rule june_act_3

If axis_size = medium and
   a12 > 20000 and
   a12 < = 40000 Then lineto 597,155
     june_act = found    ;

Rule june_act_4

If axis_size = medium and
   a12 > 40000 and
   a12 < = 60000 Then lineto 597,139
     june_act = found    ;

Rule june_act_5

If axis_size = medium and
   a12 > 60000 and
   a12 < = 80000 Then lineto 597,123
     june_act = found    ;

Rule june_act_6
```

```
If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x + 1)
```

```
    y = (y - 1)
  end

  x = 1
  y = (count_it)
  z = (count_it)
  whiletrue x < = (z) then
    new_personal_c[x] = (new_personal[y])
    x = (x + 1)
    y = (y - 1)
  end


!display 'exp_personal_c[1] = (exp_personal_c[1])'

!display 'new_personal_c[1] = (new_personal_c[1]) ¬ ' ;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4: 10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_personal_c[z] = unknown_dummy
    new_contract_c[z] = unknown_dummy
    new_s_&_m_c[z] = unknown_dummy

!display "z = (z) ¬" !display "new_personal_c[z] = (new_personal_c[z])" !display "new_contract_c[z] = (new_contract_c[z])" !display
"new_s_&_m_c[z] = (new_s_&_m_c[z])"
    z = (z + 1) end


find do_personal find do_contract find do_s_&_m ;

! Rules Block



Rule begin_contract_display

If do_contract = unknown

Then do_contract = found

    x1 = (exp_contract_c[1])
    display "exp_contract_c[1] = (exp_contract_c[1]) ¬"
    display "x1 = (x1) ¬"
    a1 = (new_contract_c[1])
    display "new_contract_c[1]] = (new_contract_c[1])"
    display "a1 = (a1) ¬"

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_contract_c[1])
    find july_bud
    reset july_bud
```

```
x2 = (exp_contract_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contract_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contract_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contract_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contract_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contract_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contract_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contract_c[9])
find march_bud
reset march_bud
x10 = (exp_contract_c[10])
find april_bud
reset april_bud
x11 = (exp_contract_c[11])
find may_bud
reset may_bud
x12 = (exp_contract_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contract_c[1])
find july_act
reset july_act
a2 = (new_contract_c[2])
find aug_act
reset aug_act
a3 = (new_contract_c[3])
find sept_act
reset sept_act
a4 = (new_contract_c[4])
find oct_act
reset oct_act
a5 = (new_contract_c[5])
find nov_act
reset nov_act
a6 = (new_contract_c[6])
find dec_act
reset dec_act
a7 = (new_contract_c[7])
find jan_act
reset jan_act
a8 = (new_contract_c[8])
find feb_act
reset feb_act
 a9 = (new_contract_c[9])
find march_act
reset march_act
a10 = (new_contract_c[10])
find april_act
reset april_act
a11 = (new_contract_c[11])
find may_act
reset may_act
a12 = (new_contract_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
```

```
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 23,1
    gdisplay "Contractual Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_personal_display

If do_personal = unknown

Then do_personal = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Personal Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph."

loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_contin_c[z] = unknown_dummy
    new_uniforms_c[z] = unknown_dummy
    new_total_c[z] = unknown_dummy
    z = (z + 1) end

find do_contin find do_uniforms find do_total_costs

;

! Rules Block

Rule begin_contin_display

If do_contin = unknown

Then do_contin = found

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Continuous Charges"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 11
    moveto 30,180
    x1 = (exp_contin_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_contin_c[2])
    find aug_bud
    reset aug_bud
```

```
x3 = (exp_contin_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contin_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contin_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contin_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contin_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contin_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contin_c[9])
find march_bud
reset march_bud
x10 = (exp_contin_c[10])
find april_bud
reset april_bud
x11 = (exp_contin_c[11])
find may_bud
reset may_bud
x12 = (exp_contin_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contin_c[1])
find july_act
reset july_act
a2 = (new_contin_c[2])
find aug_act
reset aug_act
a3 = (new_contin_c[3])
find sept_act
reset sept_act
a4 = (new_contin_c[4])
find oct_act
reset oct_act
a5 = (new_contin_c[5])
find nov_act
reset nov_act
a6 = (new_contin_c[6])
find dec_act
reset dec_act
a7 = (new_contin_c[7])
find jan_act
reset jan_act
a8 = (new_contin_c[8])
find feb_act
reset feb_act
 a9 = (new_contin_c[9])
find march_act
reset march_act
a10 = (new_contin_c[10])
find april_act
reset april_act
a11 = (new_contin_c[11])
find may_act
reset may_act
a12 = (new_contin_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
```

```
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_uniforms_display

If do_uniforms = unknown

Then do_uniforms = found

    gmode 14
    exitbutton5 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Uniform Purchases"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"


    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
```

```
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_uniforms_c[1])
find july_bud
reset july_bud
x2 = (exp_uniforms_c[2])
find aug_bud
reset aug_bud
x3 = (exp_uniforms_c[3])
find sept_bud
reset sept_bud
x4 = (exp_uniforms_c[4])
find oct_bud
reset oct_bud
x5 = (exp_uniforms_c[5])
find nov_bud
reset nov_bud
x6 = (exp_uniforms_c[6])
find dec_bud
reset dec_bud
x7 = (exp_uniforms_c[7])
find jan_bud
reset jan_bud
x8 = (exp_uniforms_c[8])
find feb_bud
reset feb_bud
x9 = (exp_uniforms_c[9])
find march_bud
reset march_bud
x10 = (exp_uniforms_c[10])
find april_bud
reset april_bud
x11 = (exp_uniforms_c[11])
find may_bud
reset may_bud
x12 = (exp_uniforms_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_uniforms_c[1])
find july_act
reset july_act
a2 = (new_uniforms_c[2])
find aug_act
reset aug_act
a3 = (new_uniforms_c[3])
find sept_act
reset sept_act
a4 = (new_uniforms_c[4])
find oct_act
reset oct_act
a5 = (new_uniforms_c[5])
find nov_act
reset nov_act
a6 = (new_uniforms_c[6])
find dec_act
reset dec_act
a7 = (new_uniforms_c[7])
find jan_act
reset jan_act
a8 = (new_uniforms_c[8])
find feb_act
reset feb_act
 a9 = (new_uniforms_c[9])
find march_act
reset march_act
a10 = (new_uniforms_c[10])
find april_act
reset april_act
a11 = (new_uniforms_c[11])
find may_act
```

```
    reset may_act
    a12 = (new_uniforms_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton5 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_total_costs_display

If do_total_costs = unknown

Then do_total_costs = found

    gmode 14
    exitbutton6 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Total Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
```

```
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_c[1])
find july_bud
reset july_bud
x2 = (exp_total_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_c[9])
find march_bud
reset march_bud
x10 = (exp_total_c[10])
find april_bud
reset april_bud
x11 = (exp_total_c[11])
find may_bud
reset may_bud
x12 = (exp_total_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_c[1])
find july_act
reset july_act
a2 = (new_total_c[2])
find aug_act
reset aug_act
a3 = (new_total_c[3])
find sept_act
reset sept_act
a4 = (new_total_c[4])
find oct_act
reset oct_act
a5 = (new_total_c[5])
find nov_act
reset nov_act
a6 = (new_total_c[6])
find dec_act
reset dec_act
a7 = (new_total_c[7])
```

```
find jan_act
reset jan_act
a8 = (new_total_c[8])
find feb_act
reset feb_act
 a9 = (new_total_c[9])
find march_act
reset march_act
a10 = (new_total_c[10])
find april_act
reset april_act
a11 = (new_total_c[11])
find may_act
reset may_act
a12 = (new_total_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton6 = no then end

reset axis_display
tmode
savefacts tempdata
chain graph1;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

```
Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 < = 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 < = 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 70000 and
  x1 < = 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 < = 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
  x1 < = 210000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 < = 245000 Then locate 30,180
```

```
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 < = 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 < = 315000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 < = 350000 Then lineto 114,29
    aug_bud = found;
```

```
Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 < = 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 < = 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 < = 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 < = 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 < = 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 < = 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 < = 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 < = 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 < = 315000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 < = 350000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;
```

```
Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
  x4 > 350000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = large and
  x5 > 0 and
  x5 < = 35000 Then lineto 260,172
```

```
    nov_bud = found;

Rule nov_bud_3

If axis_size = large and
   x5 > 35000 and
   x5 < = 70000 Then lineto 260,156
     nov_bud = found;

Rule nov_bud_4

If axis_size = large and
   x5 > 70000 and
   x5 < = 105000 Then lineto 260,140
     nov_bud = found;

Rule nov_bud_5

If axis_size = large and
   x5 > 105000 and
   x5 < = 140000 Then lineto 260,124
     nov_bud = found;

Rule nov_bud_6

If axis_size = large and
   x5 > 140000 and
   x5 < = 175000 Then lineto 260,108
     nov_bud = found;

Rule nov_bud_7

If axis_size = large and
   x5 > 175000 and
   x5 < = 210000 Then lineto 260,92
     nov_bud = found;

Rule nov_bud_8

If axis_size = large and
   x5 > 210000 and
   x5 < = 245000 Then lineto 260,77
     nov_bud = found;

Rule nov_bud_9

If axis_size = large and
   x5 > 245000 and
   x5 < = 280000 Then lineto 260,62
     nov_bud = found;

Rule nov_bud_10

If axis_size = large and
   x5 > 280000 and
   x5 < = 315000 Then lineto 260,45
     nov_bud = found;

Rule nov_bud_11

If axis_size = large and
   x5 > 315000 and
   x5 < = 350000 Then lineto 260,29
     nov_bud = found;

Rule nov_bud_12

If axis_size = large and
   x5 > 350000 Then lineto 260,20
     nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
     dec_bud = found;

Rule dec_bud_2

If axis_size = large and
   x6 > 0 and
```

```
   x6 < = 35000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = large and
   x6 > 35000 and
   x6 < = 70000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = large and
   x6 > 70000 and
   x6 < = 105000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = large and
   x6 > 105000 and
   x6 < = 140000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = large and
   x6 > 140000 and
   x6 < = 175000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = large and
   x6 > 175000 and
   x6 < = 210000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = large and
   x6 > 210000 and
   x6 < = 245000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = large and
   x6 > 245000 and
   x6 < = 280000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = large and
   x6 > 280000 and
   x6 < = 315000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = large and
   x6 > 315000 and
   x6 < = 350000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = large and
   x6 > 350000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
```

```
  x7 > 0 and
  x7 < = 35000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = large and
  x7 > 35000 and
  x7 < = 70000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = large and
  x7 > 70000 and
  x7 < = 105000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = large and
  x7 > 105000 and
  x7 < = 140000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = large and
  x7 > 140000 and
  x7 < = 175000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = large and
  x7 > 175000 and
  x7 < = 210000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = large and
  x7 > 210000 and
  x7 < = 245000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = large and
  x7 > 245000 and
  x7 < = 280000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = large and
  x7 > 280000 and
  x7 < = 315000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = large and
  x7 > 315000 and
  x7 < = 350000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = large and
  x7 > 350000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2
```

```
If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2
```

```
If axis_size = large and
   x9 > 0 and
   x9 < = 35000 Then lineto 452,172
     march_bud = found;

Rule march_bud_3

If axis_size = large and
   x9 > 35000 and
   x9 < = 70000 Then lineto 452,156
     march_bud = found;

Rule march_bud_4

If axis_size = large and
   x9 > 70000 and
   x9 < = 105000 Then lineto 452,140
     march_bud = found;

Rule march_bud_5

If axis_size = large and
   x9 > 105000 and
   x9 < = 140000 Then lineto 452,124
     march_bud = found;

Rule march_bud_6

If axis_size = large and
   x9 > 140000 and
   x9 < = 175000 Then lineto 452,108
     march_bud = found;

Rule march_bud_7

If axis_size = large and
   x9 > 175000 and
   x9 < = 210000 Then lineto 452,92
     march_bud = found;

Rule march_bud_8

If axis_size = large and
   x9 > 210000 and
   x9 < = 245000 Then lineto 452,77
     march_bud = found;

Rule march_bud_9

If axis_size = large and
   x9 > 245000 and
   x9 < = 280000 Then lineto 452,62
     march_bud = found;

Rule march_bud_10

If axis_size = large and
   x9 > 280000 and
   x9 < = 315000 Then lineto 452,45
     march_bud = found;

Rule march_bud_11

If axis_size = large and
   x9 > 315000 and
   x9 < = 350000 Then lineto 452,29
     march_bud = found;

Rule march_bud_12

If axis_size = large and
   x9 > 350000 Then lineto 452,20
     march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
     april_bud = found;
```

```
Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
  x10 > 350000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If x11 = 0 Then lineto 549,180
```

```
    may_bud = found;

Rule may_bud_2

If axis_size = large and
  x11 > 0 and
  x11 < = 35000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = large and
  x11 > 35000 and
  x11 < = 70000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = large and
  x11 > 70000 and
  x11 < = 105000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = large and
  x11 > 105000 and
  x11 < = 140000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = large and
  x11 > 140000 and
  x11 < = 175000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = large and
  x11 > 175000 and
  x11 < = 210000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = large and
  x11 > 210000 and
  x11 < = 245000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = large and
  x11 > 245000 and
  x11 < = 280000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = large and
  x11 > 280000 and
  x11 < = 315000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = large and
  x11 > 315000 and
  x11 < = 350000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = large and
  x11 > 350000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1
```

```
If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = large and
  x12 > 0 and
  x12 < = 35000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = large and
  x12 > 35000 and
  x12 < = 70000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = large and
  x12 > 70000 and
  x12 < = 105000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = large and
  x12 > 105000 and
  x12 < = 140000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = large and
  x12 > 140000 and
  x12 < = 175000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = large and
  x12 > 175000 and
  x12 < = 210000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = large and
  x12 > 210000 and
  x12 < = 245000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;
```

```
Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  a2 > 0 and
  a2 < = 35000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;
```

```
Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
  a3 > 35000 and
  a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
  a3 > 70000 and
  a3 < = 105000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = large and
  a3 > 105000 and
  a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
  a3 > 140000 and
  a3 < = 175000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = large and
  a3 > 175000 and
  a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
  a3 > 210000 and
```

```
  a3 < = 245000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = large and
  a3 > 245000 and
  a3 < = 280000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = large and
  a3 > 280000 and
  a3 < = 315000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = large and
  a3 > 315000 and
  a3 < = 350000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = large and
  a3 > 350000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = large and
  a4 > 0 and
  a4 < = 35000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = large and
  a4 > 35000 and
  a4 < = 70000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = large and
  a4 > 70000 and
  a4 < = 105000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = large and
  a4 > 175000 and
  a4 < = 210000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = large and
```

```
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
  a5 < = 105000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = large and
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8
```

```
If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8
```

```
If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
   dec_act = found;

Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
   dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
   dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
   dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
   dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
   jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
   jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
   jan_act = found;

Rule jan_act_4

If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
   jan_act = found;

Rule jan_act_5

If axis_size = large and
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
   jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
   jan_act = found;

Rule jan_act_7

If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
   jan_act = found;
```

```
Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;
```

```
Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
```

```
    march_act = found    ;

Rule march_act_8

If axis_size = large and
  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
  a10 < = 175000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
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```
  a10 < = 210000 Then lineto 501,91
    apnl_act = found    ;

Rule apnl_act_8

If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    apnl_act = found    ;

Rule apnl_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    apnl_act = found    ;

Rule apnl_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    apnl_act = found    ;

Rule apnl_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    apnl_act = found    ;

Rule apnl_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    apnl_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  a11 > 70000 and
  a11 < = 105000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = large and
  a11 > 105000 and
  a11 < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
  a11 > 140000 and
  a11 < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
```

```
  a11 > 175000 and
  a11 < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = large and
  a11 > 210000 and
  a11 < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
  a11 > 245000 and
  a11 < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
  a11 > 280000 and
  a11 < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
  a11 > 315000 and
  a11 < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
  a11 > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
  a12 > 0 and
  a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
  a12 > 35000 and
  a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
  a12 > 70000 and
  a12 < = 105000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = large and
  a12 > 105000 and
  a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = large and
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7
```

```
If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
```

```
      x = (x + 1)
      y = (y - 1)
    end

;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4: 10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the
files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12
then
    new_personal_c[z] = unknown_dummy
    new_contract_c[z] = unknown_dummy
    new_s_&_m_c[z] = unknown_dummy

!display "z = (z) ¬" !display "new_personal_c[z] = (new_personal_c[z])" !display "new_contract_c[z] = (new_contract_c[z])" !display
"new_s_&_m_c[z] = (new_s_&_m_c[z])"
    z = (z + 1) end


find do_personal find do_contract find do_s_&_m ;

! Rules Block



Rule begin_contract_display

If do_contract = unknown

Then do_contract = found

    x1 = (exp_contract_c[1])
    display "exp_contract_c[1] = (exp_contract_c[1]) ¬"
    display "x1 = (x1) ¬"
    a1 = (new_contract_c[1])
    display "new_contract_c[1]] = (new_contract_c[1])"
    display "a1 = (a1) ¬"

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_contract_c[1])
    find july_bud
```

```
reset july_bud
x2 = (exp_contract_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contract_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contract_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contract_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contract_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contract_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contract_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contract_c[9])
find march_bud
reset march_bud
x10 = (exp_contract_c[10])
find april_bud
reset april_bud
x11 = (exp_contract_c[11])
find may_bud
reset may_bud
x12 = (exp_contract_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contract_c[1])
find july_act
reset july_act
a2 = (new_contract_c[2])
find aug_act
reset aug_act
a3 = (new_contract_c[3])
find sept_act
reset sept_act
a4 = (new_contract_c[4])
find oct_act
reset oct_act
a5 = (new_contract_c[5])
find nov_act
reset nov_act
a6 = (new_contract_c[6])
find dec_act
reset dec_act
a7 = (new_contract_c[7])
find jan_act
reset jan_act
a8 = (new_contract_c[8])
find feb_act
reset feb_act
 a9 = (new_contract_c[9])
find march_act
reset march_act
a10 = (new_contract_c[10])
find april_act
reset april_act
a11 = (new_contract_c[11])
find may_act
reset may_act
a12 = (new_contract_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
```

```
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 23,1
    gdisplay "Contractual Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_personal_display

If do_personal = unknown

Then do_personal = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Personal Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
```

```
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_personal_c[1])
find july_bud
reset july_bud
x2 = (exp_personal_c[2])
find aug_bud
reset aug_bud
x3 = (exp_personal_c[3])
find sept_bud
reset sept_bud
x4 = (exp_personal_c[4])
find oct_bud
reset oct_bud
x5 = (exp_personal_c[5])
find nov_bud
reset nov_bud
x6 = (exp_personal_c[6])
find dec_bud
reset dec_bud
x7 = (exp_personal_c[7])
find jan_bud
reset jan_bud
x8 = (exp_personal_c[8])
find feb_bud
reset feb_bud
x9 = (exp_personal_c[9])
find march_bud
reset march_bud
x10 = (exp_personal_c[10])
find april_bud
reset april_bud
x11 = (exp_personal_c[11])
find may_bud
reset may_bud
x12 = (exp_personal_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_personal_c[1])
find july_act
reset july_act
a2 = (new_personal_c[2])
find aug_act
reset aug_act
a3 = (new_personal_c[3])
find sept_act
reset sept_act
a4 = (new_personal_c[4])
find oct_act
reset oct_act
a5 = (new_personal_c[5])
find nov_act
reset nov_act
a6 = (new_personal_c[6])
find dec_act
reset dec_act
a7 = (new_personal_c[7])
find jan_act
reset jan_act
a8 = (new_personal_c[8])
find feb_act
```

```
    reset feb_act
     a9 = (new_personal_c[9])
    find march_act
    reset march_act
    a10 = (new_personal_c[10])
    find april_act
    reset april_act
    a11 = (new_personal_c[11])
    find may_act
    reset may_act
    a12 = (new_personal_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_s_&_m_display

If do_s_&_m = unknown

Then do_s_&_m = found

    x1 = (exp_s_&_m_c[1]) display "exp_s_&_m_c[1] = (exp_s_&_m_c[1])" display "x1 = (x1) ¬"
    a1 = (new_s_&_m_c[1])
    display "new_s_&_m_c[1]] = (new_s_&_m_c[1])"
    display "a1 = (a1) ¬"

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Supplies & Materials"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"
```

```
glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_&_m_c[1])
find july_bud
reset july_bud
x2 = (exp_s_&_m_c[2])
find aug_bud
reset aug_bud
x3 = (exp_s_&_m_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_&_m_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_&_m_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_&_m_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_&_m_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_&_m_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_&_m_c[9])
find march_bud
reset march_bud
x10 = (exp_s_&_m_c[10])
find april_bud
reset april_bud
x11 = (exp_s_&_m_c[11])
find may_bud
reset may_bud
x12 = (exp_s_&_m_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_&_m_c[1])
find july_act
reset july_act
a2 = (new_s_&_m_c[2])
find aug_act
reset aug_act
```

```
a3 = (new_s_&_m_c[3])
find sept_act
reset sept_act
a4 = (new_s_&_m_c[4])
find oct_act
reset oct_act
a5 = (new_s_&_m_c[5])
find nov_act
reset nov_act
a6 = (new_s_&_m_c[6])
find dec_act
reset dec_act
a7 = (new_s_&_m_c[7])
find jan_act
reset jan_act
a8 = (new_s_&_m_c[8])
find feb_act
reset feb_act
 a9 = (new_s_&_m_c[9])
find march_act
reset march_act
a10 = (new_s_&_m_c[10])
find april_act
reset april_act
a11 = (new_s_&_m_c[11])
find may_act
reset may_act
a12 = (new_s_&_m_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain expgraph;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

```
Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 < = 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 < = 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 < = 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 < = 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 < = 100000 Then locate 30,180
```

```
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
```

```
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;
```

```
Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
```

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    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
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  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 <= 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 <= 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 <= 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 <= 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 <= 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 <= 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 <= 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 <= 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 <= 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 <= 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12
```

```
If axis_size = medium and
  x6 > 200000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
  x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
  x7 > 160000 and
  x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12
```

```
If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;
```

```
Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;
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```
Rule march_bud_12

If axis_size = medium and
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
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    april_bud = found;

Rule april_bud_12

If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
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  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11
```

```
If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;
```

```
Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 < = 20000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
    sept_act = found;
```

```
Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
```

```
    oct_act = found;

Rule oct_act_7

If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
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  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
```

```
  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6
```

```
If axis_size = medium and
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6
```

```
If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;
```

```
Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;
```

```
Rule april_act_6

If axis_size = medium and
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
```

```
    may_act = found    ;

Rule may_act_6

If axis_size = medium and
   a11 > 80000 and
   a11 < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
   a11 > 100000 and
   a11 < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
   a11 > 120000 and
   a11 < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
   a11 > 140000 and
   a11 < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
   a11 > 160000 and
   a11 < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
   a11 > 180000 and
   a11 < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
   a11 > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
   a12 > 0 and
   a12 < = 20000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = medium and
   a12 > 20000 and
   a12 < = 40000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = medium and
   a12 > 40000 and
   a12 < = 60000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = medium and
   a12 > 60000 and
```

```
   a12 < = 80000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = medium and
   a12 > 80000 and
   a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
   a12 > 100000 and
   a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
   a12 > 120000 and
   a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
   a12 > 140000 and
   a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
   a12 > 160000 and
   a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
   a12 > 180000 and
   a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
   a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

   x = 1
```

```
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x + 1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
      x = (x + 1)
      y = (y - 1)
    end


!display "exp_personal_c[1] = (exp_personal_c[1])"

!display "new_personal_c[1] = (new_personal_c[1]) ~ " ;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4: 10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_contin_c[z] = unknown_dummy
    new_uniforms_c[z] = unknown_dummy
    new_total_c[z] = unknown_dummy


!display "z = (z) ¬" !display "new_contin_c[z] = (new_contin_c[z])" !display "new_uniforms_c[z] = (new_uniforms_c[z])" !display "new_total_c[z] = (new_total_c[z]) ¬"
    z = (z + 1) end

find do_contin find do_uniforms find do_total_costs

;

! Rules Block

Rule begin_contin_display

If do_contin = unknown

Then do_contin = found

    x1 = (exp_contin_c[1]) !display "exp_contin_c[1] = (exp_contin_c[1])" !display "x1 = (x1) ¬"

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Continuous Charges"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 11
    moveto 30,180
    x1 = (exp_contin_c[1])
```

```
find july_bud
reset july_bud
x2 = (exp_contin_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contin_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contin_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contin_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contin_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contin_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contin_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contin_c[9])
find march_bud
reset march_bud
x10 = (exp_contin_c[10])
find april_bud
reset april_bud
x11 = (exp_contin_c[11])
find may_bud
reset may_bud
x12 = (exp_contin_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contin_c[1])
find july_act
reset july_act
a2 = (new_contin_c[2])
find aug_act
reset aug_act
a3 = (new_contin_c[3])
find sept_act
reset sept_act
a4 = (new_contin_c[4])
find oct_act
reset oct_act
a5 = (new_contin_c[5])
find nov_act
reset nov_act
a6 = (new_contin_c[6])
find dec_act
reset dec_act
a7 = (new_contin_c[7])
find jan_act
reset jan_act
a8 = (new_contin_c[8])
find feb_act
reset feb_act
 a9 = (new_contin_c[9])
find march_act
reset march_act
a10 = (new_contin_c[10])
find april_act
reset april_act
a11 = (new_contin_c[11])
find may_act
reset may_act
a12 = (new_contin_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
```

```
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_uniforms_display

If do_uniforms = unknown

Then do_uniforms = found

    x1 = (exp_uniforms_c[1]) !display "exp_uniforms_c[1] = (exp_uniforms_c[1])" !display "x1 = (x1) ¬"

    gmode 14
    exitbutton5 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Uniform Purchases"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"


    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
```

```
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_uniforms_c[1])
find july_bud
reset july_bud
x2 = (exp_uniforms_c[2])
find aug_bud
reset aug_bud
x3 = (exp_uniforms_c[3])
find sept_bud
reset sept_bud
x4 = (exp_uniforms_c[4])
find oct_bud
reset oct_bud
x5 = (exp_uniforms_c[5])
find nov_bud
reset nov_bud
x6 = (exp_uniforms_c[6])
find dec_bud
reset dec_bud
x7 = (exp_uniforms_c[7])
find jan_bud
reset jan_bud
x8 = (exp_uniforms_c[8])
find feb_bud
reset feb_bud
x9 = (exp_uniforms_c[9])
find march_bud
reset march_bud
x10 = (exp_uniforms_c[10])
find april_bud
reset april_bud
x11 = (exp_uniforms_c[11])
find may_bud
reset may_bud
x12 = (exp_uniforms_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_uniforms_c[1])
find july_act
reset july_act
a2 = (new_uniforms_c[2])
find aug_act
reset aug_act
a3 = (new_uniforms_c[3])
find sept_act
reset sept_act
a4 = (new_uniforms_c[4])
find oct_act
reset oct_act
a5 = (new_uniforms_c[5])
find nov_act
reset nov_act
a6 = (new_uniforms_c[6])
find dec_act
reset dec_act
a7 = (new_uniforms_c[7])
find jan_act
reset jan_act
a8 = (new_uniforms_c[8])
find feb_act
reset feb_act
 a9 = (new_uniforms_c[9])
```

```
    find march_act
    reset march_act
    a10 = (new_uniforms_c[10])
    find april_act
    reset april_act
    a11 = (new_uniforms_c[11])
    find may_act
    reset may_act
    a12 = (new_uniforms_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton5 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_total_costs_display

If do_total_costs = unknown

Then do_total_costs = found

    x1 = (exp_total_c[1]) !display "exp_total_c[1] = (exp_total_c[1])" !display "x1 = (x1) ¬"

    gmode 14
    exitbutton6 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Total Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
```

```
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_c[1])
find july_bud
reset july_bud
x2 = (exp_total_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_c[9])
find march_bud
reset march_bud
x10 = (exp_total_c[10])
find april_bud
reset april_bud
x11 = (exp_total_c[11])
find may_bud
reset may_bud
x12 = (exp_total_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_c[1])
find july_act
reset july_act
a2 = (new_total_c[2])
find aug_act
reset aug_act
a3 = (new_total_c[3])
find sept_act
reset sept_act
a4 = (new_total_c[4])
```

```
    find oct_act
    reset oct_act
    a5 = (new_total_c[5])
    find nov_act
    reset nov_act
    a6 = (new_total_c[6])
    find dec_act
    reset dec_act
    a7 = (new_total_c[7])
    find jan_act
    reset jan_act
    a8 = (new_total_c[8])
    find feb_act
    reset feb_act
     a9 = (new_total_c[9])
    find march_act
    reset march_act
    a10 = (new_total_c[10])
    find april_act
    reset april_act
    a11 = (new_total_c[11])
    find may_act
    reset may_act
    a12 = (new_total_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton6 = no then end

    reset axis_display
    tmode
    chain graph1;

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy
```

```
Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found; Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found; Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found; Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 < = 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 < = 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 < = 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 < = 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 < = 100000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
```

```
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
  ` lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
```

```
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
```

```
   oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
   oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
   oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
   oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
   oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
   oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
   oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
   oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
   oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
   oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
   oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
   oct_bud = found;

Rule nov_bud_1
```

```
If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1
```

```
If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 < = 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 < = 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 < = 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 < = 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 < = 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 < = 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 < = 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 < = 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 < = 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 < = 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = medium and
  x6 > 200000 Then lineto 308,20
    dec_bud = found;
```

```
Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
  x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
  x7 > 160000 and
  x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;
```

```
Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
```

```
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = medium and
```

```
   x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
   x10 > 0 and
   x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
   x10 > 20000 and
   x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
   x10 > 40000 and
   x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
   x10 > 60000 and
   x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
   x10 > 80000 and
   x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
   x10 > 100000 and
   x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
   x10 > 120000 and
   x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
   x10 > 140000 and
   x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
   x10 > 160000 and
   x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
   x10 > 180000 and
   x10 < = 200000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12
```

```
If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;
```

```
Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;
```

```
Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
```

```
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
   aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
   aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
   aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
   aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
   aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
   aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
   aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
   aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
   aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
   aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
   aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
   sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 < = 20000 Then lineto 163,171
   sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
   sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
   sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
   sept_act = found;

Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
   sept_act = found;
```

```
Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7
```

```
If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7
```

```
If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;
```

```
Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = medium and
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;
```

```
Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
```

```
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
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```
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = medium and
```

```
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6
```

```
If axis_size = medium and
  a11 > 80000 and
  a11 < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
  a11 > 100000 and
  a11 < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
  a11 > 120000 and
  a11 < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
  a11 > 140000 and
  a11 < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
  a11 > 160000 and
  a11 < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
  a11 > 180000 and
  a11 < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
  a11 > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
  a12 > 0 and
  a12 < = 20000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = medium and
  a12 > 20000 and
  a12 < = 40000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = medium and
  a12 > 40000 and
  a12 < = 60000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = medium and
  a12 > 60000 and
  a12 < = 80000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6
```

```
If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x + 1)
```

```
    y = (y - 1)
  end

  x = 1
  y = (count_it)
  z = (count_it)
  whiletrue x < = (z) then
    new_personal_c[x] = (new_personal[y])
    x = (x + 1)
    y = (y - 1)
  end


!display "exp_personal_c[1] = (exp_personal_c[1])"

!display "new_personal_c[1] = (new_personal_c[1]) ¬ " ;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded.  Once the files
have loaded, the system will proceed directly" display "into the graph."  loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_personal_c[z] = unknown_dummy
    new_contract_c[z] = unknown_dummy
    new_s_&_m_c[z] = unknown_dummy

!display "z = {z}¬" !display "new_personal_c[z] = {new_personal_c[z]}" !display "new_contract_c[z] = {new_contract_c[z]}" !display
"new_s_&_m_c[z] = {new_s_&_m_c[z]}"
    z = (z + 1) end


find do_personal find do_contract find do_s_&_m ;

! Rules Block



Rule begin_contract_display

If do_contract = unknown

Then do_contract = found

    x1 = (exp_contract_c[1])
    display "exp_contract_c[1] = {exp_contract_c[1]}¬"
    display "x1 = {x1}¬"
    a1 = (new_contract_c[1])
    display "new_contract_c[1]] = {new_contract_c[1]}"
    display "a1 = {a1}¬"

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_contract_c[1])
    find july_bud
    reset july_bud
```

```
x2 = (exp_contract_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contract_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contract_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contract_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contract_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contract_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contract_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contract_c[9])
find march_bud
reset march_bud
x10 = (exp_contract_c[10])
find april_bud
reset april_bud
x11 = (exp_contract_c[11])
find may_bud
reset may_bud
x12 = (exp_contract_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contract_c[1])
find july_act
reset july_act
a2 = (new_contract_c[2])
find aug_act
reset aug_act
a3 = (new_contract_c[3])
find sept_act
reset sept_act
a4 = (new_contract_c[4])
find oct_act
reset oct_act
a5 = (new_contract_c[5])
find nov_act
reset nov_act
a6 = (new_contract_c[6])
find dec_act
reset dec_act
a7 = (new_contract_c[7])
find jan_act
reset jan_act
a8 = (new_contract_c[8])
find feb_act
reset feb_act
 a9 = (new_contract_c[9])
find march_act
reset march_act
a10 = (new_contract_c[10])
find april_act
reset april_act
a11 = (new_contract_c[11])
find may_act
reset may_act
a12 = (new_contract_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
```

```
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 23,1
    gdisplay "Contractual Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_personal_display

If do_personal = unknown

Then do_personal = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Personal Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
```

```
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_personal_c[1])
find july_bud
reset july_bud
x2 = (exp_personal_c[2])
find aug_bud
reset aug_bud
x3 = (exp_personal_c[3])
find sept_bud
reset sept_bud
x4 = (exp_personal_c[4])
find oct_bud
reset oct_bud
x5 = (exp_personal_c[5])
find nov_bud
reset nov_bud
x6 = (exp_personal_c[6])
find dec_bud
reset dec_bud
x7 = (exp_personal_c[7])
find jan_bud
reset jan_bud
x8 = (exp_personal_c[8])
find feb_bud
reset feb_bud
x9 = (exp_personal_c[9])
find march_bud
reset march_bud
x10 = (exp_personal_c[10])
find april_bud
reset april_bud
x11 = (exp_personal_c[11])
find may_bud
reset may_bud
x12 = (exp_personal_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_personal_c[1])
find july_act
reset july_act
a2 = (new_personal_c[2])
find aug_act
reset aug_act
a3 = (new_personal_c[3])
find sept_act
reset sept_act
a4 = (new_personal_c[4])
find oct_act
reset oct_act
a5 = (new_personal_c[5])
find nov_act
reset nov_act
a6 = (new_personal_c[6])
find dec_act
reset dec_act
a7 = (new_personal_c[7])
find jan_act
reset jan_act
a8 = (new_personal_c[8])
find feb_act
reset feb_act
```

```
    a9 = (new_personal_c[9])
    find march_act
    reset march_act
    a10 = (new_personal_c[10])
    find april_act
    reset april_act
    a11 = (new_personal_c[11])
    find may_act
    reset may_act
    a12 = (new_personal_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_s_&_m_display

If do_s_&_m = unknown

Then do_s_&_m = found

    x1 = (exp_s_&_m_c[1]) display "exp_s_&_m_c[1] = (exp_s_&_m_c[1])" display "x1 = (x1) ¬"
    a1 = (new_s_&_m_c[1])
    display "new_s_&_m_c[1]] = (new_s_&_m_c[1])"
    display "a1 = (a1) ¬"

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Supplies & Materials"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"
```

```
glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_&_m_c[1])
find july_bud
reset july_bud
x2 = (exp_s_&_m_c[2])
find aug_bud
reset aug_bud
x3. = (exp_s_&_m_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_&_m_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_&_m_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_&_m_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_&_m_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_&_m_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_&_m_c[9])
find march_bud
reset march_bud
x10 = (exp_s_&_m_c[10])
find april_bud
reset april_bud
x11 = (exp_s_&_m_c[11])
find may_bud
reset may_bud
x12 = (exp_s_&_m_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_&_m_c[1])
find july_act
reset july_act
a2 = (new_s_&_m_c[2])
find aug_act
reset aug_act
a3 = (new_s_&_m_c[3])
```

```
find sept_act
reset sept_act
a4 = (new_s_&_m_c[4])
find oct_act
reset oct_act
a5 = (new_s_&_m_c[5])
find nov_act
reset nov_act
a6 = (new_s_&_m_c[6])
find dec_act
reset dec_act
a7 = (new_s_&_m_c[7])
find jan_act
reset jan_act
a8 = (new_s_&_m_c[8])
find feb_act
reset feb_act
 a9 = (new_s_&_m_c[9])
find march_act
reset march_act
a10 = (new_s_&_m_c[10])
find april_act
reset april_act
a11 = (new_s_&_m_c[11])
find may_act
reset may_act
a12 = (new_s_&_m_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain expgraph;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

```
Rule sept_act_unknown_dummy
If a3 = unknown_dummy
Then sept_act = found;
Rule oct_act_unknown_dummy
If a4 = unknown_dummy
Then oct_act = found;
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found;
Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found;
Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found;
Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 < = 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 < = 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 70000 and
  x1 < = 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 < = 140000 Then locate 30,180
```

```
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 < = 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
  x1 < = 210000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 < = 245000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
```

```
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 <= 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 <= 315000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 <= 350000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 <= 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 <= 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 <= 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 <= 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 <= 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 <= 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 <= 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 <= 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 <= 315000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 <= 350000 Then lineto 163,29
    sept_bud = found;
```

```
Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
```

```
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
   x4 > 350000 Then lineto 212,20
     oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
     nov_bud = found;

Rule nov_bud_2

If axis_size = large and
   x5 > 0 and
   x5 < = 35000 Then lineto 260,172
     nov_bud = found;

Rule nov_bud_3

If axis_size = large and
   x5 > 35000 and
   x5 < = 70000 Then lineto 260,156
     nov_bud = found;

Rule nov_bud_4

If axis_size = large and
   x5 > 70000 and
   x5 < = 105000 Then lineto 260,140
     nov_bud = found;

Rule nov_bud_5

If axis_size = large and
   x5 > 105000 and
   x5 < = 140000 Then lineto 260,124
     nov_bud = found;

Rule nov_bud_6

If axis_size = large and
   x5 > 140000 and
   x5 < = 175000 Then lineto 260,108
     nov_bud = found;

Rule nov_bud_7

If axis_size = large and
   x5 > 175000 and
   x5 < = 210000 Then lineto 260,92
     nov_bud = found;

Rule nov_bud_8

If axis_size = large and
   x5 > 210000 and
   x5 < = 245000 Then lineto 260,77
     nov_bud = found;

Rule nov_bud_9

If axis_size = large and
   x5 > 245000 and
   x5 < = 280000 Then lineto 260,62
     nov_bud = found;

Rule nov_bud_10

If axis_size = large and
   x5 > 280000 and
   x5 < = 315000 Then lineto 260,45
     nov_bud = found;

Rule nov_bud_11

If axis_size = large and
   x5 > 315000 and
```

```
  x5 < = 350000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = large and
  x5 > 350000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = large and
  x6 > 0 and
  x6 < = 35000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = large and
  x6 > 35000 and
  x6 < = 70000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = large and
  x6 > 70000 and
  x6 < = 105000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = large and
  x6 > 105000 and
  x6 < = 140000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = large and
  x6 > 140000 and
  x6 < = 175000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = large and
  x6 > 175000 and
  x6 < = 210000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = large and
  x6 > 210000 and
  x6 < = 245000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = large and
  x6 > 245000 and
  x6 < = 280000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = large and
  x6 > 280000 and
  x6 < = 315000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = large and
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  x6 > 315000 and
  x6 < = 350000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = large and
  x6 > 350000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
  x7 > 0 and
  x7 < = 35000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = large and
  x7 > 35000 and
  x7 < = 70000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = large and
  x7 > 70000 and
  x7 < = 105000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = large and
  x7 > 105000 and
  x7 < = 140000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = large and
  x7 > 140000 and
  x7 < = 175000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = large and
  x7 > 175000 and
  x7 < = 210000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = large and
  x7 > 210000 and
  x7 < = 245000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = large and
  x7 > 245000 and
  x7 < = 280000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = large and
  x7 > 280000 and
  x7 < = 315000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11
```

```
If axis_size = large and
  x7 > 315000 and
  x7 < = 350000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = large and
  x7 > 350000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11
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If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = large and
  x9 > 0 and
  x9 < = 35000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = large and
  x9 > 35000 and
  x9 < = 70000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = large and
  x9 > 70000 and
  x9 < = 105000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = large and
  x9 > 105000 and
  x9 < = 140000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = large and
  x9 > 140000 and
  x9 < = 175000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = large and
  x9 > 175000 and
  x9 < = 210000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = large and
  x9 > 210000 and
  x9 < = 245000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = large and
  x9 > 245000 and
  x9 < = 280000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = large and
  x9 > 280000 and
  x9 < = 315000 Then lineto 452,45
    march_bud = found;
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```
Rule march_bud_11

If axis_size = large and
  x9 > 315000 and
  x9 < = 350000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = large and
  x9 > 350000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;
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```
Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
  x10 > 350000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = large and
  x11 > 0 and
  x11 < = 35000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = large and
  x11 > 35000 and
  x11 < = 70000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = large and
  x11 > 70000 and
  x11 < = 105000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = large and
  x11 > 105000 and
  x11 < = 140000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = large and
  x11 > 140000 and
  x11 < = 175000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = large and
  x11 > 175000 and
  x11 < = 210000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = large and
  x11 > 210000 and
  x11 < = 245000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = large and
  x11 > 245000 and
  x11 < = 280000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = large and
  x11 > 280000 and
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  x11 < = 315000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = large and
  x11 > 315000 and
  x11 < = 350000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = large and
  x11 > 350000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = large and
  x12 > 0 and
  x12 < = 35000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = large and
  x12 > 35000 and
  x12 < = 70000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = large and
  x12 > 70000 and
  x12 < = 105000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = large and
  x12 > 105000 and
  x12 < = 140000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = large and
  x12 > 140000 and
  x12 < = 175000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = large and
  x12 > 175000 and
  x12 < = 210000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = large and
  x12 > 210000 and
  x12 < = 245000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
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  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
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    july_act = found;

Rule july_act If    a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  a2 > 0 and
  a2 < = 35000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
  a3 > 35000 and
  a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
  a3 > 70000 and
  a3 < = 105000 Then lineto 163,139
    sept_act = found;
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Rule sept_act_5 If axis_size = large and
  a3 > 105000 and
  a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
  a3 > 140000 and
  a3 < = 175000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = large and
  a3 > 175000 and
  a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
  a3 > 210000 and
  a3 < = 245000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = large and
  a3 > 245000 and
  a3 < = 280000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = large and
  a3 > 280000 and
  a3 < = 315000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = large and
  a3 > 315000 and
  a3 < = 350000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = large and
  a3 > 350000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = large and
  a4 > 0 and
  a4 < = 35000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = large and
  a4 > 35000 and
  a4 < = 70000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = large and
  a4 > 70000 and
  a4 < = 105000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
    oct_act = found;
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Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = large and
  a4 > 175000 and
  a4 < = 210000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = large and
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
  a5 < = 105000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
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    nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = large and
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
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  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = large and
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```
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5
```

```
If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5
```

```
If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = large and
  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;
```

```
Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
  a10 < = 175000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
  a10 < = 210000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  a11 > 70000 and
  a11 < = 105000 Then lineto 549,139
    may_act = found    ;
```

```
Rule may_act_5

If axis_size = large and
  a11 > 105000 and
  a11 < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
  a11 > 140000 and
  a11 < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
  a11 > 175000 and
  a11 < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = large and
  a11 > 210000 and
  a11 < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
  a11 > 245000 and
  a11 < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
  a11 > 280000 and
  a11 < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
  a11 > 315000 and
  a11 < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
  a11 > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
  a12 > 0 and
  a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
  a12 > 35000 and
  a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
  a12 > 70000 and
  a12 < = 105000 Then lineto 597,139
```

```
    june_act = found    ;

Rule june_act_5

If axis_size = large and
  a12 > 105000 and
  a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = large and
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";

Rule turn_around_personal_array
```

```
If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x+1)
      y = (y - 1)
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
      x = (x+1)
      y = (y - 1)
    end


!display "exp_personal_c[1] = (exp_personal_c[1])"

!display "new_personal_c[1] = (new_personal_c[1]) ¬ " ;

!statements block

!bkcolor = 1;

!button exitbutton1: 10,2,14,14,exit; !button exitbutton2: 10,2,14,14,exit; !button exitbutton3: 10,2,14,14,exit; !button exitbutton4:
10,2,14,14,exit; !button exitbutton5: 10,2,14,14,exit; !button exitbutton6: 10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_contin_c[z] = unknown_dummy
    new_uniforms_c[z] = unknown_dummy
    new_total_c[z] = unknown_dummy


!display "z = {z}¬" !display "new_contin_c[z] = {new_contin_c[z]}" !display "new_uniforms_c[z] = {new_uniforms_c[z]}" !display
"new_total_c[z] = {new_total_c[z]}¬"
    z = (z + 1) end

find do_contin find do_uniforms find do_total_costs

;

! Rule Block

Rule begin_contin_display

If do_contin = unknown

Then do_contin = found

    x1 = (exp_contin_c[1]) !display "exp_contin_c[1] = {exp_contin_c[1]}" !display "x1 = {x1}¬"

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Continuous Charges"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 11
    moveto 30,180
    x1 = (exp_contin_c[1])
    find july_bud
```

```
reset july_bud
x2 = (exp_contin_c[2])
find aug_bud
reset aug_bud
x3 = (exp_contin_c[3])
find sept_bud
reset sept_bud
x4 = (exp_contin_c[4])
find oct_bud
reset oct_bud
x5 = (exp_contin_c[5])
find nov_bud
reset nov_bud
x6 = (exp_contin_c[6])
find dec_bud
reset dec_bud
x7 = (exp_contin_c[7])
find jan_bud
reset jan_bud
x8 = (exp_contin_c[8])
find feb_bud
reset feb_bud
x9 = (exp_contin_c[9])
find march_bud
reset march_bud
x10 = (exp_contin_c[10])
find april_bud
reset april_bud
x11 = (exp_contin_c[11])
find may_bud
reset may_bud
x12 = (exp_contin_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_contin_c[1])
find july_act
reset july_act
a2 = (new_contin_c[2])
find aug_act
reset aug_act
a3 = (new_contin_c[3])
find sept_act
reset sept_act
a4 = (new_contin_c[4])
find oct_act
reset oct_act
a5 = (new_contin_c[5])
find nov_act
reset nov_act
a6 = (new_contin_c[6])
find dec_act
reset dec_act
a7 = (new_contin_c[7])
find jan_act
reset jan_act
a8 = (new_contin_c[8])
find feb_act
reset feb_act
 a9 = (new_contin_c[9])
find march_act
reset march_act
a10 = (new_contin_c[10])
find april_act
reset april_act
a11 = (new_contin_c[11])
find may_act
reset may_act
a12 = (new_contin_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
```

```
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
    chain expgraph;

Rule begin_uniforms_display

If do_uniforms = unknown

Then do_uniforms = found

    x1 = (exp_uniforms_c[1]) !display "exp_uniforms_c[1] = (exp_uniforms_c[1])" !display "x1 = (x1) ¬"

    gmode 14
    exitbutton5 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 25,1
    gdisplay "Uniform Purchases"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"


    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
```

```
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_uniforms_c[1])
find july_bud
reset july_bud
x2 = (exp_uniforms_c[2])
find aug_bud
reset aug_bud
x3 = (exp_uniforms_c[3])
find sept_bud
reset sept_bud
x4 = (exp_uniforms_c[4])
find oct_bud
reset oct_bud
x5 = (exp_uniforms_c[5])
find nov_bud
reset nov_bud
x6 = (exp_uniforms_c[6])
find dec_bud
reset dec_bud
x7 = (exp_uniforms_c[7])
find jan_bud
reset jan_bud
x8 = (exp_uniforms_c[8])
find feb_bud
reset feb_bud
x9 = (exp_uniforms_c[9])
find march_bud
reset march_bud
x10 = (exp_uniforms_c[10])
find april_bud
reset april_bud
x11 = (exp_uniforms_c[11])
find may_bud
reset may_bud
x12 = (exp_uniforms_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_uniforms_c[1])
find july_act
reset july_act
a2 = (new_uniforms_c[2])
find aug_act
reset aug_act
a3 = (new_uniforms_c[3])
find sept_act
reset sept_act
a4 = (new_uniforms_c[4])
find oct_act
reset oct_act
a5 = (new_uniforms_c[5])
find nov_act
reset nov_act
a6 = (new_uniforms_c[6])
find dec_act
reset dec_act
a7 = (new_uniforms_c[7])
find jan_act
reset jan_act
a8 = (new_uniforms_c[8])
find feb_act
reset feb_act
 a9 = (new_uniforms_c[9])
find march_act
```

```
    reset march_act
    a10 = (new_uniforms_c[10])
    find april_act
    reset april_act
    a11 = (new_uniforms_c[11])
    find may_act
    reset may_act
    a12 = (new_uniforms_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton5 = no then end

    reset axis_display
    tmode
    chain expgraph;


Rule begin_total_costs_display

If do_total_costs = unknown

Then do_total_costs = found

    x1 = (exp_total_c[1]) !display "exp_total_c[1] = {exp_total_c[1]}" !display "x1 = {x1}¬"

    gmode 14
    exitbutton6 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Total Expenses"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
```

```
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_c[1])
find july_bud
reset july_bud
x2 = (exp_total_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_c[9])
find march_bud
reset march_bud
x10 = (exp_total_c[10])
find april_bud
reset april_bud
x11 = (exp_total_c[11])
find may_bud
reset may_bud
x12 = (exp_total_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_c[1])
find july_act
reset july_act
a2 = (new_total_c[2])
find aug_act
reset aug_act
a3 = (new_total_c[3])
find sept_act
reset sept_act
a4 = (new_total_c[4])
find oct_act
```

```
reset oct_act
a5 = (new_total_c[5])
find nov_act
reset nov_act
a6 = (new_total_c[6])
find dec_act
reset dec_act
a7 = (new_total_c[7])
find jan_act
reset jan_act
a8 = (new_total_c[8])
find feb_act
reset feb_act
 a9 = (new_total_c[9])
find march_act
reset march_act
a10 = (new_total_c[10])
find april_act
reset april_act
a11 = (new_total_c[11])
find may_act
reset may_act
a12 = (new_total_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton6 = no then end

reset axis_display
tmode
chain graph1;

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;
```

```
Rule oct_act_unknown_dummy
If a4 = unknown_dummy
Then oct_act = found;
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found; Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found; Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found; Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 < = 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 < = 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 70000 and
  x1 < = 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 < = 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
```

```
  x1 < = 210000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 < = 245000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 < = 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 < = 315000 Then lineto 114,45
```

```
    aug_bud = found;

Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 < = 350000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 < = 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 < = 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 < = 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 < = 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 < = 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 < = 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 < = 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 < = 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 < = 315000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 < = 350000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;
```

```
Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
  x4 > 350000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
```

```
    nov_bud = found;

Rule nov_bud_2

If axis_size = large and
   x5 > 0 and
   x5 < = 35000 Then lineto 260,172
     nov_bud = found;

Rule nov_bud_3

If axis_size = large and
   x5 > 35000 and
   x5 < = 70000 Then lineto 260,156
     nov_bud = found;

Rule nov_bud_4

If axis_size = large and
   x5 > 70000 and
   x5 < = 105000 Then lineto 260,140
     nov_bud = found;

Rule nov_bud_5

If axis_size = large and
   x5 > 105000 and
   x5 < = 140000 Then lineto 260,124
     nov_bud = found;

Rule nov_bud_6

If axis_size = large and
   x5 > 140000 and
   x5 < = 175000 Then lineto 260,108
     nov_bud = found;

Rule nov_bud_7

If axis_size = large and
   x5 > 175000 and
   x5 < = 210000 Then lineto 260,92
     nov_bud = found;

Rule nov_bud_8

If axis_size = large and
   x5 > 210000 and
   x5 < = 245000 Then lineto 260,77
     nov_bud = found;

Rule nov_bud_9

If axis_size = large and
   x5 > 245000 and
   x5 < = 280000 Then lineto 260,62
     nov_bud = found;

Rule nov_bud_10

If axis_size = large and
   x5 > 280000 and
   x5 < = 315000 Then lineto 260,45
     nov_bud = found;

Rule nov_bud_11

If axis_size = large and
   x5 > 315000 and
   x5 < = 350000 Then lineto 260,29
     nov_bud = found;

Rule nov_bud_12

If axis_size = large and
   x5 > 350000 Then lineto 260,20
     nov_bud = found;

Rule dec_bud_1
```

```
If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = large and
  x6 > 0 and
  x6 < = 35000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = large and
  x6 > 35000 and
  x6 < = 70000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = large and
  x6 > 70000 and
  x6 < = 105000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = large and
  x6 > 105000 and
  x6 < = 140000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = large and
  x6 > 140000 and
  x6 < = 175000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = large and
  x6 > 175000 and
  x6 < = 210000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = large and
  x6 > 210000 and
  x6 < = 245000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = large and
  x6 > 245000 and
  x6 < = 280000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = large and
  x6 > 280000 and
  x6 < = 315000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = large and
  x6 > 315000 and
  x6 < = 350000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = large and
  x6 > 350000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1
```

```
If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
  x7 > 0 and
  x7 < = 35000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = large and
  x7 > 35000 and
  x7 < = 70000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = large and
  x7 > 70000 and
  x7 < = 105000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = large and
  x7 > 105000 and
  x7 < = 140000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = large and
  x7 > 140000 and
  x7 < = 175000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = large and
  x7 > 175000 and
  x7 < = 210000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = large and
  x7 > 210000 and
  x7 < = 245000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = large and
  x7 > 245000 and
  x7 < = 280000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = large and
  x7 > 280000 and
  x7 < = 315000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = large and
  x7 > 315000 and
  x7 < = 350000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = large and
  x7 > 350000 Then lineto 357,20
    jan_bud = found;
```

```
Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;
```

```
Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = large and
  x9 > 0 and
  x9 < = 35000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = large and
  x9 > 35000 and
  x9 < = 70000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = large and
  x9 > 70000 and
  x9 < = 105000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = large and
  x9 > 105000 and
  x9 < = 140000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = large and
  x9 > 140000 and
  x9 < = 175000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = large and
  x9 > 175000 and
  x9 < = 210000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = large and
  x9 > 210000 and
  x9 < = 245000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = large and
  x9 > 245000 and
  x9 < = 280000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = large and
  x9 > 280000 and
  x9 < = 315000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = large and
  x9 > 315000 and
  x9 < = 350000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = large and
  x9 > 350000 Then lineto 452,20
```

```
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
```

```
   x10 > 350000 Then lineto 501,20
     april_bud = found
     reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
     may_bud = found;

Rule may_bud_2

If axis_size = large and
   x11 > 0 and
   x11 < = 35000 Then lineto 549,172
     may_bud = found;

Rule may_bud_3

If axis_size = large and
   x11 > 35000 and
   x11 < = 70000 Then lineto 549,156
     may_bud = found;

Rule may_bud_4

If axis_size = large and
   x11 > 70000 and
   x11 < = 105000 Then lineto 549,140
     may_bud = found;

Rule may_bud_5

If axis_size = large and
   x11 > 105000 and
   x11 < = 140000 Then lineto 549,124
     may_bud = found;

Rule may_bud_6

If axis_size = large and
   x11 > 140000 and
   x11 < = 175000 Then lineto 549,108
     may_bud = found;

Rule may_bud_7

If axis_size = large and
   x11 > 175000 and
   x11 < = 210000 Then lineto 549,92
     may_bud = found;

Rule may_bud_8

If axis_size = large and
   x11 > 210000 and
   x11 < = 245000 Then lineto 549,77
     may_bud = found;

Rule may_bud_9

If axis_size = large and
   x11 > 245000 and
   x11 < = 280000 Then lineto 549,62
     may_bud = found;

Rule may_bud_10

If axis_size = large and
   x11 > 280000 and
   x11 < = 315000 Then lineto 549,45
     may_bud = found;

Rule may_bud_11

If axis_size = large and
   x11 > 315000 and
   x11 < = 350000 Then lineto 549,29
     may_bud = found;

Rule may_bud_12
```

```
If axis_size = large and
  x11 > 350000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = large and
  x12 > 0 and
  x12 < = 35000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = large and
  x12 > 35000 and
  x12 < = 70000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = large and
  x12 > 70000 and
  x12 < = 105000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = large and
  x12 > 105000 and
  x12 < = 140000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = large and
  x12 > 140000 and
  x12 < = 175000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = large and
  x12 > 175000 and
  x12 < = 210000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = large and
  x12 > 210000 and
  x12 < = 245000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;
```

```
Rule june_bud_12

If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  a2 > 0 and
```

```
  a2 < = 35000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
  a3 > 35000 and
  a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
  a3 > 70000 and
  a3 < = 105000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = large and
  a3 > 105000 and
  a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
  a3 > 140000 and
  a3 < = 175000 Then lineto 163,107
    sept_act = found;
```

```
Rule sept_act_7 If axis_size = large and
  a3 > 175000 and
  a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
  a3 > 210000 and
  a3 < = 245000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = large and
  a3 > 245000 and
  a3 < = 280000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = large and
  a3 > 280000 and
  a3 < = 315000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = large and
  a3 > 315000 and
  a3 < = 350000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = large and
  a3 > 350000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = large and
  a4 > 0 and
  a4 < = 35000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = large and
  a4 > 35000 and
  a4 < = 70000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = large and
  a4 > 70000 and
  a4 < = 105000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = large and
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```
  a4 > 175000 and
  a4 < = 210000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = large and
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
  a5 < = 105000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7
```

```
If axis_size = large and
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7
```

```
If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = large and
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
    jan_act = found;
```

```
Rule jan_act_7

If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;
```

```
Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
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```
    march_act = found    ;

Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = large and
  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
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```
  a10 < = 175000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
  a10 < = 210000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  a11 > 70000 and
  a11 < = 105000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = large and
  a11 > 105000 and
  a11 < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
```

```
  a11 > 140000 and
  a11 < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
  a11 > 175000 and
  a11 < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = large and
  a11 > 210000 and
  a11 < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
  a11 > 245000 and
  a11 < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
  a11 > 280000 and
  a11 < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
  a11 > 315000 and
  a11 < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
  a11 > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
  a12 > 0 and
  a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
  a12 > 35000 and
  a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
  a12 > 70000 and
  a12 < = 105000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = large and
  a12 > 105000 and
  a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6
```

```
If axis_size = large and
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";

Rule turn_around_personal_array

If turn_personal = unknown

Then turn_personal = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_personal_c[x] = (exp_personal[y])
      x = (x + 1)
      y = (y - 1)
```

```
    end

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then
      new_personal_c[x] = (new_personal[y])
      x = (x + 1)
      y = (y - 1)
    end


!display "exp_personal_c[1] = {exp_personal_c[1]}"

!display "new_personal_c[1] = {new_personal_c[1]} ¬" ;

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit; lbutton exitbutton5: 10,2,14,14,exit; lbutton exitbutton6: 10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded and a decision made regarding
which knowledge base to enter" display "next. You will be instructed when to continue." display " " loadfacts tempdata find beg_display
find turn_around_arrays x = (exp_corps_rev_c[12]) find corps_display x = (exp_public_rev_c[12]) find public_display x =
(exp_s_f_s_rev_c[12]) find s_f_s_display x = (exp_interdept_rev_c[12]) find interdept_display x = (exp_music_rev_c[12]) find
music_display x = (exp_state_rev_c[12]) find state_display x = (exp_total_rev_c[12]) find total_display



;

! Rules Block


Rule show_beginning_display

If beg_display = unknown

Then beg_display = found
    display "
    display "Press any key to continue.¬"
    cls
    color = 11
    locate 2,20 display "BUDGET VERSUS ACTUAL REVENUE GRAPHS" locate 5,6 display "The following series of line graphs
each display 2 lines. The first" display "line represents the accumulated amount of each revenue for each month," display "given the budget.
This is shown for the entire year. The second line" display "represents the actual amount of accumulated revenue to date. There is a"
display "graph for each of the following revenue categories:" locate 11,25 display "Corps of Cadets," locate 12,25 display "Public," locate
13,25 display "Students/Faculty/Staff," locate 14,25 display "Interdepartmental," locate 15,25 display "Music Department," locate 16,25
display "State Related, and" locate 17,25 display "Total revenue" locate 20,25 display "Press any key to continue¬";



Rule begin_corps_display

If corps_display = unknown and
  x < = 10000 Then corps_display = found
    savefacts tempdata
    chain smaxrev1;

Rule begin_corps_display

If corps_display = unknown and
  x > 10000 and
  x < = 200000 Then corps_display = found
    savefacts tempdata
    chain mdaxrev1;

Rule begin_corps_display

If corps_display = unknown and
  x > 200000 Then corps_display = found
    savefacts tempdata
    chain lgaxrev1;


Rule begin_public_display

If public_display = unknown and
  x < = 10000 Then public_display = found
    do_corps_rev = found
    savefacts tempdata
    chain smaxrev1;

Rule begin_public_display

If public_display = unknown and
  x > 10000 and
  x < = 200000 Then public_display = found
    do_corps_rev = found
    savefacts tempdata
    chain mdaxrev1;

Rule begin_public_display
```

```
If public_display = unknown and
  x > 200000 Then public_display = found
    do_corps_rev = found
    savefacts tempdata
    chain lgaxrev1;

Rule begin_s_f_s_display

If s_f_s_display = unknown and
  x < = 10000 Then s_f_s_display = found
    do_public_rev = found
    savefacts tempdata
    chain smaxrev1;

Rule begin_s_f_s_display

If s_f_s_display = unknown and
  x > 10000 and
  x < = 200000 Then s_f_s_display = found
    do_public_rev = found
    savefacts tempdata
    chain mdaxrev1;

Rule begin_s_f_s_display

If s_f_s_display = unknown and
  x > 200000 Then s_f_s_display = found
    do_public_rev = found
    savefacts tempdata
    chain lgaxrev1;

Rule begin_interdept_display

If interdept_display = unknown and
  x < = 10000 Then interdept_display = found
    do_s_f_s_rev = found
    savefacts tempdata
    chain smaxrev1;

Rule begin_interdept_display

If interdept_display = unknown and
  x > 10000 and
  x < = 200000 Then interdept_display = found
    do_s_f_s_rev = found
    savefacts tempdata
    chain mdaxrev1;

Rule begin_interdept_display

If interdept_display = unknown and
  x > 200000 Then interdept_display = found
    do_s_f_s_rev = found
    savefacts tempdata
    chain lgaxrev1;

Rule begin_music_display

If music_display = unknown and
  x < = 10000 Then music_display = found
    do_interdept_rev = found
    savefacts tempdata
    chain smaxrev2;

Rule begin_music_display

If music_display = unknown and
  x > 10000 and
  x < = 200000 Then music_display = found
    do_interdept_rev = found
    savefacts tempdata
    chain mdaxrev2;

Rule begin_music_display

If music_display = unknown and
  x > 200000 Then music_display = found
    do_interdept_rev = found
    savefacts tempdata
    chain lgaxrev2;
```

```
Rule begin_state_display

If state_display = unknown and
  x < = 10000 Then state_display = found
    do_music_rev = found
    savefacts tempdata
    chain smaxrev2;

Rule begin_state_display

If state_display = unknown and
  x > 10000 and
  x < = 200000 Then state_display = found
    do_music_rev = found
    savefacts tempdata
    chain mdaxrev2;

Rule begin_state_display

If state_display = unknown and
  x > 200000 Then state_display = found
    do_music_rev = found
    savefacts tempdata
    chain lgaxrev2;

Rule begin_total_display

If total_display = unknown and
  x < = 10000 Then total_display = found
    do_state_rev = found
    savefacts tempdata
    chain smaxrev2;

Rule begin_total_display

If total_display = unknown and
  x > 10000 and
  x < = 200000 Then total_display = found
    do_state_rev = found
    savefacts tempdata
    chain mdaxrev2;

Rule begin_total_display

If total_display = unknown and
  x > 200000 Then total_display = found
    do_state_rev = found
    savefacts tempdata
    chain lgaxrev2;

Rule turn_around_arrays

If turn_around_arrays = unknown

Then turn_around_arrays = found

    x = 1
    y = 12
    whiletrue x < = 12 then
      exp_corps_rev_c[x] = (exp_corps_rev[y])
      exp_public_rev_c[x] = (exp_public_rev[y])
      exp_s_f_s_rev_c[x] = (exp_s_f_s_rev[y])
      exp_interdept_rev_c[x] = (exp_interdept_rev[y])
      exp_music_rev_c[x] = (exp_music_rev[y])
```

```
    exp_state_rev_c[x] = (exp_state_rev[y])
    exp_total_rev_c[x] = (exp_total_rev[y])
     x = (x + 1)
     y = (y - 1)
   end

   x = 1
   y = (count_it)
   z = (count_it)
   whiletrue x < = (z) then

    new_corps_rev_c[x] = (new_corps_rev[y])
    new_public_rev_c[x] = (new_public_rev[y])
    new_s_f_s_rev_c[x] = (new_s_f_s_rev[y])
    new_interdept_rev_c[x] = (new_interdept_rev[y])
    new_music_rev_c[x] = (new_music_rev[y])
    new_state_rev_c[x] = (new_state_rev[y])
    new_total_revs_c[x] = (new_total_revs[y])
     x = (x + 1)
     y = (y - 1)
   end

;


!statements block

bkcolor = 1;

plural: exp_corps_rev_c, new_corps_rev_c; plural: exp_public_rev_c,new_public_rev_c; plural: exp_s_f_s_rev_c, new_s_f_s_rev_c; plural: exp_interdept_rev_c, new_interdept_rev_c; plural: exp_music_rev_c, new_music_rev_c; plural: exp_state_rev_c, new_state_rev_c; plural: exp_total_rev_c, new_total_rev_c;
```

```
runtime; execute;

actions

axis_size = small color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_corps_rev_c[z] = unknown_dummy
    new_public_rev_c[z] = unknown_dummy
    new_s_f_s_rev_c[z] = unknown_dummy
    new_interdept_rev_c[z] = unknown_dummy
    z = (z + 1) end


find do_corps_rev find do_public_rev find do_s_f_s_rev find do_interdept_rev ;

! Rules Block



Rule begin_corps_rev_display

If do_corps_rev = unknown

Then do_corps_rev = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_corps_rev_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_corps_rev_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_corps_rev_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_corps_rev_c[4])
    find oct_bud
    reset oct_bud
```

```
x5 = (exp_corps_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_corps_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_corps_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_corps_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_corps_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_corps_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_corps_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_corps_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_corps_rev_c[1])
find july_act
reset july_act
a2 = (new_corps_rev_c[2])
find aug_act
reset aug_act
a3 = (new_corps_rev_c[3])
find sept_act
reset sept_act
a4 = (new_corps_rev_c[4])
find oct_act
reset oct_act
a5 = (new_corps_rev_c[5])
find nov_act
reset nov_act
a6 = (new_corps_rev_c[6])
find dec_act
reset dec_act
a7 = (new_corps_rev_c[7])
find jan_act
reset jan_act
a8 = (new_corps_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_corps_rev_c[9])
find march_act
reset march_act
a10 = (new_corps_rev_c[10])
find april_act
reset april_act
a11 = (new_corps_rev_c[11])
find may_act
reset may_act
a12 = (new_corps_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
```

```
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 28,1
    gdisplay "Corps Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain revgraph;


Rule begin_public_rev_display

If do_public_rev = unknown

Then do_public_rev = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Public Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
```

```
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_public_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_public_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_public_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_public_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_public_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_public_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_public_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_public_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_public_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_public_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_public_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_public_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_public_rev_c[1])
find july_act
reset july_act
a2 = (new_public_rev_c[2])
find aug_act
reset aug_act
a3 = (new_public_rev_c[3])
find sept_act
reset sept_act
a4 = (new_public_rev_c[4])
find oct_act
reset oct_act
a5 = (new_public_rev_c[5])
find nov_act
reset nov_act
a6 = (new_public_rev_c[6])
find dec_act
reset dec_act
a7 = (new_public_rev_c[7])
find jan_act
reset jan_act
a8 = (new_public_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_public_rev_c[9])
find march_act
reset march_act
a10 = (new_public_rev_c[10])
find april_act
reset april_act
a11 = (new_public_rev_c[11])
```

```
    find may_act
    reset may_act
    a12 = (new_public_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain revgraph;



Rule begin_s_f_s_rev_display

If do_s_f_s_rev = unknown

Then do_s_f_s_rev = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 23,1
    gdisplay "Student/Faculty/Staff"
    glocate 30,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
```

```
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_f_s_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_s_f_s_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_s_f_s_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_f_s_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_f_s_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_f_s_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_f_s_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_f_s_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_f_s_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_s_f_s_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_s_f_s_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_s_f_s_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_f_s_rev_c[1])
find july_act
reset july_act
a2 = (new_s_f_s_rev_c[2])
find aug_act
reset aug_act
a3 = (new_s_f_s_rev_c[3])
find sept_act
reset sept_act
a4 = (new_s_f_s_rev_c[4])
find oct_act
reset oct_act
a5 = (new_s_f_s_rev_c[5])
find nov_act
```

```
reset nov_act
a6 = (new_s_f_s_rev_c[6])
find dec_act
reset dec_act
a7 = (new_s_f_s_rev_c[7])
find jan_act
reset jan_act
a8 = (new_s_f_s_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_s_f_s_rev_c[9])
find march_act
reset march_act
a10 = (new_s_f_s_rev_c[10])
find april_act
reset april_act
a11 = (new_s_f_s_rev_c[11])
find may_act
reset may_act
a12 = (new_s_f_s_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain revgraph;
```

Rule begin_interdept_rev_display

If do_interdept_rev = unknown

Then do_interdept_rev = found

```
gmode 14
exitbutton4 = no
moveto 30,5
lineto 30,180
lineto 600,180
```

```
glocate 24,1
gdisplay "Interdepartmental"
glocate 29,2
gdisplay "Revenue"
glocate 8,5
gdisplay "Green - Actual"
glocate 8,6
gdisplay "Blue - Budget"

glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_interdept_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_interdept_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_interdept_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_interdept_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_interdept_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_interdept_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_interdept_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_interdept_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_interdept_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_interdept_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_interdept_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_interdept_rev_c[12])
find june_bud
reset june_bud
```

```
gcolor 10
moveto 30,180

a1 = (new_interdept_rev_c[1])
find july_act
reset july_act
a2 = (new_interdept_rev_c[2])
find aug_act
reset aug_act
a3 = (new_interdept_rev_c[3])
find sept_act
reset sept_act
a4 = (new_interdept_rev_c[4])
find oct_act
reset oct_act
a5 = (new_interdept_rev_c[5])
find nov_act
reset nov_act
a6 = (new_interdept_rev_c[6])
find dec_act
reset dec_act
a7 = (new_interdept_rev_c[7])
find jan_act
reset jan_act
a8 = (new_interdept_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_interdept_rev_c[9])
find march_act
reset march_act
a10 = (new_interdept_rev_c[10])
find april_act
reset april_act
a11 = (new_interdept_rev_c[11])
find may_act
reset may_act
a12 = (new_interdept_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton4 = no then end

reset axis_display
```

```
   tmode
   chain revgraph;


Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found;

Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found;

Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found;

Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 0 and
  x1 < = 1000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 1000 and
  x1 < = 2000 Then locate 30,180
    lineto 69,156
```

```
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 2000 and
  x1 < = 3000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 3000 and
  x1 < = 4000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 4000 and
  x1 < = 5000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 5000 and
  x1 < = 6000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 6000 and
  x1 < = 7000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 7000 and
  x1 < = 8000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 8000 and
  x1 < = 9000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 9000 and
  x1 < = 10000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 10000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = small and
  x2 > 0 and
  x2 < = 1000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = small and
  x2 > 1000 and
  x2 < = 2000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = small and
  x2 > 2000 and
  x2 < = 3000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = small and
  x2 > 3000 and
  x2 < = 4000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = small and
  x2 > 4000 and
```

```
  x2 < = 5000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = small and
  x2 > 5000 and
  x2 < = 6000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = small and
  x2 > 6000 and
  x2 < = 7000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = small and
  x2 > 7000 and
  x2 < = 8000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = small and
  x2 > 8000 and
  x2 < = 9000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = small and
  x2 > 9000 and
  x2 < = 10000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = small and
  x2 > 10000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = small and
  x3 > 0 and
  x3 < = 1000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = small and
  x3 > 1000 and
  x3 < = 2000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = small and
  x3 > 2000 and
  x3 < = 3000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = small and
  x3 > 3000 and
  x3 < = 4000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = small and
  x3 > 4000 and
  x3 < = 5000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = small and
  x3 > 5000 and
  x3 < = 6000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = small and
  x3 > 6000 and
  x3 < = 7000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = small and
  x3 > 7000 and
  x3 < = 8000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10
```

```
If axis_size = small and
  x3 > 8000 and
  x3 < = 9000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = small and
  x3 > 9000 and
  x3 < = 10000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = small and
  x3 > 10000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = small and
  x4 > 0 and
  x4 < = 1000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = small and
  x4 > 1000 and
  x4 < = 2000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = small and
  x4 > 2000 and
  x4 < = 3000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = small and
  x4 > 3000 and
  x4 < = 4000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = small and
  x4 > 4000 and
  x4 < = 5000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = small and
  x4 > 5000 and
  x4 < = 6000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = small and
  x4 > 6000 and
  x4 < = 7000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = small and
  x4 > 7000 and
  x4 < = 8000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10
```

```
If axis_size = small and
   x4 > 8000 and
   x4 < = 9000 Then lineto 212,45
     oct_bud = found;

Rule oct_bud_11

If axis_size = small and
   x4 > 9000 and
   x4 < = 10000 Then lineto 212,29
     oct_bud = found;

Rule oct_bud_12

If axis_size = small and
   x4 > 10000 Then lineto 212,20
     oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
     nov_bud = found;

Rule nov_bud_2

If axis_size = small and
   x5 > 0 and
   x5 < = 1000 Then lineto 260,172
     nov_bud = found;

Rule nov_bud_3

If axis_size = small and
   x5 > 1000 and
   x5 < = 2000 Then lineto 260,156
     nov_bud = found;

Rule nov_bud_4

If axis_size = small and
   x5 > 2000 and
   x5 < = 3000 Then lineto 260,140
     nov_bud = found;

Rule nov_bud_5

If axis_size = small and
   x5 > 3000 and
   x5 < = 4000 Then lineto 260,124
     nov_bud = found;

Rule nov_bud_6

If axis_size = small and
   x5 > 4000 and
   x5 < = 5000 Then lineto 260,108
     nov_bud = found;

Rule nov_bud_7

If axis_size = small and
   x5 > 5000 and
   x5 < = 6000 Then lineto 260,92
     nov_bud = found;

Rule nov_bud_8

If axis_size = small and
   x5 > 6000 and
   x5 < = 7000 Then lineto 260,77
     nov_bud = found;

Rule nov_bud_9

If axis_size = small and
   x5 > 7000 and
   x5 < = 8000 Then lineto 260,62
     nov_bud = found;
```

```
Rule nov_bud_10

If axis_size = small and
  x5 > 8000 and
  x5 < = 9000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = small and
  x5 > 9000 and
  x5 < = 10000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = small and
  x5 > 10000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = small and
  x6 > 0 and
  x6 < = 1000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = small and
  x6 > 1000 and
  x6 < = 2000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = small and
  x6 > 2000 and
  x6 < = 3000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = small and
  x6 > 3000 and
  x6 < = 4000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = small and
  x6 > 4000 and
  x6 < = 5000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = small and
  x6 > 5000 and
  x6 < = 6000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = small and
  x6 > 6000 and
  x6 < = 7000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = small and
  x6 > 7000 and
  x6 < = 8000 Then lineto 308,62
    dec_bud = found;
```

```
Rule dec_bud_10

If axis_size = small and
  x6 > 8000 and
  x6 <= 9000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = small and
  x6 > 9000 and
  x6 <= 10000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = small and
  x6 > 10000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = small and
  x7 > 0 and
  x7 <= 1000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = small and
  x7 > 1000 and
  x7 <= 2000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = small and
  x7 > 2000 and
  x7 <= 3000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = small and
  x7 > 3000 and
  x7 <= 4000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = small and
  x7 > 4000 and
  x7 <= 5000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = small and
  x7 > 5000 and
  x7 <= 6000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = small and
  x7 > 6000 and
  x7 <= 7000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = small and
  x7 > 7000 and
  x7 <= 8000 Then lineto 357,62
```

```
    jan_bud = found;

Rule jan_bud_10

If axis_size = small and
  x7 > 8000 and
  x7 < = 9000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = small and
  x7 > 9000 and
  x7 < = 10000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = small and
  x7 > 10000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = small and
  x8 > 0 and
  x8 < = 1000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = small and
  x8 > 1000 and
  x8 < = 2000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = small and
  x8 > 2000 and
  x8 < = 3000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = small and
  x8 > 3000 and
  x8 < = 4000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = small and
  x8 > 4000 and
  x8 < = 5000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = small and
  x8 > 5000 and
  x8 < = 6000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = small and
  x8 > 6000 and
  x8 < = 7000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = small and
  x8 > 7000 and
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```
  x8 < = 8000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = small and
  x8 > 8000 and
  x8 < = 9000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = small and
  x8 > 9000 and
  x8 < = 10000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = small and
  x8 > 10000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = small and
  x9 > 0 and
  x9 < = 1000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = small and
  x9 > 1000 and
  x9 < = 2000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = small and
  x9 > 2000 and
  x9 < = 3000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = small and
  x9 > 3000 and
  x9 < = 4000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = small and
  x9 > 4000 and
  x9 < = 5000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = small and
  x9 > 5000 and
  x9 < = 6000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = small and
  x9 > 6000 and
  x9 < = 7000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = small and
```

```
  x9 > 7000 and
  x9 < = 8000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = small and
  x9 > 8000 and
  x9 < = 9000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = small and
  x9 > 9000 and
  x9 < = 10000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = small and
  x9 > 10000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = small and
  x10 > 0 and
  x10 < = 1000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = small and
  x10 > 1000 and
  x10 < = 2000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = small and
  x10 > 2000 and
  x10 < = 3000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = small and
  x10 > 3000 and
  x10 < = 4000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = small and
  x10 > 4000 and
  x10 < = 5000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = small and
  x10 > 5000 and
  x10 < = 6000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = small and
  x10 > 6000 and
  x10 < = 7000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9
```

```
If axis_size = small and
  x10 > 7000 and
  x10 < = 8000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = small and
  x10 > 8000 and
  x10 < = 9000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = small and
  x10 > 9000 and
  x10 < = 10000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = small and
  x10 > 10000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = small and
  x11 > 0 and
  x11 < = 1000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = small and
  x11 > 1000 and
  x11 < = 2000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = small and
  x11 > 2000 and
  x11 < = 3000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = small and
  x11 > 3000 and
  x11 < = 4000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = small and
  x11 > 4000 and
  x11 < = 5000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = small and
  x11 > 5000 and
  x11 < = 6000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = small and
  x11 > 6000 and
  x11 < = 7000 Then lineto 549,77
    may_bud = found;
```

```
Rule may_bud_9

If axis_size = small and
  x11 > 7000 and
  x11 < = 8000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = small and
  x11 > 8000 and
  x11 < = 9000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = small and
  x11 > 9000 and
  x11 < = 10000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = small and
  x11 > 10000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = small and
  x12 > 0 and
  x12 < = 1000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = small and
  x12 > 1000 and
  x12 < = 2000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = small and
  x12 > 2000 and
  x12 < = 3000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = small and
  x12 > 3000 and
  x12 < = 4000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = small and
  x12 > 4000 and
  x12 < = 5000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = small and
  x12 > 5000 and
  x12 < = 6000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = small and
  x12 > 6000 and
  x12 < = 7000 Then lineto 597,77
    june_bud = found;
```

```
Rule june_bud_9

If axis_size = small and
  x12 > 7000 and
  x12 < = 8000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = small and
  x12 > 8000 and
  x12 < = 9000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = small and
  x12 > 9000 and
  x12 < = 10000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = small and
  x12 > 10000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 0 and
  a1 < = 1000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 1000 and
  a1 < = 2000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 2000 and
  a1 < = 3000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 3000 and
  a1 < = 4000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 4000 and
  a1 < = 5000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 5000 and
  a1 < = 6000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 6000 and
  a1 < = 7000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 7000 and
  a1 < = 8000 Then locate 30,180
    lineto 69,62
    july_act = found;
```

```
Rule july_act If axis_size = small and
  a1 > 8000 and
  a1 < = 9000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 9000 and
  a1 < = 10000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 10000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = small and
  a2 > 0 and
  a2 < = 1000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = small and
  a2 > 1000 and
  a2 < = 2000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = small and
  a2 > 2000 and
  a2 < = 3000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = small and
  a2 > 3000 and
  a2 < = 4000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = small and
  a2 > 4000 and
  a2 < = 5000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = small and
  a2 > 5000 and
  a2 < = 6000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = small and
  a2 > 6000 and
  a2 < = 7000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = small and
  a2 > 7000 and
  a2 < = 8000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = small and
  a2 > 8000 and
  a2 < = 9000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = small and
  a2 > 9000 and
  a2 < = 10000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = small and
  a2 > 10000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = small and
  a3 > 0 and
  a3 < = 1000 Then lineto 163,171
```

```
    sept_act = found;

Rule sept_act_3 If axis_size = small and
  a3 > 1000 and
  a3 < = 2000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = small and
  a3 > 2000 and
  a3 < = 3000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = small and
  a3 > 3000 and
  a3 < = 4000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = small and
  a3 > 4000 and
  a3 < = 5000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = small and
  a3 > 5000 and
  a3 < = 6000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = small and
  a3 > 6000 and
  a3 < = 7000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = small and
  a3 > 7000 and
  a3 < = 8000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = small and
  a3 > 8000 and
  a3 < = 9000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = small and
  a3 > 9000 and
  a3 < = 10000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = small and
  a3 > 10000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = small and
  a4 > 0 and
  a4 < = 1000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = small and
  a4 > 1000 and
  a4 < = 2000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4
```

```
If axis_size = small and
  a4 > 2000 and
  a4 < = 3000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = small and
  a4 > 3000 and
  a4 < = 4000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = small and
  a4 > 4000 and
  a4 < = 5000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = small and
  a4 > 5000 and
  a4 < = 6000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = small and
  a4 > 6000 and
  a4 < = 7000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = small and
  a4 > 7000 and
  a4 < = 8000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = small and
  a4 > 8000 and
  a4 < = 9000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = small and
  a4 > 9000 and
  a4 < = 10000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = small and
  a4 > 10000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = small and
  a5 > 0 and
  a5 < = 1000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = small and
  a5 > 1000 and
  a5 < = 2000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4
```

```
If axis_size = small and
  a5 > 2000 and
  a5 < = 3000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = small and
  a5 > 3000 and
  a5 < = 4000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = small and
  a5 > 4000 and
  a5 < = 5000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = small and
  a5 > 5000 and
  a5 < = 6000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = small and
  a5 > 6000 and
  a5 < = 7000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = small and
  a5 > 7000 and
  a5 < = 8000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = small and
  a5 > 8000 and
  a5 < = 9000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = small and
  a5 > 9000 and
  a5 < = 10000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = small and
  a5 > 10000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = small and
  a6 > 0 and
  a6 < = 1000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = small and
  a6 > 1000 and
  a6 < = 2000 Then lineto 308,155
    dec_act = found;
```

```
Rule dec_act_4

If axis_size = small and
  a6 > 2000 and
  a6 < = 3000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = small and
  a6 > 3000 and
  a6 < = 4000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = small and
  a6 > 4000 and
  a6 < = 5000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = small and
  a6 > 5000 and
  a6 < = 6000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = small and
  a6 > 6000 and
  a6 < = 7000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = small and
  a6 > 7000 and
  a6 < = 8000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = small and
  a6 > 8000 and
  a6 < = 9000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = small and
  a6 > 9000 and
  a6 < = 10000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = small and
  a6 > 10000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = small and
  a7 > 0 and
  a7 < = 1000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = small and
  a7 > 1000 and
  a7 < = 2000 Then lineto 357,155
    jan_act = found;
```

```
Rule jan_act_4

If axis_size = small and
  a7 > 2000 and
  a7 < = 3000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = small and
  a7 > 3000 and
  a7 < = 4000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = small and
  a7 > 4000 and
  a7 < = 5000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = small and
  a7 > 5000 and
  a7 < = 6000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = small and
  a7 > 6000 and
  a7 < = 7000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = small and
  a7 > 7000 and
  a7 < = 8000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = small and
  a7 > 8000 and
  a7 < = 9000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = small and
  a7 > 9000 and
  a7 < = 10000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = small and
  a7 > 10000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = small and
  a8 > 0 and
  a8 < = 1000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = small and
  a8 > 1000 and
  a8 < = 2000 Then lineto 404,155
```

```
    feb_act = found    ;

Rule feb_act_4

If axis_size = small and
  a8 > 2000 and
  a8 < = 3000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = small and
  a8 > 3000 and
  a8 < = 4000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = small and
  a8 > 4000 and
  a8 < = 5000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = small and
  a8 > 5000 and
  a8 < = 6000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = small and
  a8 > 6000 and
  a8 < = 7000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = small and
  a8 > 7000 and
  a8 < = 8000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = small and
  a8 > 8000 and
  a8 < = 9000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = small and
  a8 > 9000 and
  a8 < = 10000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = small and
  a8 > 10000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = small and
  a9 > 0 and
  a9 < = 1000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = small and
  a9 > 1000 and
```

```
  a9 < = 2000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = small and
  a9 > 2000 and
  a9 < = 3000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = small and
  a9 > 3000 and
  a9 < = 4000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = small and
  a9 > 4000 and
  a9 < = 5000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = small and
  a9 > 5000 and
  a9 < = 6000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = small and
  a9 > 6000 and
  a9 < = 7000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = small and
  a9 > 7000 and
  a9 < = 8000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = small and
  a9 > 8000 and
  a9 < = 9000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = small and
  a9 > 9000 and
  a9 < = 10000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = small and
  a9 > 10000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = small and
  a10 > 0 and
  a10 < = 1000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = small and
```

```
  a10 > 1000 and
  a10 < = 2000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = small and
  a10 > 2000 and
  a10 < = 3000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = small and
  a10 > 3000 and
  a10 < = 4000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = small and
  a10 > 4000 and
  a10 < = 5000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = small and
  a10 > 5000 and
  a10 < = 6000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = small and
  a10 > 6000 and
  a10 < = 7000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = small and
  a10 > 7000 and
  a10 < = 8000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = small and
  a10 > 8000 and
  a10 < = 9000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = small and
  a10 > 9000 and
  a10 < = 10000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = small and
  a10 > 10000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = small and
  a11 > 0 and
  a11 < = 1000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3
```

```
If axis_size = small and
  all > 1000 and
  all < = 2000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = small and
  all > 2000 and
  all < = 3000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = small and
  all > 3000 and
  all < = 4000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = small and
  all > 4000 and
  all < = 5000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = small and
  all > 5000 and
  all < = 6000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = small and
  all > 6000 and
  all < = 7000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = small and
  all > 7000 and
  all < = 8000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = small and
  all > 8000 and
  all < = 9000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = small and
  all > 9000 and
  all < = 10000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = small and
  all > 10000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = small and
  a12 > 0 and
  a12 < = 1000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3
```

```
If axis_size = small and
  a12 > 1000 and
  a12 < = 2000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = small and
  a12 > 2000 and
  a12 < = 3000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = small and
  a12 > 3000 and
  a12 < = 4000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = small and
  a12 > 4000 and
  a12 < = 5000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = small and
  a12 > 5000 and
  a12 < = 6000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = small and
  a12 > 6000 and
  a12 < = 7000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = small and
  a12 > 7000 and
  a12 < = 8000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = small and
  a12 > 8000 and
  a12 < = 9000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = small and
  a12 > 9000 and
  a12 < = 10000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = small and
  a12 > 10000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_small

If axis_display = unknown

Then axis_display = found
    glocate 2,3
```

```
    gdisplay "10"
    glocate 3,7
    gdisplay "8"
    glocate 3,11
    gdisplay "6"
    glocate 3,15
    gdisplay "4"
    glocate 3,19
    gdisplay "2";

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4: 10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = small color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_music_rev_c[z] = unknown_dummy
    new_state_rev_c[z] = unknown_dummy
    new_total_revs_c[z] = unknown_dummy
    z = (z + 1) end


find do_music_rev find do_state_rev find do_total_rev ;

! Rules Block


Rule begin_music_rev_display

If do_music_rev = unknown

Then do_music_rev = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_music_rev_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_music_rev_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_music_rev_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_music_rev_c[4])
    find oct_bud
    reset oct_bud
    x5 = (exp_music_rev_c[5])
    find nov_bud
    reset nov_bud
```

```
x6 = (exp_music_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_music_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_music_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_music_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_music_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_music_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_music_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_music_rev_c[1])
find july_act
reset july_act
a2 = (new_music_rev_c[2])
find aug_act
reset aug_act
a3 = (new_music_rev_c[3])
find sept_act
reset sept_act
a4 = (new_music_rev_c[4])
find oct_act
reset oct_act
a5 = (new_music_rev_c[5])
find nov_act
reset nov_act.
a6 = (new_music_rev_c[6])
find dec_act
reset dec_act
a7 = (new_music_rev_c[7])
find jan_act
reset jan_act
a8 = (new_music_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_music_rev_c[9])
find march_act
reset march_act
a10 = (new_music_rev_c[10])
find april_act
reset april_act
a11 = (new_music_rev_c[11])
find may_act
reset may_act
a12 = (new_music_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
```

```
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 27,1
    gdisplay "Music Department"
    glocate 30,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain revgraph;


Rule begin_state_rev_display

If do_state_rev = unknown

Then do_state_rev = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "State Related"
    glocate 29,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
```

```
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_state_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_state_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_state_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_state_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_state_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_state_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_state_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_state_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_state_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_state_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_state_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_state_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_state_rev_c[1])
find july_act
reset july_act
a2 = (new_state_rev_c[2])
find aug_act
reset aug_act
a3 = (new_state_rev_c[3])
find sept_act
reset sept_act
a4 = (new_state_rev_c[4])
find oct_act
reset oct_act
a5 = (new_state_rev_c[5])
find nov_act
reset nov_act
a6 = (new_state_rev_c[6])
find dec_act
reset dec_act
a7 = (new_state_rev_c[7])
find jan_act
reset jan_act
a8 = (new_state_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_state_rev_c[9])
find march_act
reset march_act
a10 = (new_state_rev_c[10])
find april_act
reset april_act
a11 = (new_state_rev_c[11])
```

```
    find may_act
    reset may_act
    a12 = (new_state_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain revgraph;


Rule begin_total_rev_display

If do_total_rev = unknown

Then do_total_rev = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 30,1
    gdisplay "Total Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
```

```
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_total_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_total_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_total_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_total_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_revs_c[1])
find july_act
reset july_act
a2 = (new_total_revs_c[2])
find aug_act
reset aug_act
a3 = (new_total_revs_c[3])
find sept_act
reset sept_act
a4 = (new_total_revs_c[4])
find oct_act
reset oct_act
a5 = (new_total_revs_c[5])
find nov_act
reset nov_act
a6 = (new_total_revs_c[6])
```

```
find dec_act
reset dec_act
a7 = (new_total_revs_c[7])
find jan_act
reset jan_act
a8 = (new_total_revs_c[8])
find feb_act
reset feb_act
 a9 = (new_total_revs_c[9])
find march_act
reset march_act
a10 = (new_total_revs_c[10])
find april_act
reset april_act
a11 = (new_total_revs_c[11])
find may_act
reset may_act
a12 = (new_total_revs_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain graph1;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

```
Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found;

Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found;

Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found;

Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 0 and
  x1 < = 1000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 1000 and
  x1 < = 2000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 2000 and
  x1 < = 3000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 3000 and
  x1 < = 4000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 4000 and
  x1 < = 5000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = small and
```

```
  .
  x1 > 5000 and
  x1 < = 6000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 6000 and
  x1 < = 7000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 7000 and
  x1 < = 8000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 8000 and
  x1 < = 9000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 9000 and
  x1 < = 10000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 10000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = small and
  x2 > 0 and
  x2 < = 1000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = small and
  x2 > 1000 and
  x2 < = 2000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = small and
  x2 > 2000 and
  x2 < = 3000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = small and
  x2 > 3000 and
  x2 < = 4000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = small and
  x2 > 4000 and
  x2 < = 5000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = small and
  x2 > 5000 and
  x2 < = 6000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = small and
  x2 > 6000 and
  x2 < = 7000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = small and
  x2 > 7000 and
  x2 < = 8000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = small and
  x2 > 8000 and
```

```
  x2 < = 9000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = small and
  x2 > 9000 and
  x2 < = 10000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = small and
  x2 > 10000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = small and
  x3 > 0 and
  x3 < = 1000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = small and
  x3 > 1000 and
  x3 < = 2000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = small and
  x3 > 2000 and
  x3 < = 3000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = small and
  x3 > 3000 and
  x3 < = 4000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = small and
  x3 > 4000 and
  x3 < = 5000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = small and
  x3 > 5000 and
  x3 < = 6000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = small and
  x3 > 6000 and
  x3 < = 7000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = small and
  x3 > 7000 and
  x3 < = 8000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = small and
  x3 > 8000 and
  x3 < = 9000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = small and
  x3 > 9000 and
  x3 < = 10000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = small and
  x3 > 10000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
```

```
    oct_bud = found;

Rule oct_bud_2

If axis_size = small and
  x4 > 0 and
  x4 < = 1000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = small and
  x4 > 1000 and
  x4 < = 2000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = small and
  x4 > 2000 and
  x4 < = 3000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = small and
  x4 > 3000 and
  x4 < = 4000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = small and
  x4 > 4000 and
  x4 < = 5000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = small and
  x4 > 5000 and
  x4 < = 6000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = small and
  x4 > 6000 and
  x4 < = 7000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = small and
  x4 > 7000 and
  x4 < = 8000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = small and
  x4 > 8000 and
  x4 < = 9000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = small and
  x4 > 9000 and
  x4 < = 10000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = small and
  x4 > 10000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1
```

```
If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = small and
  x5 > 0 and
  x5 < = 1000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = small and
  x5 > 1000 and
  x5 < = 2000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = small and
  x5 > 2000 and
  x5 < = 3000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = small and
  x5 > 3000 and
  x5 < = 4000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = small and
  x5 > 4000 and
  x5 < = 5000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = small and
  x5 > 5000 and
  x5 < = 6000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = small and
  x5 > 6000 and
  x5 < = 7000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = small and
  x5 > 7000 and
  x5 < = 8000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = small and
  x5 > 8000 and
  x5 < = 9000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = small and
  x5 > 9000 and
  x5 < = 10000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = small and
  x5 > 10000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1
```

```
If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = small and
  x6 > 0 and
  x6 < = 1000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = small and
  x6 > 1000 and
  x6 < = 2000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = small and
  x6 > 2000 and
  x6 < = 3000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = small and
  x6 > 3000 and
  x6 < = 4000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = small and
  x6 > 4000 and
  x6 < = 5000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = small and
  x6 > 5000 and
  x6 < = 6000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = small and
  x6 > 6000 and
  x6 < = 7000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = small and
  x6 > 7000 and
  x6 < = 8000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = small and
  x6 > 8000 and
  x6 < = 9000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = small and
  x6 > 9000 and
  x6 < = 10000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = small and
  x6 > 10000 Then lineto 308,20
    dec_bud = found;
```

```
Rule jan_bud_1

If x7 =. 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = small and
  x7 > 0 and
  x7 < = 1000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = small and
  x7 > 1000 and
  x7 < = 2000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = small and
  x7 > 2000 and
  x7 < = 3000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = small and
  x7 > 3000 and
  x7 < = 4000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = small and
  x7 > 4000 and
  x7 < = 5000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = small and
  x7 > 5000 and
  x7 < = 6000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = small and
  x7 > 6000 and
  x7 < = 7000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = small and
  x7 > 7000 and
  x7 < = 8000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = small and
  x7 > 8000 and
  x7 < = 9000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = small and
  x7 > 9000 and
  x7 < = 10000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = small and
  x7 > 10000 Then lineto 357,20
    jan_bud = found;
```

```
Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = small and
  x8 > 0 and
  x8 < = 1000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = small and
  x8 > 1000 and
  x8 < = 2000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = small and
  x8 > 2000 and
  x8 < = 3000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = small and
  x8 > 3000 and
  x8 < = 4000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = small and
  x8 > 4000 and
  x8 < = 5000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = small and
  x8 > 5000 and
  x8 < = 6000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = small and
  x8 > 6000 and
  x8 < = 7000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = small and
  x8 > 7000 and
  x8 < = 8000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = small and
  x8 > 8000 and
  x8 < = 9000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = small and
  x8 > 9000 and
  x8 < = 10000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = small and
  x8 > 10000 Then lineto 404,20
```

```
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = small and
  x9 > 0 and
  x9 < = 1000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = small and
  x9 > 1000 and
  x9 < = 2000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = small and
  x9 > 2000 and
  x9 < = 3000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = small and
  x9 > 3000 and
  x9 < = 4000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = small and
  x9 > 4000 and
  x9 < = 5000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = small and
  x9 > 5000 and
  x9 < = 6000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = small and
  x9 > 6000 and
  x9 < = 7000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = small and
  x9 > 7000 and
  x9 < = 8000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = small and
  x9 > 8000 and
  x9 < = 9000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = small and
  x9 > 9000 and
  x9 < = 10000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = small and
```

```
  x9 > 10000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = small and
  x10 > 0 and
  x10 < = 1000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = small and
  x10 > 1000 and
  x10 < = 2000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = small and
  x10 > 2000 and
  x10 < = 3000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = small and
  x10 > 3000 and
  x10 < = 4000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = small and
  x10 > 4000 and
  x10 < = 5000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = small and
  x10 > 5000 and
  x10 < = 6000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = small and
  x10 > 6000 and
  x10 < = 7000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = small and
  x10 > 7000 and
  x10 < = 8000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = small and
  x10 > 8000 and
  x10 < = 9000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = small and
  x10 > 9000 and
  x10 < = 10000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12
```

```
If axis_size = small and
  x10 > 10000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = small and
  x11 > 0 and
  x11 < = 1000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = small and
  x11 > 1000 and
  x11 < = 2000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = small and
  x11 > 2000 and
  x11 < = 3000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = small and
  x11 > 3000 and
  x11 < = 4000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = small and
  x11 > 4000 and
  x11 < = 5000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = small and
  x11 > 5000 and
  x11 < = 6000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = small and
  x11 > 6000 and
  x11 < = 7000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = small and
  x11 > 7000 and
  x11 < = 8000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = small and
  x11 > 8000 and
  x11 < = 9000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = small and
  x11 > 9000 and
  x11 < = 10000 Then lineto 549,29
    may_bud = found;
```

```
Rule may_bud_12

If axis_size = small and
  x11 > 10000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = small and
  x12 > 0 and
  x12 <= 1000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = small and
  x12 > 1000 and
  x12 <= 2000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = small and
  x12 > 2000 and
  x12 <= 3000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = small and
  x12 > 3000 and
  x12 <= 4000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = small and
  x12 > 4000 and
  x12 <= 5000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = small and
  x12 > 5000 and
  x12 <= 6000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = small and
  x12 > 6000 and
  x12 <= 7000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = small and
  x12 > 7000 and
  x12 <= 8000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = small and
  x12 > 8000 and
  x12 <= 9000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = small and
  x12 > 9000 and
  x12 <= 10000 Then lineto 597,29
    june_bud = found;
```

```
Rule june_bud_12

If axis_size = small and
  x12 > 10000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 0 and
  a1 < = 1000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 1000 and
  a1 < = 2000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 2000 and
  a1 < = 3000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 3000 and
  a1 < = 4000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 4000 and
  a1 < = 5000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 5000 and
  a1 < = 6000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 6000 and
  a1 < = 7000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 7000 and
  a1 < = 8000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 8000 and
  a1 < = 9000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 9000 and
  a1 < = 10000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 10000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = small and
```

```
  a2 > 0 and
  a2 < = 1000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = small and
  a2 > 1000 and
  a2 < = 2000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = small and
  a2 > 2000 and
  a2 < = 3000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = small and
  a2 > 3000 and
  a2 < = 4000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = small and
  a2 > 4000 and
  a2 < = 5000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = small and
  a2 > 5000 and
  a2 < = 6000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = small and
  a2 > 6000 and
  a2 < = 7000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = small and
  a2 > 7000 and
  a2 < = 8000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = small and
  a2 > 8000 and
  a2 < = 9000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = small and
  a2 > 9000 and
  a2 < = 10000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = small and
  a2 > 10000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = small and
  a3 > 0 and
  a3 < = 1000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = small and
  a3 > 1000 and
  a3 < = 2000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = small and
  a3 > 2000 and
  a3 < = 3000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = small and
  a3 > 3000 and
  a3 < = 4000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = small and
  a3 > 4000 and
  a3 < = 5000 Then lineto 163,107
    sept_act = found;
```

```
Rule sept_act_7 If axis_size = small and
  a3 > 5000 and
  a3 < = 6000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = small and
  a3 > 6000 and
  a3 < = 7000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = small and
  a3 > 7000 and
  a3 < = 8000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = small and
  a3 > 8000 and
  a3 < = 9000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = small and
  a3 > 9000 and
  a3 < = 10000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = small and
  a3 > 10000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = small and
  a4 > 0 and
  a4 < = 1000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = small and
  a4 > 1000 and
  a4 < = 2000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = small and
  a4 > 2000 and
  a4 < = 3000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = small and
  a4 > 3000 and
  a4 < = 4000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = small and
  a4 > 4000 and
  a4 < = 5000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7
```

```
If axis_size = small and
  a4 > 5000 and
  a4 < = 6000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = small and
  a4 > 6000 and
  a4 < = 7000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = small and
  a4 > 7000 and
  a4 < = 8000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = small and
  a4 > 8000 and
  a4 < = 9000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = small and
  a4 > 9000 and
  a4 < = 10000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = small and
  a4 > 10000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = small and
  a5 > 0 and
  a5 < = 1000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = small and
  a5 > 1000 and
  a5 < = 2000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = small and
  a5 > 2000 and
  a5 < = 3000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = small and
  a5 > 3000 and
  a5 < = 4000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = small and
  a5 > 4000 and
  a5 < = 5000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7
```

```
If axis_size = small and
  a5 > 5000 and
  a5 < = 6000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = small and
  a5 > 6000 and
  a5 < = 7000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = small and
  a5 > 7000 and
  a5 < = 8000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = small and
  a5 > 8000 and
  a5 < = 9000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = small and
  a5 > 9000 and
  a5 < = 10000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = small and
  a5 > 10000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = small and
  a6 > 0 and
  a6 < = 1000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = small and
  a6 > 1000 and
  a6 < = 2000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = small and
  a6 > 2000 and
  a6 < = 3000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = small and
  a6 > 3000 and
  a6 < = 4000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = small and
  a6 > 4000 and
  a6 < = 5000 Then lineto 308,107
    dec_act = found;
```

```
Rule dec_act_7

If axis_size = small and
  a6 > 5000 and
  a6 < = 6000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = small and
  a6 > 6000 and
  a6 < = 7000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = small and
  a6 > 7000 and
  a6 < = 8000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = small and
  a6 > 8000 and
  a6 < = 9000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = small and
  a6 > 9000 and
  a6 < = 10000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = small and
  a6 > 10000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = small and
  a7 > 0 and
  a7 < = 1000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = small and
  a7 > 1000 and
  a7 < = 2000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = small and
  a7 > 2000 and
  a7 < = 3000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = small and
  a7 > 3000 and
  a7 < = 4000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = small and
  a7 > 4000 and
  a7 < = 5000 Then lineto 357,107
    jan_act = found;
```

```
Rule jan_act_7

If axis_size = small and
  a7 > 5000 and
  a7 < = 6000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = small and
  a7 > 6000 and
  a7 < = 7000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = small and
  a7 > 7000 and
  a7 < = 8000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = small and
  a7 > 8000 and
  a7 < = 9000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = small and
  a7 > 9000 and
  a7 < = 10000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = small and
  a7 > 10000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = small and
  a8 > 0 and
  a8 < = 1000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = small and
  a8 > 1000 and
  a8 < = 2000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = small and
  a8 > 2000 and
  a8 < = 3000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = small and
  a8 > 3000 and
  a8 < = 4000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = small and
  a8 > 4000 and
  a8 < = 5000 Then lineto 404,107
```

```
    feb_act = found    ;

Rule feb_act_7

If axis_size = small and
  a8 > 5000 and
  a8 < = 6000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = small and
  a8 > 6000 and
  a8 < = 7000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = small and
  a8 > 7000 and
  a8 < = 8000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = small and
  a8 > 8000 and
  a8 < = 9000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = small and
  a8 > 9000 and
  a8 < = 10000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = small and
  a8 > 10000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = small and
  a9 > 0 and
  a9 < = 1000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = small and
  a9 > 1000 and
  a9 < = 2000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = small and
  a9 > 2000 and
  a9 < = 3000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = small and
  a9 > 3000 and
  a9 < = 4000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = small and
  a9 > 4000 and
```

```
  a9 < = 5000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = small and
  a9 > 5000 and
  a9 < = 6000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = small and
  a9 > 6000 and
  a9 < = 7000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = small and
  a9 > 7000 and
  a9 < = 8000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = small and
  a9 > 8000 and
  a9 < = 9000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = small and
  a9 > 9000 and
  a9 < = 10000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = small and
  a9 > 10000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = small and
  a10 > 0 and
  a10 < = 1000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = small and
  a10 > 1000 and
  a10 < = 2000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = small and
  a10 > 2000 and
  a10 < = 3000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = small and
  a10 > 3000 and
  a10 < = 4000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = small and
```

```
  a10 > 4000 and
  a10 < = 5000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = small and
  a10 > 5000 and
  a10 < = 6000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = small and
  a10 > 6000 and
  a10 < = 7000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = small and
  a10 > 7000 and
  a10 < = 8000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = small and
  a10 > 8000 and
  a10 < = 9000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = small and
  a10 > 9000 and
  a10 < = 10000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = small and
  a10 > 10000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = small and
  a11 > 0 and
  a11 < = 1000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = small and
  a11 > 1000 and
  a11 < = 2000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = small and
  a11 > 2000 and
  a11 < = 3000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = small and
  a11 > 3000 and
  a11 < = 4000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6
```

```
If axis_size = small and
  a11 > 4000 and
  a11 < = 5000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = small and
  a11 > 5000 and
  a11 < = 6000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = small and
  a11 > 6000 and
  a11 < = 7000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = small and
  a11 > 7000 and
  a11 < = 8000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = small and
  a11 > 8000 and
  a11 < = 9000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = small and
  a11 > 9000 and
  a11 < = 10000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = small and
  a11 > 10000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = small and
  a12 > 0 and
  a12 < = 1000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = small and
  a12 > 1000 and
  a12 < = 2000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = small and
  a12 > 2000 and
  a12 < = 3000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = small and
  a12 > 3000 and
  a12 < = 4000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6
```

```
If axis_size = small and
  a12 > 4000 and
  a12 < = 5000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = small and
  a12 > 5000 and
  a12 < = 6000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = small and
  a12 > 6000 and
  a12 < = 7000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = small and
  a12 > 7000 and
  a12 < = 8000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = small and
  a12 > 8000 and
  a12 < = 9000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = small and
  a12 > 9000 and
  a12 < = 10000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = small and
  a12 > 10000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_small

If axis_display = unknown

Then axis_display = found
    glocate 2,3
    gdisplay "10"
    glocate 3,7
    gdisplay "8"
    glocate 3,11
    gdisplay "6"
    glocate 3,15
    gdisplay "4"
    glocate 3,19
    gdisplay "2";


!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_corps_rev_c[z] = unknown_dummy
    new_public_rev_c[z] = unknown_dummy
    new_s_f_s_rev_c[z] = unknown_dummy
    new_interdept_rev_c[z] = unknown_dummy
    z = (z + 1) end


find do_corps_rev find do_public_rev find do_s_f_s_rev find do_interdept_rev ;

!Rules Block

Rule begin_corps_rev_display

If do_corps_rev = unknown

Then do_corps_rev = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_corps_rev_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_corps_rev_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_corps_rev_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_corps_rev_c[4])
    find oct_bud
    reset oct_bud
    x5 = (exp_corps_rev_c[5])
    find nov_bud
```

```
reset nov_bud
x6 = (exp_corps_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_corps_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_corps_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_corps_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_corps_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_corps_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_corps_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_corps_rev_c[1])
find july_act
reset july_act
a2 = (new_corps_rev_c[2])
find aug_act
reset aug_act
a3 = (new_corps_rev_c[3])
find sept_act
reset sept_act
a4 = (new_corps_rev_c[4])
find oct_act
reset oct_act
a5 = (new_corps_rev_c[5])
find nov_act
reset nov_act
a6 = (new_corps_rev_c[6])
find dec_act
reset dec_act
a7 = (new_corps_rev_c[7])
find jan_act
reset jan_act
a8 = (new_corps_rev_c[8])
find feb_act
reset feb_act
a9 = (new_corps_rev_c[9])
find march_act
reset march_act
a10 = (new_corps_rev_c[10])
find april_act
reset april_act
a11 = (new_corps_rev_c[11])
find may_act
reset may_act
a12 = (new_corps_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
```

```
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 28,1
    gdisplay "Corps Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain revgraph;



Rule begin_public_rev_display

If do_public_rev = unknown

Then do_public_rev = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Public Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
```

```
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_public_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_public_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_public_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_public_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_public_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_public_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_public_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_public_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_public_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_public_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_public_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_public_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_public_rev_c[1])
find july_act
reset july_act
a2 = (new_public_rev_c[2])
find aug_act
reset aug_act
a3 = (new_public_rev_c[3])
find sept_act
reset sept_act
a4 = (new_public_rev_c[4])
find oct_act
reset oct_act
a5 = (new_public_rev_c[5])
find nov_act
reset nov_act
a6 = (new_public_rev_c[6])
find dec_act
reset dec_act
a7 = (new_public_rev_c[7])
find jan_act
reset jan_act
a8 = (new_public_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_public_rev_c[9])
find march_act
reset march_act
a10 = (new_public_rev_c[10])
find april_act
reset april_act
a11 = (new_public_rev_c[11])
find may_act
```

```
    reset may_act
    a12 = (new_public_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
    chain revgraph;


Rule begin_s_f_s_rev_display

If do_s_f_s_rev = unknown

Then do_s_f_s_rev = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 23,1
    gdisplay "Student/Faculty/Staff"
    glocate 30,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
```

```
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_f_s_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_s_f_s_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_s_f_s_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_f_s_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_f_s_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_f_s_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_f_s_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_f_s_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_f_s_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_s_f_s_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_s_f_s_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_s_f_s_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_f_s_rev_c[1])
find july_act
reset july_act
a2 = (new_s_f_s_rev_c[2])
find aug_act
reset aug_act
a3 = (new_s_f_s_rev_c[3])
find sept_act
reset sept_act
a4 = (new_s_f_s_rev_c[4])
find oct_act
reset oct_act
a5 = (new_s_f_s_rev_c[5])
find nov_act
reset nov_act
```

```
a6 = (new_s_f_s_rev_c[6])
find dec_act
reset dec_act
a7 = (new_s_f_s_rev_c[7])
find jan_act
reset jan_act
a8 = (new_s_f_s_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_s_f_s_rev_c[9])
find march_act
reset march_act
a10 = (new_s_f_s_rev_c[10])
find april_act
reset april_act
a11 = (new_s_f_s_rev_c[11])
find may_act
reset may_act
a12 = (new_s_f_s_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain revgraph;
```

Rule begin_interdept_rev_display

If do_interdept_rev = unknown

Then do_interdept_rev = found

```
gmode 14
exitbutton4 = no
moveto 30,5
lineto 30,180
```

```
lineto 600,180

glocate 24,1
gdisplay "Interdepartmental"
glocate 29,2
gdisplay "Revenue"
glocate 8,5
gdisplay "Green - Actual"
glocate 8,6
gdisplay "Blue - Budget"

glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39.24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_interdept_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_interdept_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_interdept_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_interdept_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_interdept_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_interdept_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_interdept_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_interdept_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_interdept_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_interdept_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_interdept_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_interdept_rev_c[12])
find june_bud
reset june_bud
```

```
gcolor 10
moveto 30,180

a1 = (new_interdept_rev_c[1])
find july_act
reset july_act
a2 = (new_interdept_rev_c[2])
find aug_act
reset aug_act
a3 = (new_interdept_rev_c[3])
find sept_act
reset sept_act
a4 = (new_interdept_rev_c[4])
find oct_act
reset oct_act
a5 = (new_interdept_rev_c[5])
find nov_act
reset nov_act
a6 = (new_interdept_rev_c[6])
find dec_act
reset dec_act
a7 = (new_interdept_rev_c[7])
find jan_act
reset jan_act
a8 = (new_interdept_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_interdept_rev_c[9])
find march_act
reset march_act
a10 = (new_interdept_rev_c[10])
find april_act
reset april_act
a11 = (new_interdept_rev_c[11])
find may_act
reset may_act
a12 = (new_interdept_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton4 = no then end
```

```
    reset axis_display
    tmode
   chain revgraph;


Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found;

Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found;

Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found;

Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 < = 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 < = 40000 Then locate 30,180
```

```
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 < = 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 < = 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 < = 100000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
```

```
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10
```

```
If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;
```

```
Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;
```

```
Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 < = 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 < = 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 < = 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 < = 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 < = 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 < = 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 < = 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 < = 160000 Then lineto 308,62
```

```
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 < = 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 < = 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = medium and
  x6 > 200000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
```

```
   x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
   x7 > 160000 and
   x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
   x7 > 180000 and
   x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = medium and
   x7 > 200000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
   x8 > 0 and
   x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
   x8 > 20000 and
   x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
   x8 > 40000 and
   x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
   x8 > 60000 and
   x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
   x8 > 80000 and
   x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
   x8 > 100000 and
   x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
   x8 > 120000 and
   x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
```

```
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9
```

```
If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = medium and
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9
```

```
If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;
```

```
Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
```

```
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
```

```
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
```

```
  a3 < = 20000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4
```

```
If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;
```

```
Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;
```

```
Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
```

```
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
```

```
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3
```

```
If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = medium and
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3
```

```
If axis_size = medium and
  all > 20000 and
  all < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  all > 40000 and
  all < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  all > 60000 and
  all < = 80000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = medium and
  all > 80000 and
  all < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
  all > 100000 and
  all < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
  all > 120000 and
  all < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
  all > 140000 and
  all < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
  all > 160000 and
  all < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
  all > 180000 and
  all < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
  all > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
  a12 > 0 and
  a12 < = 20000 Then lineto 597,171
    june_act = found    ;
```

```
Rule june_act_3

If axis_size = medium and
  a12 > 20000 and
  a12 < = 40000 Then lineto 597,155
   june_act = found    ;

Rule june_act_4

If axis_size = medium and
  a12 > 40000 and
  a12 < = 60000 Then lineto 597,139
   june_act = found    ;

Rule june_act_5

If axis_size = medium and
  a12 > 60000 and
  a12 < = 80000 Then lineto 597,123
   june_act = found    ;

Rule june_act_6

If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
   june_act = found    ;

Rule june_act_7

If axis_size = medium and
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
   june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
   june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
   june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
   june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
   june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
   june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
   lineto 69,180
   july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
```

```
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_music_rev_c[z] = unknown_dummy
    new_state_rev_c[z] = unknown_dummy
    new_total_revs_c[z] = unknown_dummy
    z = (z + 1) end


find do_music_rev find do_state_rev find do_total_rev ;

! Rules Block


Rule begin_music_rev_display

If do_music_rev = unknown

Then do_music_rev = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_music_rev_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_music_rev_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_music_rev_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_music_rev_c[4])
    find oct_bud
    reset oct_bud
    x5 = (exp_music_rev_c[5])
    find nov_bud
```

```
reset nov_bud
x6 = (exp_music_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_music_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_music_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_music_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_music_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_music_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_music_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_music_rev_c[1])
find july_act
reset july_act
a2 = (new_music_rev_c[2])
find aug_act
reset aug_act
a3 = (new_music_rev_c[3])
find sept_act
reset sept_act
a4 = (new_music_rev_c[4])
find oct_act
reset oct_act
a5 = (new_music_rev_c[5])
find nov_act
reset nov_act
a6 = (new_music_rev_c[6])
find dec_act
reset dec_act
a7 = (new_music_rev_c[7])
find jan_act
reset jan_act
a8 = (new_music_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_music_rev_c[9])
find march_act
reset march_act
a10 = (new_music_rev_c[10])
find april_act
reset april_act
a11 = (new_music_rev_c[11])
find may_act
reset may_act
a12 = (new_music_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
```

```
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 27,1
    gdisplay "Music Department"
    glocate 30,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain revgraph;


Rule begin_state_rev_display

If do_state_rev = unknown

Then do_state_rev = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "State Related"
    glocate 29,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
```

```
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_state_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_state_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_state_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_state_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_state_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_state_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_state_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_state_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_state_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_state_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_state_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_state_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_state_rev_c[1])
find july_act
reset july_act
a2 = (new_state_rev_c[2])
find aug_act
reset aug_act
a3 = (new_state_rev_c[3])
find sept_act
reset sept_act
a4 = (new_state_rev_c[4])
find oct_act
reset oct_act
a5 = (new_state_rev_c[5])
find nov_act
reset nov_act
a6 = (new_state_rev_c[6])
find dec_act
reset dec_act
a7 = (new_state_rev_c[7])
find jan_act
reset jan_act
a8 = (new_state_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_state_rev_c[9])
find march_act
reset march_act
a10 = (new_state_rev_c[10])
find april_act
```

```
    reset april_act
    a11 = (new_state_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_state_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain revgraph;


Rule begin_total_rev_display

If do_total_rev = unknown

Then do_total_rev = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 30,1
    gdisplay "Total Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
```

```
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_total_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_total_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_total_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_total_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_revs_c[1])
find july_act
reset july_act
a2 = (new_total_revs_c[2])
find aug_act
reset aug_act
a3 = (new_total_revs_c[3])
find sept_act
reset sept_act
a4 = (new_total_revs_c[4])
find oct_act
reset oct_act
a5 = (new_total_revs_c[5])
find nov_act
```

```
reset nov_act
a6 = (new_total_revs_c[6])
find dec_act
reset dec_act
a7 = (new_total_revs_c[7])
find jan_act
reset jan_act
a8 = (new_total_revs_c[8])
find feb_act
reset feb_act
 a9 = (new_total_revs_c[9])
find march_act
reset march_act
a10 = (new_total_revs_c[10])
find april_act
reset april_act
a11 = (new_total_revs_c[11])
find may_act
reset may_act
a12 = (new_total_revs_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain graph1;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

```
If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found;

Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found;

Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found;

Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 < = 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 < = 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 < = 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 < = 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 < = 100000 Then locate 30,180
    lineto 69,108
```

```
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;
```

```
Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;
```

```
Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
    oct_bud = found;
```

```
Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
  x5 > 200000 Then lineto 260,20
```

```
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 < = 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 < = 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 < = 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 < = 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 < = 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 < = 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 < = 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 < = 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 < = 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 < = 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = medium and
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  x6 > 200000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
  x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
  x7 > 160000 and
  x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12
```

```
If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12
```

```
If axis_size = medium and
  x8 > 200000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;
```

```
Rule march_bud_12

If axis_size = medium and
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
    april_bud = found;
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```
Rule april_bud_12

If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
  x11 > 180000 and
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  x11 < = 200000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = medium and
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  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
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```
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 < = 20000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = medium and
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  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
    oct_act = found;
```

```
Rule oct_act_7

If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
  a5 < = 100000 Then lineto 260,107
```

```
    nov_act = found;

Rule nov_act_7

If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
  a6 > 80000 and
```

```
  a6 < = 100000 Then lineto 308,107
   dec_act = found;

Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
   dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
   dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
   dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
   dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
   dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
   dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
   jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
   jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
   jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
   jan_act = found;

Rule jan_act_5

If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
   jan_act = found;

Rule jan_act_6

If axis_size = medium and
```

```
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6
```

```
If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6
```

```
If axis_size = medium and
  a9 > 80000 and
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;
```

```
Rule april_act_6

If axis_size = medium and
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
    may_act = found    ;
```

```
Rule may_act_6

If axis_size = medium and
  all > 80000 and
  all < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
  all > 100000 and
  all < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
  all > 120000 and
  all < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
  all > 140000 and
  all < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
  all > 160000 and
  all < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
  all > 180000 and
  all < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
  all > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
  a12 > 0 and
  a12 < = 20000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = medium and
  a12 > 20000 and
  a12 < = 40000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = medium and
  a12 > 40000 and
  a12 < = 60000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = medium and
  a12 > 60000 and
  a12 < = 80000 Then lineto 597,123
```

```
    june_act = found    ;

Rule june_act_6

If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";


!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;
```

plural: new_personal_c,exp_personal_c,exp_personal;

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded.  Once the files
have loaded, the system will proceed directly" display "into the graph."  loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_corps_rev_c[z] = unknown_dummy
    new_public_rev_c[z] = unknown_dummy
    new_s_f_s_rev_c[z] = unknown_dummy
    new_interdept_rev_c[z] = unknown_dummy
    z = (z + 1) end


find do_corps_rev find do_public_rev find do_s_f_s_rev find do_interdept_rev ;

! Rules Block



Rule begin_corps_rev_display

If do_corps_rev = unknown

Then do_corps_rev = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_corps_rev_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_corps_rev_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_corps_rev_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_corps_rev_c[4])
    find oct_bud
    reset oct_bud
```

```
x5 = (exp_corps_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_corps_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_corps_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_corps_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_corps_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_corps_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_corps_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_corps_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_corps_rev_c[1])
find july_act
reset july_act
a2 = (new_corps_rev_c[2])
find aug_act
reset aug_act
a3 = (new_corps_rev_c[3])
find sept_act
reset sept_act
a4 = (new_corps_rev_c[4])
find oct_act
reset oct_act
a5 = (new_corps_rev_c[5])
find nov_act
reset nov_act
a6 = (new_corps_rev_c[6])
find dec_act
reset dec_act
a7 = (new_corps_rev_c[7])
find jan_act
reset jan_act
a8 = (new_corps_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_corps_rev_c[9])
find march_act
reset march_act
a10 = (new_corps_rev_c[10])
find april_act
reset april_act
a11 = (new_corps_rev_c[11])
find may_act
reset may_act
a12 = (new_corps_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
```

```
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 28,1
    gdisplay "Corps Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
    chain revgraph;


Rule begin_public_rev_display

If do_public_rev = unknown

Then do_public_rev = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Public Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
```

```
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_public_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_public_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_public_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_public_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_public_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_public_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_public_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_public_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_public_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_public_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_public_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_public_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_public_rev_c[1])
find july_act
reset july_act
a2 = (new_public_rev_c[2])
find aug_act
reset aug_act
a3 = (new_public_rev_c[3])
find sept_act
reset sept_act
a4 = (new_public_rev_c[4])
find oct_act
reset oct_act
a5 = (new_public_rev_c[5])
find nov_act
reset nov_act
a6 = (new_public_rev_c[6])
find dec_act
reset dec_act
a7 = (new_public_rev_c[7])
find jan_act
reset jan_act
a8 = (new_public_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_public_rev_c[9])
find march_act
reset march_act
a10 = (new_public_rev_c[10])
find april_act
reset april_act
a11 = (new_public_rev_c[11])
```

```
    find may_act
    reset may_act
    a12 = (new_public_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain revgraph;

Rule begin_s_f_s_rev_display

If do_s_f_s_rev = unknown

Then do_s_f_s_rev = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 23,1
    gdisplay "Student/Faculty/Staff"
    glocate 30,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
```

```
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_s_f_s_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_s_f_s_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_s_f_s_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_s_f_s_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_s_f_s_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_s_f_s_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_s_f_s_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_s_f_s_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_s_f_s_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_s_f_s_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_s_f_s_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_s_f_s_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_s_f_s_rev_c[1])
find july_act
reset july_act
a2 = (new_s_f_s_rev_c[2])
find aug_act
reset aug_act
a3 = (new_s_f_s_rev_c[3])
find sept_act
reset sept_act
a4 = (new_s_f_s_rev_c[4])
find oct_act
reset oct_act
a5 = (new_s_f_s_rev_c[5])
find nov_act
reset nov_act
a6 = (new_s_f_s_rev_c[6])
```

```
    find dec_act
    reset dec_act
    a7 = (new_s_f_s_rev_c[7])
    find jan_act
    reset jan_act
    a8 = (new_s_f_s_rev_c[8])
    find feb_act
    reset feb_act
     a9 = (new_s_f_s_rev_c[9])
    find march_act
    reset march_act
    a10 = (new_s_f_s_rev_c[10])
    find april_act
    reset april_act
    a11 = (new_s_f_s_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_s_f_s_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton3 = no then end

    reset axis_display
    tmode
  chain revgraph;

Rule begin_interdept_rev_display

If do_interdept_rev = unknown

Then do_interdept_rev = found


    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Interdepartmental"
```

```
glocate 29,2
gdisplay "Revenue"
glocate 8,5
gdisplay "Green - Actual"
glocate 8,6
gdisplay "Blue - Budget"

glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_interdept_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_interdept_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_interdept_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_interdept_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_interdept_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_interdept_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_interdept_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_interdept_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_interdept_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_interdept_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_interdept_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_interdept_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180
```

```
a1 = (new_interdept_rev_c[1])
find july_act
reset july_act
a2 = (new_interdept_rev_c[2])
find aug_act
reset aug_act
a3 = (new_interdept_rev_c[3])
find sept_act
reset sept_act
a4 = (new_interdept_rev_c[4])
find oct_act
reset oct_act
a5 = (new_interdept_rev_c[5])
find nov_act
reset nov_act
a6 = (new_interdept_rev_c[6])
find dec_act
reset dec_act
a7 = (new_interdept_rev_c[7])
find jan_act
reset jan_act
a8 = (new_interdept_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_interdept_rev_c[9])
find march_act
reset march_act
a10 = (new_interdept_rev_c[10])
find april_act
reset april_act
a11 = (new_interdept_rev_c[11])
find may_act
reset may_act
a12 = (new_interdept_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton4 = no then end

reset axis_display
tmode
chain revgraph;
```

```
Rule aug_act_unknown_dummy
If a2 = unknown_dummy
Then aug_act = found;
Rule sept_act_unknown_dummy
If a3 = unknown_dummy
Then sept_act = found;
Rule oct_act_unknown_dummy
If a4 = unknown_dummy
Then oct_act = found;
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found;
Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found;
Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found;
Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 < = 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 < = 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
```

```
  x1 > 70000 and
  x1 < = 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 < = 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
  x1 < = 210000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 < = 245000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;
```

```
Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 < = 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 < = 315000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 < = 350000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 < = 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 < = 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 < = 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 < = 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 < = 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 < = 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 < = 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 < = 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 < = 315000 Then lineto 163,45
```

```
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 < = 350000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
```

```
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
  x4 > 350000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = large and
  x5 > 0 and
  x5 < = 35000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = large and
  x5 > 35000 and
  x5 < = 70000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = large and
  x5 > 70000 and
  x5 < = 105000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = large and
  x5 > 105000 and
  x5 < = 140000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = large and
  x5 > 140000 and
  x5 < = 175000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = large and
  x5 > 175000 and
  x5 < = 210000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = large and
  x5 > 210000 and
  x5 < = 245000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = large and
  x5 > 245000 and
  x5 < = 280000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = large and
```

```
  x5 > 280000 and
  x5 < = 315000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = large and
  x5 > 315000 and
  x5 < = 350000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = large and
  x5 > 350000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = large and
  x6 > 0 and
  x6 < = 35000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = large and
  x6 > 35000 and
  x6 < = 70000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = large and
  x6 > 70000 and
  x6 < = 105000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = large and
  x6 > 105000 and
  x6 < = 140000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = large and
  x6 > 140000 and
  x6 < = 175000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = large and
  x6 > 175000 and
  x6 < = 210000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = large and
  x6 > 210000 and
  x6 < = 245000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = large and
  x6 > 245000 and
  x6 < = 280000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10
```

```
If axis_size = large and
  x6 > 280000 and
  x6 < = 315000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = large and
  x6 > 315000 and
  x6 < = 350000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = large and
  x6 > 350000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
  x7 > 0 and
  x7 < = 35000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = large and
  x7 > 35000 and
  x7 < = 70000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = large and
  x7 > 70000 and
  x7 < = 105000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = large and
  x7 > 105000 and
  x7 < = 140000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = large and
  x7 > 140000 and
  x7 < = 175000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = large and
  x7 > 175000 and
  x7 < = 210000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = large and
  x7 > 210000 and
  x7 < = 245000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = large and
  x7 > 245000 and
  x7 < = 280000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10
```

```
If axis_size = large and
  x7 > 280000 and
  x7 < = 315000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = large.and
  x7 > 315000 and
  x7 < = 350000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = large and
  x7 > 350000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;
```

```
Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = large and
  x9 > 0 and
  x9 < = 35000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = large and
  x9 > 35000 and
  x9 < = 70000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = large and
  x9 > 70000 and
  x9 < = 105000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = large and
  x9 > 105000 and
  x9 < = 140000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = large and
  x9 > 140000 and
  x9 < = 175000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = large and
  x9 > 175000 and
  x9 < = 210000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = large and
  x9 > 210000 and
  x9 < = 245000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = large and
  x9 > 245000 and
  x9 < = 280000 Then lineto 452,62
    march_bud = found;
```

```
Rule march_bud_10

If axis_size = large and
  x9 > 280000 and
  x9 < = 315000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = large and
  x9 > 315000 and
  x9 < = 350000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = large and
  x9 > 350000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
```

```
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
  x10 > 350000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = large and
  x11 > 0 and
  x11 < = 35000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = large and
  x11 > 35000 and
  x11 < = 70000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = large and
  x11 > 70000 and
  x11 < = 105000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = large and
  x11 > 105000 and
  x11 < = 140000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = large and
  x11 > 140000 and
  x11 < = 175000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = large and
  x11 > 175000 and
  x11 < = 210000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = large and
  x11 > 210000 and
  x11 < = 245000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = large and
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   x11 > 245000 and
   x11 < = 280000 Then lineto 549,62
     may_bud = found;

Rule may_bud_10

If axis_size = large and
   x11 > 280000 and
   x11 < = 315000 Then lineto 549,45
     may_bud = found;

Rule may_bud_11

If axis_size = large and
   x11 > 315000 and
   x11 < = 350000 Then lineto 549,29
     may_bud = found;

Rule may_bud_12

If axis_size = large and
   x11 > 350000 Then lineto 549,20
     may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
     june_bud = found;

Rule june_bud_2

If axis_size = large and
   x12 > 0 and
   x12 < = 35000 Then lineto 597,172
     june_bud = found;

Rule june_bud_3

If axis_size = large and
   x12 > 35000 and
   x12 < = 70000 Then lineto 597,156
     june_bud = found;

Rule june_bud_4

If axis_size = large and
   x12 > 70000 and
   x12 < = 105000 Then lineto 597,140
     june_bud = found;

Rule june_bud_5

If axis_size = large and
   x12 > 105000 and
   x12 < = 140000 Then lineto 597,124
     june_bud = found;

Rule june_bud_6

If axis_size = large and
   x12 > 140000 and
   x12 < = 175000 Then lineto 597,108
     june_bud = found;

Rule june_bud_7

If axis_size = large and
   x12 > 175000 and
   x12 < = 210000 Then lineto 597,92
     june_bud = found;

Rule june_bud_8

If axis_size = large and
   x12 > 210000 and
   x12 < = 245000 Then lineto 597,77
     june_bud = found;

Rule june_bud_9
```

```
If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
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  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  a2 > 0 and
  a2 < = 35000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
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   a3 > 35000 and
   a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
   a3 > 70000 and
   a3 < = 105000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = large and
   a3 > 105000 and
   a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
   a3 > 140000 and
   a3 < = 175000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = large and
   a3 > 175000 and
   a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
   a3 > 210000 and
   a3 < = 245000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = large and
   a3 > 245000 and
   a3 < = 280000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = large and
   a3 > 280000 and
   a3 < = 315000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = large and
   a3 > 315000 and
   a3 < = 350000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = large and
   a3 > 350000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = large and
   a4 > 0 and
   a4 < = 35000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = large and
   a4 > 35000 and
   a4 < = 70000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = large and
   a4 > 70000 and
   a4 < = 105000 Then lineto 212,139
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    oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = large and
  a4 > 175000 and
  a4 < = 210000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = large and
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
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  a5 < = 105000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = large and
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
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  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4
```

```
If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = large and
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4
```

```
If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;
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```
Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = large and
  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;
```

```
Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
  a10 < = 175000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
  a10 < = 210000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
```

```
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  all > 70000 and
  all < = 105000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = large and
  all > 105000 and
  all < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
  all > 140000 and
  all < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
  all > 175000 and
  all < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = large and
  all > 210000 and
  all < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
  all > 245000 and
  all < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
  all > 280000 and
  all < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
  all > 315000 and
  all < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
  all > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
  a12 > 0 and
  a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
  a12 > 35000 and
```

```
  a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
  a12 > 70000 and
  a12 < = 105000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = large and
  a12 > 105000 and
  a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = large and
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
```

```
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";

!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4: 10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded.  Once the files
have loaded, the system will proceed directly" display "into the graph."  loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_music_rev_c[z] = unknown_dummy
    new_state_rev_c[z] = unknown_dummy
    new_total_revs_c[z] = unknown_dummy
    z = (z + 1) end


find do_music_rev find do_state_rev find do_total_rev ;

! Rules Block


Rule begin_music_rev_display

If do_music_rev = unknown

Then do_music_rev = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 11
    moveto 30,180
    x1 = (exp_music_rev_c[1])
    find july_bud
    reset july_bud
    x2 = (exp_music_rev_c[2])
    find aug_bud
    reset aug_bud
    x3 = (exp_music_rev_c[3])
    find sept_bud
    reset sept_bud
    x4 = (exp_music_rev_c[4])
    find oct_bud
    reset oct_bud
    x5 = (exp_music_rev_c[5])
    find nov_bud
    reset nov_bud
```

```
x6 = (exp_music_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_music_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_music_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_music_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_music_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_music_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_music_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_music_rev_c[1])
find july_act
reset july_act
a2 = (new_music_rev_c[2])
find aug_act
reset aug_act
a3 = (new_music_rev_c[3])
find sept_act
reset sept_act
a4 = (new_music_rev_c[4])
find oct_act
reset oct_act
a5 = (new_music_rev_c[5])
find nov_act
reset nov_act
a6 = (new_music_rev_c[6])
find dec_act
reset dec_act
a7 = (new_music_rev_c[7])
find jan_act
reset jan_act
a8 = (new_music_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_music_rev_c[9])
find march_act
reset march_act
a10 = (new_music_rev_c[10])
find april_act
reset april_act
a11 = (new_music_rev_c[11])
find may_act
reset may_act
a12 = (new_music_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
```

```
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 27,1
    gdisplay "Music Department"
    glocate 30,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain revgraph;


Rule begin_state_rev_display

If do_state_rev = unknown

Then do_state_rev = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "State Related"
    glocate 29,2
    gdisplay "Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
```

```
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_state_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_state_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_state_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_state_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_state_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_state_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_state_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_state_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_state_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_state_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_state_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_state_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_state_rev_c[1])
find july_act
reset july_act
a2 = (new_state_rev_c[2])
find aug_act
reset aug_act
a3 = (new_state_rev_c[3])
find sept_act
reset sept_act
a4 = (new_state_rev_c[4])
find oct_act
reset oct_act
a5 = (new_state_rev_c[5])
find nov_act
reset nov_act
a6 = (new_state_rev_c[6])
find dec_act
reset dec_act
a7 = (new_state_rev_c[7])
find jan_act
reset jan_act
a8 = (new_state_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_state_rev_c[9])
find march_act
reset march_act
a10 = (new_state_rev_c[10])
find april_act
reset april_act
a11 = (new_state_rev_c[11])
```

```
    find may_act
    reset may_act
    a12 = (new_state_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain revgraph;


Rule begin_total_rev_display

If do_total_rev = unknown

Then do_total_rev = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 30,1
    gdisplay "Total Revenue"
    glocate 8,5
    gdisplay "Green - Actual"
    glocate 8,6
    gdisplay "Blue - Budget"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
```

```
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 11
moveto 30,180
x1 = (exp_total_rev_c[1])
find july_bud
reset july_bud
x2 = (exp_total_rev_c[2])
find aug_bud
reset aug_bud
x3 = (exp_total_rev_c[3])
find sept_bud
reset sept_bud
x4 = (exp_total_rev_c[4])
find oct_bud
reset oct_bud
x5 = (exp_total_rev_c[5])
find nov_bud
reset nov_bud
x6 = (exp_total_rev_c[6])
find dec_bud
reset dec_bud
x7 = (exp_total_rev_c[7])
find jan_bud
reset jan_bud
x8 = (exp_total_rev_c[8])
find feb_bud
reset feb_bud
x9 = (exp_total_rev_c[9])
find march_bud
reset march_bud
x10 = (exp_total_rev_c[10])
find april_bud
reset april_bud
x11 = (exp_total_rev_c[11])
find may_bud
reset may_bud
x12 = (exp_total_rev_c[12])
find june_bud
reset june_bud

gcolor 10
moveto 30,180

a1 = (new_total_revs_c[1])
find july_act
reset july_act
a2 = (new_total_revs_c[2])
find aug_act
reset aug_act
a3 = (new_total_revs_c[3])
find sept_act
reset sept_act
a4 = (new_total_revs_c[4])
find oct_act
reset oct_act
a5 = (new_total_revs_c[5])
find nov_act
reset nov_act
a6 = (new_total_revs_c[6])
find dec_act
reset dec_act
```

```
    a7 = (new_total_revs_c[7])
    find jan_act
    reset jan_act
    a8 = (new_total_revs_c[8])
    find feb_act
    reset feb_act
     a9 = (new_total_revs_c[9])
    find march_act
    reset march_act
    a10 = (new_total_revs_c[10])
    find april_act
    reset april_act
    a11 = (new_total_revs_c[11])
    find may_act
    reset may_act
    a12 = (new_total_revs_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton3 = no then end

    reset axis_display
    tmode
   chain graph1;

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;
```

```
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found;
Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found;
Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found;
Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 < = 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 < = 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 70000 and
  x1 < = 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 < = 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
  x1 < = 210000 Then locate 30,180
```

```
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 < = 245000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 < = 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 < = 315000 Then lineto 114,45
    aug_bud = found;
```

```
Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 < = 350000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 < = 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 < = 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 < = 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 < = 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 < = 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 < = 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 < = 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 < = 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 < = 315000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 < = 350000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;
```

```
Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
  x4 > 350000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;
```

```
Rule nov_bud_2

If axis_size = large and
  x5 > 0 and
  x5 < = 35000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = large and
  x5 > 35000 and
  x5 < = 70000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = large and
  x5 > 70000 and
  x5 < = 105000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = large and
  x5 > 105000 and
  x5 < = 140000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = large and
  x5 > 140000 and
  x5 < = 175000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = large and
  x5 > 175000 and
  x5 < = 210000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = large and
  x5 > 210000 and
  x5 < = 245000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = large and
  x5 > 245000 and
  x5 < = 280000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = large and
  x5 > 280000 and
  x5 < = 315000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = large and
  x5 > 315000 and
  x5 < = 350000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = large and
  x5 > 350000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
```

```
    dec_bud = found;

Rule dec_bud_2

If axis_size = large and
   x6 > 0 and
   x6 < = 35000 Then lineto 308,172
     dec_bud = found;

Rule dec_bud_3

If axis_size = large and
   x6 > 35000 and
   x6 < = 70000 Then lineto 308,156
     dec_bud = found;

Rule dec_bud_4

If axis_size = large and
   x6 > 70000 and
   x6 < = 105000 Then lineto 308,140
     dec_bud = found;

Rule dec_bud_5

If axis_size = large and
   x6 > 105000 and
   x6 < = 140000 Then lineto 308,124
     dec_bud = found;

Rule dec_bud_6

If axis_size = large and
   x6 > 140000 and
   x6 < = 175000 Then lineto 308,108
     dec_bud = found;

Rule dec_bud_7

If axis_size = large and
   x6 > 175000 and
   x6 < = 210000 Then lineto 308,92
     dec_bud = found;

Rule dec_bud_8

If axis_size = large and
   x6 > 210000 and
   x6 < = 245000 Then lineto 308,77
     dec_bud = found;

Rule dec_bud_9

If axis_size = large and
   x6 > 245000 and
   x6 < = 280000 Then lineto 308,62
     dec_bud = found;

Rule dec_bud_10

If axis_size = large and
   x6 > 280000 and
   x6 < = 315000 Then lineto 308,45
     dec_bud = found;

Rule dec_bud_11

If axis_size = large and
   x6 > 315000 and
   x6 < = 350000 Then lineto 308,29
     dec_bud = found;

Rule dec_bud_12

If axis_size = large and
   x6 > 350000 Then lineto 308,20
     dec_bud = found;

Rule jan_bud_1
```

```
If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
  x7 > 0 and
  x7 < = 35000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = large and
  x7 > 35000 and
  x7 < = 70000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = large and
  x7 > 70000 and
  x7 < = 105000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = large and
  x7 > 105000 and
  x7 < = 140000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = large and
  x7 > 140000 and
  x7 < = 175000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = large and
  x7 > 175000 and
  x7 < = 210000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = large and
  x7 > 210000 and
  x7 < = 245000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = large and
  x7 > 245000 and
  x7 < = 280000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = large and
  x7 > 280000 and
  x7 < = 315000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = large and
  x7 > 315000 and
  x7 < = 350000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = large and
  x7 > 350000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1
```

```
If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;
```

```
Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = large and
  x9 > 0 and
  x9 < = 35000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = large and
  x9 > 35000 and
  x9 < = 70000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = large and
  x9 > 70000 and
  x9 < = 105000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = large and
  x9 > 105000 and
  x9 < = 140000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = large and
  x9 > 140000 and
  x9 < = 175000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = large and
  x9 > 175000 and
  x9 < = 210000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = large and
  x9 > 210000 and
  x9 < = 245000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = large and
  x9 > 245000 and
  x9 < = 280000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = large and
  x9 > 280000 and
  x9 < = 315000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = large and
  x9 > 315000 and
  x9 < = 350000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = large and
  x9 > 350000 Then lineto 452,20
    march_bud = found;
```

```
Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
  x10 > 350000 Then lineto 501,20
```

```
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = large and
  x11 > 0 and
  x11 < = 35000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = large and
  x11 > 35000 and
  x11 < = 70000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = large and
  x11 > 70000 and
  x11 < = 105000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = large and
  x11 > 105000 and
  x11 < = 140000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = large and
  x11 > 140000 and
  x11 < = 175000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = large and
  x11 > 175000 and
  x11 < = 210000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = large and
  x11 > 210000 and
  x11 < = 245000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = large and
  x11 > 245000 and
  x11 < = 280000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = large and
  x11 > 280000 and
  x11 < = 315000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = large and
  x11 > 315000 and
  x11 < = 350000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12
```

```
If axis_size = large and
  x11 > 350000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = large and
  x12 > 0 and
  x12 < = 35000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = large and
  x12 > 35000 and
  x12 < = 70000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = large and
  x12 > 70000 and
  x12 < = 105000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = large and
  x12 > 105000 and
  x12 < = 140000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = large and
  x12 > 140000 and
  x12 < = 175000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = large and
  x12 > 175000 and
  x12 < = 210000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = large and
  x12 > 210000 and
  x12 < = 245000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12
```

```
If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If x2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,171
```

```
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
  a3 > 35000 and
  a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
  a3 > 70000 and
  a3 < = 105000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = large and
  a3 > 105000 and
  a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
  a3 > 140000 and
  a3 < = 175000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = large and
```

```
  a3 > 175000 and
  a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
  a3 > 210000 and
  a3 < = 245000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = large and
  a3 > 245000 and
  a3 < = 280000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = large and
  a3 > 280000 and
  a3 < = 315000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = large and
  a3 > 315000 and
  a3 < = 350000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = large and
  a3 > 350000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = large and
  a4 > 0 and
  a4 < = 35000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = large and
  a4 > 35000 and
  a4 < = 70000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = large and
  a4 > 70000 and
  a4 < = 105000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = large and
  a4 > 175000 and
```

```
  a4 < = 210000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = large and
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
  a5 < = 105000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = large and
```

```
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7
```

```
If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = large and
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7
```

```
If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;
```

```
Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
    march_act = found    ;
```

```
Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = large and
  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
  a10 < = 175000 Then lineto 501,107
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```
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
  a10 < = 210000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  a11 > 70000 and
  a11 < = 105000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = large and
  a11 > 105000 and
  a11 < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
  a11 > 140000 and
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```
   a11 < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
   a11 > 175000 and
   a11 < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = large and
   a11 > 210000 and
   a11 < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
   a11 > 245000 and
   a11 < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
   a11 > 280000 and
   a11 < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
   a11 > 315000 and
   a11 < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
   a11 > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
   a12 > 0 and
   a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
   a12 > 35000 and
   a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
   a12 > 70000 and
   a12 < = 105000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = large and
   a12 > 105000 and
   a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = large and
```

```
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";


!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded and a decision made regarding
which knwoledge base to enter" display "next.  You will be instructed when to continue." display " " loadfacts tempdata find
beg_display_seg find turn_seg_arrays x = (new_corps_rev[1]) find corps_seg_display x = (new_public_rev[1]) find public_seg_display x
= (new_s_f_s_rev[1]) find s_f_s_seg_display x = (new_interdept_rev[1]) find interdept_seg_display x = (new_music_rev[1]) find
music_seg_display x = (new_state_rev[1]) find state_seg_display x = (new_total_revs[1]) find total_seg_display



;

! Rules Block


Rule show_beginning_display

If beg_display_seg = unknown

Then beg_display_seg = found
    display " "
    display "Press any key to continue.¬"
    cls
    color = 11
    locate 1,16 display "REVENUE AND EXPENSE MARKET SEGMENT GRAPHS" locate 4,6 display "The following series of line
graphs each display 2 lines.  The first" display "line represents the accumulated amount of revenue for the applicable market" display
"segment.  The second line represents the accumulated amount of DIRECT costs" display "for that market segment.  Note that with the
exception of the final graph," display "which displays total revenues against total costs, no others include" display "overhead costs.  The
series of graphs which you are about to view include" display "graphs for each of the following market segments:" locate 12,25 display
"Corps of Cadets," locate 13,25 display "Public," locate 14,25 display "Students/Faculty/Staff," locate 15,25 display "Interdepartmental,"
locate 16,25 display "Music Department," locate 17,25 display "State Related, and" locate 18,25 display "Total revenue" locate 20,25 display
"Press any key to continue¬";



Rule begin_corps_seg_display

If corps_seg_display = unknown and
  x < = 10000 Then corps_seg_display = found
    savefacts tempdata
    chain smaxseg1;  ! HERE

Rule begin_corps_seg_display

If corps_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then corps_seg_display = found
    savefacts tempdata
    chain mdaxseg1;

Rule begin_corps_seg_display

If corps_seg_display = unknown and
  x > 200000 Then corps_seg_display = found
    savefacts tempdata
    chain lgaxseg1;


Rule begin_public_seg_display

If public_seg_display = unknown and
  x < = 10000 Then public_seg_display = found
    do_corps_seg = found
    savefacts tempdata
    chain smaxseg1;

Rule begin_public_seg_display

If public_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then public_seg_display = found
    do_corps_seg = found
    savefacts tempdata
    chain mdaxseg1;
```

```
Rule begin_public_seg_display

If public_seg_display = unknown and
  x > 200000 Then public_seg_display = found
    do_corps_seg = found
    savefacts tempdata
    chain lgaxseg1;

Rule begin_s_f_s_seg_display

If s_f_s_seg_display = unknown and
  x < = 10000 Then s_f_s_seg_display = found
    do_public_seg = found
    savefacts tempdata
    chain smaxseg1;

Rule begin_s_f_s_seg_display

If s_f_s_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then s_f_s_seg_display = found
    do_public_seg = found
    savefacts tempdata
    chain mdaxseg1;

Rule begin_s_f_s_seg_display

If s_f_s_seg_display = unknown and
  x > 200000 Then s_f_s_seg_display = found
    do_public_seg = found
    savefacts tempdata
    chain lgaxseg1;

Rule begin_interdept_seg_display

If interdept_seg_display = unknown and
  x < = 10000 Then interdept_seg_display = found
    do_s_f_s_seg = found
    savefacts tempdata
    chain smaxseg1;

Rule begin_interdept_seg_display

If interdept_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then interdept_seg_display = found
    do_s_f_s_seg = found
    savefacts tempdata
    chain mdaxseg1;

Rule begin_interdept_seg_display

If interdept_seg_display = unknown and
  x > 200000 Then interdept_seg_display = found
    do_s_f_s_seg = found
    savefacts tempdata
    chain lgaxseg1;

Rule begin_music_seg_display

If music_seg_display = unknown and
  x < = 10000 Then music_seg_display = found
    do_interdept_seg = found
    savefacts tempdata
    chain smaxseg2;

Rule begin_music_seg_display

If music_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then music_seg_display = found
    do_interdept_seg = found
    savefacts tempdata
    chain mdaxseg2;

Rule begin_music_seg_display

If music_seg_display = unknown and
  x > 200000 Then music_seg_display = found
    do_interdept_seg = found
```

```
    savefacts tempdata
    chain lgaxseg2;

Rule begin_state_seg_display

If state_seg_display = unknown and
  x < = 10000 Then state_seg_display = found
    do_music_seg = found
    savefacts tempdata
    chain smaxseg2;

Rule begin_state_seg_display

If state_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then state_seg_display = found
    do_music_seg = found
    savefacts tempdata
    chain mdaxseg2;

Rule begin_state_seg_display

If state_seg_display = unknown and
  x > 200000 Then state_seg_display = found
    do_music_seg = found
    savefacts tempdata
    chain lgaxseg2;

Rule begin_total_seg_display

If total_seg_display = unknown and
  x < = 10000 Then total_seg_display = found
    do_state_seg = found
    savefacts tempdata
    chain smaxseg2;

Rule begin_total_seg_display

If total_seg_display = unknown and
  x > 10000 and
  x < = 200000 Then total_seg_display = found
    do_state_seg = found
    savefacts tempdata
    chain mdaxseg2;

Rule begin_total_seg_display

If total_seg_display = unknown and
  x > 200000 Then total_seg_display = found
    do_state_seg = found
    savefacts tempdata
    chain lgaxseg2;

Rule turn_seg_arrays

If turn_seg_arrays = unknown

Then turn_seg_arrays = found

    x = 1
    y = (count_it)
    z = (count_it)
    whiletrue x < = (z) then

      new_corps_rev_c[x] = (new_corps_rev[y])
      new_public_rev_c[x] = (new_public_rev[y])
      new_s_f_s_rev_c[x] = (new_s_f_s_rev[y])
      new_interdept_rev_c[x] = (new_interdept_rev[y])
      new_music_rev_c[x] = (new_music_rev[y])
      new_state_rev_c[x] = (new_state_rev[y])
      new_total_revs_c[x] = (new_total_revs[y])

      new_corps_costs_c[x] = (new_corps_costs[y])
      new_public_costs_c[x] = (new_public_costs[y])
      new_s_f_s_costs_c[x] = (new_s_f_s_costs[y])
      new_interdept_costs_c[x] = (new_interdept_costs[y])
      new_music_costs_c[x] = (new_music_costs[y])
      new_state_costs_c[x] = (new_state_costs[y])
      new_total_costs_c[x] = (new_total_costs[y])
```

```
      x = (x+1)
      y = (y - 1)
    end

;


!statements block

bkcolor = 1;


plural: new_corps_costs_c, new_corps_rev_c; plural: new_public_costs_c,new_public_rev_c; plural: new_s_f_s_costs_c, new_s_f_s_rev_c;
plural: new_interdept_costs_c, new_interdept_rev_c; plural: new_music_costs_c, new_music_rev_c; plural: new_state_costs_c,
new_state_rev_c; plural: new_total_costs_c, new_total_revs_c;
```

```
runtime; execute;

actions

axis_size = small color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_corps_rev_c[z] = unknown_dummy
    new_public_rev_c[z] = unknown_dummy
    new_s_f_s_rev_c[z] = unknown_dummy
    new_interdept_rev_c[z] = unknown_dummy

    new_corps_costs_c[z] = unknown_dummy
    new_public_costs_c[z] = unknown_dummy
    new_s_f_s_costs_c[z] = unknown_dummy
    new_interdept_costs_c[z] = unknown_dummy

    z = (z + 1) end


find do_corps_seg find do_public_seg find do_s_f_s_seg find do_interdept_seg ;

! Rules Block



Rule begin_corps_seg_display

If do_corps_seg = unknown

Then do_corps_seg = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 12
    moveto 30,180
    x1 = (new_corps_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_corps_costs_c[2])
    find aug_bud
    reset aug_bud
```

```
x3 = (new_corps_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_corps_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_corps_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_corps_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_corps_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_corps_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_corps_costs_c[9])
find march_bud
reset march_bud
x10 = (new_corps_costs_c[10])
find april_bud
reset april_bud
x11 = (new_corps_costs_c[11])
find may_bud
reset may_bud
x12 = (new_corps_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_corps_rev_c[1])
find july_act
reset july_act
a2 = (new_corps_rev_c[2])
find aug_act
reset aug_act
a3 = (new_corps_rev_c[3])
find sept_act
reset sept_act
a4 = (new_corps_rev_c[4])
find oct_act
reset oct_act
a5 = (new_corps_rev_c[5])
find nov_act
reset nov_act
a6 = (new_corps_rev_c[6])
find dec_act
reset dec_act
a7 = (new_corps_rev_c[7])
find jan_act
reset jan_act
a8 = (new_corps_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_corps_rev_c[9])
find march_act
reset march_act
a10 = (new_corps_rev_c[10])
find april_act
reset april_act
a11 = (new_corps_rev_c[11])
find may_act
reset may_act
a12 = (new_corps_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
```

```
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 28,1
    gdisplay "Corps of Cadets"
    glocate 28,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain seggraph;


Rule begin_public_seg_display

If do_public_seg = unknown

Then do_public_seg = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Public Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
```

```
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_public_costs_c[1])
find july_bud
reset july_bud
x2 = (new_public_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_public_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_public_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_public_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_public_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_public_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_public_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_public_costs_c[9])
find march_bud
reset march_bud
x10 = (new_public_costs_c[10])
find april_bud
reset april_bud
x11 = (new_public_costs_c[11])
find may_bud
reset may_bud
x12 = (new_public_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_public_rev_c[1])
find july_act
reset july_act
a2 = (new_public_rev_c[2])
find aug_act
reset aug_act
a3 = (new_public_rev_c[3])
find sept_act
reset sept_act
a4 = (new_public_rev_c[4])
find oct_act
reset oct_act
a5 = (new_public_rev_c[5])
find nov_act
reset nov_act
a6 = (new_public_rev_c[6])
find dec_act
reset dec_act
a7 = (new_public_rev_c[7])
find jan_act
reset jan_act
a8 = (new_public_rev_c[8])
find feb_act
```

```
    reset feb_act
     a9 = (new_public_rev_c[9])
    find march_act
    reset march_act
    a10 = (new_public_rev_c[10])
    find april_act
    reset april_act
    a11 = (new_public_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_public_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain seggraph;



Rule begin_s_f_s_seg_display

If do_s_f_s_seg = unknown

Then do_s_f_s_seg = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 23,1
    gdisplay "Student/Faculty/Staff"
    glocate 27,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"
```

```
glocate 1,0
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_s_f_s_costs_c[1])
find july_bud
reset july_bud
x2 = (new_s_f_s_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_s_f_s_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_s_f_s_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_s_f_s_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_s_f_s_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_s_f_s_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_s_f_s_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_s_f_s_costs_c[9])
find march_bud
reset march_bud
x10 = (new_s_f_s_costs_c[10])
find april_bud
reset april_bud
x11 = (new_s_f_s_costs_c[11])
find may_bud
reset may_bud
x12 = (new_s_f_s_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_s_f_s_rev_c[1])
find july_act
reset july_act
a2 = (new_s_f_s_rev_c[2])
find aug_act
reset aug_act
```

```
a3 = (new_s_f_s_rev_c[3])
find sept_act
reset sept_act
a4 = (new_s_f_s_rev_c[4])
find oct_act
reset oct_act
a5 = (new_s_f_s_rev_c[5])
find nov_act
reset nov_act
a6 = (new_s_f_s_rev_c[6])
find dec_act
reset dec_act
a7 = (new_s_f_s_rev_c[7])
find jan_act
reset jan_act
a8 = (new_s_f_s_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_s_f_s_rev_c[9])
find march_act
reset march_act
a10 = (new_s_f_s_rev_c[10])
find april_act
reset april_act
a11 = (new_s_f_s_rev_c[11])
find may_act
reset may_act
a12 = (new_s_f_s_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain seggraph;
```

Rule begin_interdept_seg_display

If do_interdept_seg = unknown

```
Then do_interdept_seg = found

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Interdepartmental"
    glocate 26,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 12
    moveto 30,180
    x1 = (new_interdept_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_interdept_costs_c[2])
    find aug_bud
    reset aug_bud
    x3 = (new_interdept_costs_c[3])
    find sept_bud
    reset sept_bud
    x4 = (new_interdept_costs_c[4])
    find oct_bud
    reset oct_bud
    x5 = (new_interdept_costs_c[5])
    find nov_bud
    reset nov_bud
    x6 = (new_interdept_costs_c[6])
    find dec_bud
    reset dec_bud
    x7 = (new_interdept_costs_c[7])
    find jan_bud
    reset jan_bud
    x8 = (new_interdept_costs_c[8])
    find feb_bud
    reset feb_bud
    x9 = (new_interdept_costs_c[9])
    find march_bud
    reset march_bud
    x10 = (new_interdept_costs_c[10])
    find april_bud
```

```
reset april_bud
x11 = (new_interdept_costs_c[11])
find may_bud
reset may_bud
x12 = (new_interdept_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_interdept_rev_c[1])
find july_act
reset july_act
a2 = (new_interdept_rev_c[2])
find aug_act
reset aug_act
a3 = (new_interdept_rev_c[3])
find sept_act
reset sept_act
a4 = (new_interdept_rev_c[4])
find oct_act
reset oct_act
a5 = (new_interdept_rev_c[5])
find nov_act
reset nov_act
a6 = (new_interdept_rev_c[6])
find dec_act
reset dec_act
a7 = (new_interdept_rev_c[7])
find jan_act
reset jan_act
a8 = (new_interdept_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_interdept_rev_c[9])
find march_act
reset march_act
a10 = (new_interdept_rev_c[10])
find apnl_act
reset april_act
a11 = (new_interdept_rev_c[11])
find may_act
reset may_act
a12 = (new_interdept_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
```

```
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
   chain seggraph;
```

```
Rule aug_act_unknown_dummy
If a2 = unknown_dummy
Then aug_act = found;
Rule sept_act_unknown_dummy
If a3 = unknown_dummy
Then sept_act = found;
Rule oct_act_unknown_dummy
If a4 = unknown_dummy
Then oct_act = found;
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found;
Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found;
Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found;
Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;

Rule aug_bud_unknown_dummy
If x2 = unknown_dummy
Then aug_bud = found;
```

```
Rule sept_bud_unknown_dummy
If x3 = unknown_dummy
Then sept_bud = found;
Rule oct_bud_unknown_dummy
If x4 = unknown_dummy
Then oct_bud = found;
Rule nov_bud_unknown_dummy
If x5 = unknown_dummy
Then nov_bud = found; Rule dec_bud_unknown_dummy
If x6 = unknown_dummy
Then dec_bud = found;
Rule jan_bud_unknown_dummy
If x7 = unknown_dummy
Then jan_bud = found; Rule feb_bud_unknown_dummy
If x8 = unknown_dummy
Then feb_bud = found;
Rule march_bud_unknown_dummy
If x9 = unknown_dummy
Then march_bud = found;
Rule april_bud_unknown_dummy
If x10 = unknown_dummy
Then april_bud = found;
Rule may_bud_unknown_dummy
If x11 = unknown_dummy
Then may_bud = found;
Rule june_bud_unknown_dummy
If x12 = unknown_dummy
Then june_bud = found;

Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 0 and
  x1 < = 1000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 1000 and
  x1 < = 2000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 2000 and
  x1 < = 3000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = small and
```

```
  x1 > 3000 and
  x1 < = 4000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 4000 and
  x1 < = 5000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 5000 and
  x1 < = 6000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 6000 and
  x1 < = 7000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 7000 and
  x1 < = 8000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 8000 and
  x1 < = 9000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 9000 and
  x1 < = 10000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 10000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = small and
  x2 > 0 and
  x2 < = 1000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = small and
  x2 > 1000 and
  x2 < = 2000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = small and
  x2 > 2000 and
  x2 < = 3000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = small and
  x2 > 3000 and
  x2 < = 4000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = small and
  x2 > 4000 and
  x2 < = 5000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = small and
  x2 > 5000 and
  x2 < = 6000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = small and
```

```
  x2 > 6000 and
  x2 < = 7000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = small and
  x2 > 7000 and
  x2 < = 8000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = small and
  x2 > 8000 and
  x2 < = 9000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = small and
  x2 > 9000 and
  x2 < = 10000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = small and
  x2 > 10000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = small and
  x3 > 0 and
  x3 < = 1000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = small and
  x3 > 1000 and
  x3 < = 2000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = small and
  x3 > 2000 and
  x3 < = 3000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = small and
  x3 > 3000 and
  x3 < = 4000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = small and
  x3 > 4000 and
  x3 < = 5000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = small and
  x3 > 5000 and
  x3 < = 6000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = small and
  x3 > 6000 and
  x3 < = 7000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = small and
  x3 > 7000 and
  x3 < = 8000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = small and
  x3 > 8000 and
  x3 < = 9000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = small and
  x3 > 9000 and
```

```
   x3 < = 10000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = small and
   x3 > 10000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = small and
   x4 > 0 and
   x4 < = 1000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = small and
   x4 > 1000 and
   x4 < = 2000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = small and
   x4 > 2000 and
   x4 < = 3000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = small and
   x4 > 3000 and
   x4 < = 4000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = small and
   x4 > 4000 and
   x4 < = 5000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = small and
   x4 > 5000 and
   x4 < = 6000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = small and
   x4 > 6000 and
   x4 < = 7000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = small and
   x4 > 7000 and
   x4 < = 8000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = small and
   x4 > 8000 and
   x4 < = 9000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = small and
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  x4 > 9000 and
  x4 < = 10000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = small and
  x4 > 10000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = small and
  x5 > 0 and
  x5 < = 1000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = small and
  x5 > 1000 and
  x5 < = 2000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = small and
  x5 > 2000 and
  x5 < = 3000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = small and
  x5 > 3000 and
  x5 < = 4000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = small and
  x5 > 4000 and
  x5 < = 5000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = small and
  x5 > 5000 and
  x5 < = 6000 Then lineto 260;92
    nov_bud = found;

Rule nov_bud_8

If axis_size = small and
  x5 > 6000 and
  x5 < = 7000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = small and
  x5 > 7000 and
  x5 < = 8000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = small and
  x5 > 8000 and
  x5 < = 9000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11
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```
If axis_size = small and
  x5 > 9000 and
  x5 < = 10000 Then lineto 260,29
   nov_bud = found;

Rule nov_bud_12

If axis_size = small and
  x5 > 10000 Then lineto 260,20
   nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
   dec_bud = found;

Rule dec_bud_2

If axis_size = small and
  x6 > 0 and
  x6 < = 1000 Then lineto 308,172
   dec_bud = found;

Rule dec_bud_3

If axis_size = small and
  x6 > 1000 and
  x6 < = 2000 Then lineto 308,156
   dec_bud = found;

Rule dec_bud_4

If axis_size = small and
  x6 > 2000 and
  x6 < = 3000 Then lineto 308,140
   dec_bud = found;

Rule dec_bud_5

If axis_size = small and
  x6 > 3000 and
  x6 < = 4000 Then lineto 308,124
   dec_bud = found;

Rule dec_bud_6

If axis_size = small and
  x6 > 4000 and
  x6 < = 5000 Then lineto 308,108
   dec_bud = found;

Rule dec_bud_7

If axis_size = small and
  x6 > 5000 and
  x6 < = 6000 Then lineto 308,92
   dec_bud = found;

Rule dec_bud_8

If axis_size = small and
  x6 > 6000 and
  x6 < = 7000 Then lineto 308,77
   dec_bud = found;

Rule dec_bud_9

If axis_size = small and
  x6 > 7000 and
  x6 < = 8000 Then lineto 308,62
   dec_bud = found;

Rule dec_bud_10

If axis_size = small and
  x6 > 8000 and
  x6 < = 9000 Then lineto 308,45
   dec_bud = found;

Rule dec_bud_11
```

```
If axis_size = small and
  x6 > 9000 and
  x6 < = 10000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = small and
  x6 > 10000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = small and
  x7 > 0 and
  x7 < = 1000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = small and
  x7 > 1000 and
  x7 < = 2000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = small and
  x7 > 2000 and
  x7 < = 3000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = small and
  x7 > 3000 and
  x7 < = 4000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = small and
  x7 > 4000 and
  x7 < = 5000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = small and
  x7 > 5000 and
  x7 < = 6000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = small and
  x7 > 6000 and
  x7 < = 7000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = small and
  x7 > 7000 and
  x7 < = 8000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = small and
  x7 > 8000 and
  x7 < = 9000 Then lineto 357,45
    jan_bud = found;
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```
Rule jan_bud_11

If axis_size = small and
  x7 > 9000 and
  x7 < = 10000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = small and
  x7 > 10000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = small and
  x8 > 0 and
  x8 < = 1000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = small and
  x8 > 1000 and
  x8 < = 2000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = small and
  x8 > 2000 and
  x8 < = 3000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = small and
  x8 > 3000 and
  x8 < = 4000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = small and
  x8 > 4000 and
  x8 < = 5000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = small and
  x8 > 5000 and
  x8 < = 6000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = small and
  x8 > 6000 and
  x8 < = 7000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = small and
  x8 > 7000 and
  x8 < = 8000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = small and
  x8 > 8000 and
  x8 < = 9000 Then lineto 404,45
    feb_bud = found;
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```
Rule feb_bud_11

If axis_size = small and
  x8 > 9000 and
  x8 < = 10000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = small and
  x8 > 10000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = small and
  x9 > 0 and
  x9 < = 1000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = small and
  x9 > 1000 and
  x9 < = 2000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = small and
  x9 > 2000 and
  x9 < = 3000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = small and
  x9 > 3000 and
  x9 < = 4000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = small and
  x9 > 4000 and
  x9 < = 5000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = small and
  x9 > 5000 and
  x9 < = 6000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = small and
  x9 > 6000 and
  x9 < = 7000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = small and
  x9 > 7000 and
  x9 < = 8000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = small and
  x9 > 8000 and
  x9 < = 9000 Then lineto 452,45
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```
    march_bud = found;

Rule march_bud_11

If axis_size = small and
  x9 > 9000 and
  x9 < = 10000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = small and
  x9 > 10000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = small and
  x10 > 0 and
  x10 < = 1000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = small and
  x10 > 1000 and
  x10 < = 2000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = small and
  x10 > 2000 and
  x10 < = 3000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = small and
  x10 > 3000 and
  x10 < = 4000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = small and
  x10 > 4000 and
  x10 < = 5000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = small and
  x10 > 5000 and
  x10 < = 6000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = small and
  x10 > 6000 and
  x10 < = 7000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = small and
  x10 > 7000 and
  x10 < = 8000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = small and
  x10 > 8000 and
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  x10 < = 9000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = small and
  x10 > 9000 and
  x10 < = 10000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = small and
  x10 > 10000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = small and
  x11 > 0 and
  x11 < = 1000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = small and
  x11 > 1000 and
  x11 < = 2000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = small and
  x11 > 2000 and
  x11 < = 3000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = small and
  x11 > 3000 and
  x11 < = 4000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = small and
  x11 > 4000 and
  x11 < = 5000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = small and
  x11 > 5000 and
  x11 < = 6000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = small and
  x11 > 6000 and
  x11 < = 7000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = small and
  x11 > 7000 and
  x11 < = 8000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10
```

```
If axis_size = small and
  x11 > 8000 and
  x11 < = 9000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = small and
  x11 > 9000 and
  x11 < = 10000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = small and
  x11 > 10000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = small and
  x12 > 0 and
  x12 < = 1000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = small and
  x12 > 1000 and
  x12 < = 2000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = small and
  x12 > 2000 and
  x12 < = 3000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = small and
  x12 > 3000 and
  x12 < = 4000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = small and
  x12 > 4000 and
  x12 < = 5000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = small and
  x12 > 5000 and
  x12 < = 6000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = small and
  x12 > 6000 and
  x12 < = 7000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = small and
  x12 > 7000 and
  x12 < = 8000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10
```

```
If axis_size = small and
  x12 > 8000 and
  x12 < = 9000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = small and
  x12 > 9000 and
  x12 < = 10000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = small and
  x12 > 10000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 0 and
  a1 < = 1000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 1000 and
  a1 < = 2000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 2000 and
  a1 < = 3000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 3000 and
  a1 < = 4000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 4000 and
  a1 < = 5000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 5000 and
  a1 < = 6000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 6000 and
  a1 < = 7000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 7000 and
  a1 < = 8000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 8000 and
  a1 < = 9000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 9000 and
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  a1 < = 10000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 10000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = small and
  a2 > 0 and
  a2 < = 1000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = small and
  a2 > 1000 and
  a2 < = 2000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = small and
  a2 > 2000 and
  a2 < = 3000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = small and
  a2 > 3000 and
  a2 < = 4000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = small and
  a2 > 4000 and
  a2 < = 5000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = small and
  a2 > 5000 and
  a2 < = 6000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = small and
  a2 > 6000 and
  a2 < = 7000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = small and
  a2 > 7000 and
  a2 < = 8000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = small and
  a2 > 8000 and
  a2 < = 9000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = small and
  a2 > 9000 and
  a2 < = 10000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = small and
  a2 > 10000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = small and
  a3 > 0 and
  a3 < = 1000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = small and
  a3 > 1000 and
  a3 < = 2000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = small and
  a3 > 2000 and
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  a3 < = 3000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = small and
  a3 > 3000 and
  a3 < = 4000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = small and
  a3 > 4000 and
  a3 < = 5000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = small and
  a3 > 5000 and
  a3 < = 6000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = small and
  a3 > 6000 and
  a3 < = 7000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = small and
  a3 > 7000 and
  a3 < = 8000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = small and
  a3 > 8000 and
  a3 < = 9000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = small and
  a3 > 9000 and
  a3 < = 10000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = small and
  a3 > 10000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = small and
  a4 > 0 and
  a4 < = 1000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = small and
  a4 > 1000 and
  a4 < = 2000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = small and
  a4 > 2000 and
  a4 < = 3000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = small and
  a4 > 3000 and
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  a4 < = 4000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = small and
  a4 > 4000 and
  a4 < = 5000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = small and
  a4 > 5000 and
  a4 < = 6000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = small and
  a4 > 6000 and
  a4 < = 7000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = small and
  a4 > 7000 and
  a4 < = 8000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = small and
  a4 > 8000 and
  a4 < = 9000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = small and
  a4 > 9000 and
  a4 < = 10000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = small and
  a4 > 10000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = small and
  a5 > 0 and
  a5 < = 1000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = small and
  a5 > 1000 and
  a5 < = 2000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = small and
  a5 > 2000 and
  a5 < = 3000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = small and
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  a5 > 3000 and
  a5 < = 4000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = small and
  a5 > 4000 and
  a5 < = 5000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = small and
  a5 > 5000 and
  a5 < = 6000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = small and
  a5 > 6000 and
  a5 < = 7000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = small and
  a5 > 7000 and
  a5 < = 8000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = small and
  a5 > 8000 and
  a5 < = 9000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = small and
  a5 > 9000 and
  a5 < = 10000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = small and
  a5 > 10000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = small and
  a6 > 0 and
  a6 < = 1000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = small and
  a6 > 1000 and
  a6 < = 2000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = small and
  a6 > 2000 and
  a6 < = 3000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5
```

```
If axis_size = small and
   a6 > 3000 and
   a6 < = 4000 Then lineto 308,123
     dec_act = found;

Rule dec_act_6

If axis_size = small and
   a6 > 4000 and
   a6 < = 5000 Then lineto 308,107
     dec_act = found;

Rule dec_act_7

If axis_size = small and
   a6 > 5000 and
   a6 < = 6000 Then lineto 308,91
     dec_act = found;

Rule dec_act_8

If axis_size = small and
   a6 > 6000 and
   a6 < = 7000 Then lineto 308,76
     dec_act = found;

Rule dec_act_9

If axis_size = small and
   a6 > 7000 and
   a6 < = 8000 Then lineto 308,61
     dec_act = found;

Rule dec_act_10

If axis_size = small and
   a6 > 8000 and
   a6 < = 9000 Then lineto 308,44
     dec_act = found;

Rule dec_act_11

If axis_size = small and
   a6 > 9000 and
   a6 < = 10000 Then lineto 308,28
     dec_act = found;

Rule dec_act_12

If axis_size = small and
   a6 > 10000 Then lineto 308,20
     dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
     jan_act = found;

Rule jan_act_2

If axis_size = small and
   a7 > 0 and
   a7 < = 1000 Then lineto 357,171
     jan_act = found;

Rule jan_act_3

If axis_size = small and
   a7 > 1000 and
   a7 < = 2000 Then lineto 357,155
     jan_act = found;

Rule jan_act_4

If axis_size = small and
   a7 > 2000 and
   a7 < = 3000 Then lineto 357,139
     jan_act = found;

Rule jan_act_5
```

```
If axis_size = small and
  a7 > 3000 and
  a7 < = 4000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = small and
  a7 > 4000 and
  a7 < = 5000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = small and
  a7 > 5000 and
  a7 < = 6000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = small and
  a7 > 6000 and
  a7 < = 7000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = small and
  a7 > 7000 and
  a7 < = 8000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = small and
  a7 > 8000 and
  a7 < = 9000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = small and
  a7 > 9000 and
  a7 < = 10000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = small and
  a7 > 10000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = small and
  a8 > 0 and
  a8 < = 1000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = small and
  a8 > 1000 and
  a8 < = 2000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = small and
  a8 > 2000 and
  a8 < = 3000 Then lineto 404,139
    feb_act = found    ;
```

```
Rule feb_act_5

If axis_size = small and
  a8 > 3000 and
  a8 < = 4000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = small and
  a8 > 4000 and
  a8 < = 5000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = small and
  a8 > 5000 and
  a8 < = 6000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = small and
  a8 > 6000 and
  a8 < = 7000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = small and
  a8 > 7000 and
  a8 < = 8000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = small and
  a8 > 8000.and
  a8 < = 9000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = small and
  a8 > 9000 and
  a8 < = 10000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = small and
  a8 > 10000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = small and
  a9 > 0 and
  a9 < = 1000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = small and
  a9 > 1000 and
  a9 < = 2000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = small and
  a9 > 2000 and
  a9 < = 3000 Then lineto 452,139
    march_act = found    ;
```

```
Rule march_act_5

If axis_size = small and
  a9 > 3000 and
  a9 < = 4000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = small and
  a9 > 4000 and
  a9 < = 5000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = small and
  a9 > 5000 and
  a9 < = 6000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = small and
  a9 > 6000 and
  a9 < = 7000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = small and
  a9 > 7000 and
  a9 < = 8000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = small and
  a9 > 8000 and
  a9 < = 9000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = small and
  a9 > 9000 and
  a9 < = 10000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = small and
  a9 > 10000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = small and
  a10 > 0 and
  a10 < = 1000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = small and
  a10 > 1000 and
  a10 < = 2000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = small and
  a10 > 2000 and
  a10 < = 3000 Then lineto 501,139
```

```
    april_act = found    ;

Rule april_act_5

If axis_size = small and
  a10 > 3000 and
  a10 < = 4000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = small and
  a10 > 4000 and
  a10 < = 5000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = small and
  a10 > 5000 and
  a10 < = 6000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = small and
  a10 > 6000 and
  a10 < = 7000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = small and
  a10 > 7000 and
  a10 < = 8000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = small and
  a10 > 8000 and
  a10 < = 9000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = small and
  a10 > 9000 and
  a10 < = 10000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = small and
  a10 > 10000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = small and
  a11 > 0 and
  a11 < = 1000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = small and
  a11 > 1000 and
  a11 < = 2000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = small and
  a11 > 2000 and
```

```
  a11 < = 3000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = small and
  a11 > 3000 and
  a11 < = 4000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = small and
  a11 > 4000 and
  a11 < = 5000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = small and
  a11 > 5000 and
  a11 < = 6000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = small and
  a11 > 6000 and
  a11 < = 7000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = small and
  a11 > 7000 and
  a11 < = 8000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = small and
  a11 > 8000 and
  a11 < = 9000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = small and
  a11 > 9000 and
  a11 < = 10000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = small and
  a11 > 10000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = small and
  a12 > 0 and
  a12 < = 1000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = small and
  a12 > 1000 and
  a12 < = 2000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = small and
```

```
  a12 > 2000 and
  a12 < = 3000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = small and
  a12 > 3000 and
  a12 < = 4000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = small and
  a12 > 4000 and
  a12 < = 5000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = small and
  a12 > 5000 and
  a12 < = 6000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = small and
  a12 > 6000 and
  a12 < = 7000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = small and
  a12 > 7000 and
  a12 < = 8000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = small and
  a12 > 8000 and
  a12 < = 9000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = small and
  a12 > 9000 and
  a12 < = 10000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = small and
  a12 > 10000 Then lineto 597,20
    june_act = found    ;

Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_small

If axis_display = unknown

Then axis_display = found
    glocate 2,3
    gdisplay "10"
    glocate 3,7
    gdisplay "8"
    glocate 3,11
    gdisplay "6"
    glocate 3,15
    gdisplay "4"
    glocate 3,19
    gdisplay "2";
```

```
!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = small color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the files
have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_music_rev_c[z] = unknown_dummy
    new_state_rev_c[z] = unknown_dummy
    new_total_revs_c[z] = unknown_dummy

    new_music_costs_c[z] = unknown_dummy
    new_state_costs_c[z] = unknown_dummy
    new_total_costs_c[z] = unknown_dummy

    z = (z + 1) end


find do_music_seg find do_state_seg find do_total_seg ;

! Rules Block


Rule begin_music_seg_display

If do_music_seg = unknown

Then do_music_seg = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 12
    moveto 30,180
    x1 = (new_music_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_music_costs_c[2])
    find aug_bud
    reset aug_bud
    x3 = (new_music_costs_c[3])
    find sept_bud
    reset sept_bud
    x4 = (new_music_costs_c[4])
```

```
find oct_bud
reset oct_bud
x5 = (new_music_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_music_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_music_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_music_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_music_costs_c[9])
find march_bud
reset march_bud
x10 = (new_music_costs_c[10])
find april_bud
reset april_bud
x11 = (new_music_costs_c[11])
find may_bud
reset may_bud
x12 = (new_music_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_music_rev_c[1])
find july_act
reset july_act
a2 = (new_music_rev_c[2])
find aug_act
reset aug_act
a3 = (new_music_rev_c[3])
find sept_act
reset sept_act
a4 = (new_music_rev_c[4])
find oct_act
reset oct_act
a5 = (new_music_rev_c[5])
find nov_act
reset nov_act
a6 = (new_music_rev_c[6])
find dec_act
reset dec_act
a7 = (new_music_rev_c[7])
find jan_act
reset jan_act
a8 = (new_music_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_music_rev_c[9])
find march_act
reset march_act
a10 = (new_music_rev_c[10])
find april_act
reset april_act
a11 = (new_music_rev_c[11])
find may_act
reset may_act
a12 = (new_music_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
```

```
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 27,1
    gdisplay "Music Department"
    glocate 28,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain seggraph;

Rule begin_state_seg_display

If do_state_seg = unknown

Then do_state_seg = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "State Related"
    glocate 26,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
```

```
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_state_costs_c[1])
find july_bud
reset july_bud
x2 = (new_state_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_state_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_state_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_state_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_state_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_state_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_state_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_state_costs_c[9])
find march_bud
reset march_bud
x10 = (new_state_costs_c[10])
find april_bud
reset april_bud
x11 = (new_state_costs_c[11])
find may_bud
reset may_bud
x12 = (new_state_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_state_rev_c[1])
find july_act
reset july_act
a2 = (new_state_rev_c[2])
find aug_act
reset aug_act
a3 = (new_state_rev_c[3])
find sept_act
reset sept_act
a4 = (new_state_rev_c[4])
find oct_act
reset oct_act
a5 = (new_state_rev_c[5])
find nov_act
reset nov_act
a6 = (new_state_rev_c[6])
find dec_act
reset dec_act
a7 = (new_state_rev_c[7])
find jan_act
reset jan_act
a8 = (new_state_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_state_rev_c[9])
find march_act
```

```
    reset march_act
    a10 = (new_state_rev_c[10])
    find april_act
    reset april_act
    a11 = (new_state_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_state_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
   chain seggraph;



Rule begin_total_seg_display

If do_total_seg = unknown

Then do_total_seg = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 30,1
    gdisplay "Total Revenue & Expenses"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
```

```
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_total_costs_c[1])
find july_bud
reset july_bud
x2 = (new_total_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_total_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_total_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_total_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_total_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_total_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_total_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_total_costs_c[9])
find march_bud
reset march_bud
x10 = (new_total_costs_c[10])
find april_bud
reset april_bud
x11 = (new_total_costs_c[11])
find may_bud
reset may_bud
x12 = (new_total_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_total_revs_c[1])
find july_act
reset july_act
a2 = (new_total_revs_c[2])
find aug_act
reset aug_act
a3 = (new_total_revs_c[3])
find sept_act
reset sept_act
a4 = (new_total_revs_c[4])
find oct_act
```

```
reset oct_act
a5 = (new_total_revs_c[5])
find nov_act
reset nov_act
a6 = (new_total_revs_c[6])
find dec_act
reset dec_act
a7 = (new_total_revs_c[7])
find jan_act
reset jan_act
a8 = (new_total_revs_c[8])
find feb_act
reset feb_act
 a9 = (new_total_revs_c[9])
find march_act
reset march_act
a10 = (new_total_revs_c[10])
find april_act
reset april_act
a11 = (new_total_revs_c[11])
find may_act
reset may_act
a12 = (new_total_revs_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain graph1;
```

```
Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy
```

```
Then sept_act = found;
Rule oct_act_unknown_dummy
If a4 = unknown_dummy
Then oct_act = found;
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found;
Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found;
Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found;
Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;

Rule aug_bud_unknown_dummy
If x2 = unknown_dummy
Then aug_bud = found;
Rule sept_bud_unknown_dummy
If x3 = unknown_dummy
Then sept_bud = found;
Rule oct_bud_unknown_dummy
If x4 = unknown_dummy
Then oct_bud = found;
Rule nov_bud_unknown_dummy
If x5 = unknown_dummy
Then nov_bud = found; Rule dec_bud_unknown_dummy
If x6 = unknown_dummy
Then dec_bud = found;
```

```
Rule jan_bud_unknown_dummy
If x7 = unknown_dummy
Then jan_bud = found; Rule feb_bud_unknown_dummy
If x8 = unknown_dummy
Then feb_bud = found;
Rule march_bud_unknown_dummy
If x9 = unknown_dummy
Then march_bud = found;
Rule april_bud_unknown_dummy
If x10 = unknown_dummy
Then april_bud = found;
Rule may_bud_unknown_dummy
If x11 = unknown_dummy
Then may_bud = found;
Rule june_bud_unknown_dummy
If x12 = unknown_dummy
Then june_bud = found;
```

```
Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 0 and
  x1 < = 1000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 1000 and
  x1 < = 2000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 2000 and
  x1 < = 3000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 3000 and
  x1 < = 4000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 4000 and
  x1 < = 5000 Then locate 30,180
```

```
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 5000 and
  x1 < = 6000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 6000 and
  x1 < = 7000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 7000 and
  x1 < = 8000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 8000 and
  x1 < = 9000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 9000 and
  x1 < = 10000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = small and
  x1 > 10000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If  x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = small and
  x2 > 0 and
  x2 < = 1000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = small and
  x2 > 1000 and
  x2 < = 2000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = small and
  x2 > 2000 and
  x2 < = 3000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = small and
  x2 > 3000 and
  x2 < = 4000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = small and
  x2 > 4000 and
  x2 < = 5000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = small and
  x2 > 5000 and
  x2 < = 6000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = small and
  x2 > 6000 and
  x2 < = 7000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = small and
  x2 > 7000 and
  x2 < = 8000 Then lineto 114,62
    aug_bud = found
```

```
    reset aug_bud;

Rule aug_bud_10 If axis_size = small and
  x2 > 8000 and
  x2 < = 9000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = small and
  x2 > 9000 and
  x2 < = 10000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = small and
  x2 > 10000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = small and
  x3 > 0 and
  x3 < = 1000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = small and
  x3 > 1000 and
  x3 < = 2000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = small and
  x3 > 2000 and
  x3 < = 3000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = small and
  x3 > 3000 and
  x3 < = 4000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = small and
  x3 > 4000 and
  x3 < = 5000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = small and
  x3 > 5000 and
  x3 < = 6000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = small and
  x3 > 6000 and
  x3 < = 7000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = small and
  x3 > 7000 and
  x3 < = 8000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = small and
  x3 > 8000 and
  x3 < = 9000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = small and
  x3 > 9000 and
  x3 < = 10000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = small and
  x3 > 10000 Then lineto 163,20
    sept_bud = found;
```

```
Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = small and
  x4 > 0 and
  x4 <= 1000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = small and
  x4 > 1000 and
  x4 <= 2000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = small and
  x4 > 2000 and
  x4 <= 3000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = small and
  x4 > 3000 and
  x4 <= 4000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = small and
  x4 > 4000 and
  x4 <= 5000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = small and
  x4 > 5000 and
  x4 <= 6000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = small and
  x4 > 6000 and
  x4 <= 7000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = small and
  x4 > 7000 and
  x4 <= 8000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = small and
  x4 > 8000 and
  x4 <= 9000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = small and
  x4 > 9000 and
  x4 <= 10000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = small and
  x4 > 10000 Then lineto 212,20
```

```
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = small and
  x5 > 0 and
  x5 < = 1000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = small and
  x5 > 1000 and
  x5 < = 2000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = small and
  x5 > 2000 and
  x5 < = 3000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = small and
  x5 > 3000 and
  x5 < = 4000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = small and
  x5 > 4000 and
  x5 < = 5000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = small and
  x5 > 5000 and
  x5 < = 6000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = small and
  x5 > 6000 and
  x5 < = 7000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = small and
  x5 > 7000 and
  x5 < = 8000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = small and
  x5 > 8000 and
  x5 < = 9000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = small and
  x5 > 9000 and
  x5 < = 10000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = small and
```

```
  x5 > 10000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = small and
  x6 > 0 and
  x6 < = 1000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = small and
  x6 > 1000 and
  x6 < = 2000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = small and
  x6 > 2000 and
  x6 < = 3000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = small and
  x6 > 3000 and
  x6 < = 4000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = small and
  x6 > 4000 and
  x6 < = 5000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = small and
  x6 > 5000 and
  x6 < = 6000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = small and
  x6 > 6000 and
  x6 < = 7000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = small and
  x6 > 7000 and
  x6 < = 8000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = small and
  x6 > 8000 and
  x6 < = 9000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = small and
  x6 > 9000 and
  x6 < = 10000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12
```

```
If axis_size = small and
   x6 > 10000 Then lineto 308,20
     dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
     jan_bud = found;

Rule jan_bud_2

If axis_size = small and
   x7 > 0 and
   x7 < = 1000 Then lineto 357,172
     jan_bud = found;

Rule jan_bud_3

If axis_size = small and
   x7 > 1000 and
   x7 < = 2000 Then lineto 357,156
     jan_bud = found;

Rule jan_bud_4

If axis_size = small and
   x7 > 2000 and
   x7 < = 3000 Then lineto 357,140
     jan_bud = found;

Rule jan_bud_5

If axis_size = small and
   x7 > 3000 and
   x7 < = 4000 Then lineto 357,124
     jan_bud = found;

Rule jan_bud_6

If axis_size = small and
   x7 > 4000 and
   x7 < = 5000 Then lineto 357,108
     jan_bud = found;

Rule jan_bud_7

If axis_size = small and
   x7 > 5000 and
   x7 < = 6000 Then lineto 357,92
     jan_bud = found;

Rule jan_bud_8

If axis_size = small and
   x7 > 6000 and
   x7 < = 7000 Then lineto 357,77
     jan_bud = found;

Rule jan_bud_9

If axis_size = small and
   x7 > 7000 and
   x7 < = 8000 Then lineto 357,62
     jan_bud = found;

Rule jan_bud_10

If axis_size = small and
   x7 > 8000 and
   x7 < = 9000 Then lineto 357,45
     jan_bud = found;

Rule jan_bud_11

If axis_size = small and
   x7 > 9000 and
   x7 < = 10000 Then lineto 357,29
     jan_bud = found;

Rule jan_bud_12
```

```
If axis_size = small and
  x7 > 10000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = small and
  x8 > 0 and
  x8 < = 1000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = small and
  x8 > 1000 and
  x8 < = 2000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = small and
  x8 > 2000 and
  x8 < = 3000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = small and
  x8 > 3000 and
  x8 < = 4000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = small and
  x8 > 4000 and
  x8 < = 5000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = small and
  x8 > 5000 and
  x8 < = 6000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = small and
  x8 > 6000 and
  x8 < = 7000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = small and
  x8 > 7000 and
  x8 < = 8000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = small and
  x8 > 8000 and
  x8 < = 9000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = small and
  x8 > 9000 and
  x8 < = 10000 Then lineto 404,29
    feb_bud = found;
```

```
Rule feb_bud_12

If axis_size = small and
  x8 > 10000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = small and
  x9 > 0 and
  x9 < = 1000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = small and
  x9 > 1000 and
  x9 < = 2000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = small and
  x9 > 2000 and
  x9 < = 3000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = small and
  x9 > 3000 and
  x9 < = 4000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = small and
  x9 > 4000 and
  x9 < = 5000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = small and
  x9 > 5000 and
  x9 < = 6000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = small and
  x9 > 6000 and
  x9 < = 7000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = small and
  x9 > 7000 and
  x9 < = 8000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = small and
  x9 > 8000 and
  x9 < = 9000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = small and
  x9 > 9000 and
  x9 < = 10000 Then lineto 452,29
    march_bud = found;
```

```
Rule march_bud_12

If axis_size = small and
  x9 > 10000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = small and
  x10 > 0 and
  x10 < = 1000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = small and
  x10 > 1000 and
  x10 < = 2000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = small and
  x10 > 2000 and
  x10 < = 3000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = small and
  x10 > 3000 and
  x10 < = 4000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = small and
  x10 > 4000 and
  x10 < = 5000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = small and
  x10 > 5000 and
  x10 < = 6000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = small and
  x10 > 6000 and
  x10 < = 7000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = small and
  x10 > 7000 and
  x10 < = 8000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = small and
  x10 > 8000 and
  x10 < = 9000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = small and
  x10 > 9000 and
  x10 < = 10000 Then lineto 501,29
```

```
    april_bud = found;

Rule april_bud_12

If axis_size = small and
  x10 > 10000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = small and
  x11 > 0 and
  x11 <= 1000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = small and
  x11 > 1000 and
  x11 <= 2000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = small and
  x11 > 2000 and
  x11 <= 3000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = small and
  x11 > 3000 and
  x11 <= 4000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = small and
  x11 > 4000 and
  x11 <= 5000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = small and
  x11 > 5000 and
  x11 <= 6000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = small and
  x11 > 6000 and
  x11 <= 7000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = small and
  x11 > 7000 and
  x11 <= 8000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = small and
  x11 > 8000 and
  x11 <= 9000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = small and
```

```
  x11 > 9000 and
  x11 < = 10000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = small and
  x11 > 10000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = small and
  x12 > 0 and
  x12 < = 1000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = small and
  x12 > 1000 and
  x12 < = 2000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = small and
  x12 > 2000 and
  x12 < = 3000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = small and
  x12 > 3000 and
  x12 < = 4000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = small and
  x12 > 4000 and
  x12 < = 5000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = small and
  x12 > 5000 and
  x12 < = 6000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = small and
  x12 > 6000 and
  x12 < = 7000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = small and
  x12 > 7000 and
  x12 < = 8000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = small and
  x12 > 8000 and
  x12 < = 9000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11
```

```
If axis_size = small and
  x12 > 9000 and
  x12 < = 10000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = small and
  x12 > 10000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 0 and
  a1 < = 1000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 1000 and
  a1 < = 2000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 2000 and
  a1 < = 3000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 3000 and
  a1 < = 4000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 4000 and
  a1 < = 5000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 5000 and
  a1 < = 6000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 6000 and
  a1 < = 7000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 7000 and
  a1 < = 8000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 8000 and
  a1 < = 9000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = small and
  a1 > 9000 and
  a1 < = 10000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 10000 Then locate 30,180
    lineto 69,20
    july_act = found;
```

```
Rule aug_act_1 If a2 = 0 Then lineto 114,180
    aug_act = found;

Rule aug_act_2 If axis_size = small and
  a2 > 0 and
  a2 < = 1000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = small and
  a2 > 1000 and
  a2 < = 2000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = small and
  a2 > 2000 and
  a2 < = 3000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = small and
  a2 > 3000 and
  a2 < = 4000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = small and
  a2 > 4000 and
  a2 < = 5000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = small and
  a2 > 5000 and
  a2 < = 6000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = small and
  a2 > 6000 and
  a2 < = 7000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = small and
  a2 > 7000 and
  a2 < = 8000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = small and
  a2 > 8000 and
  a2 < = 9000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = small and
  a2 > 9000 and
  a2 < = 10000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = small and
  a2 > 10000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = small and
  a3 > 0 and
  a3 < = 1000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = small and
  a3 > 1000 and
  a3 < = 2000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = small and
  a3 > 2000 and
  a3 < = 3000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = small and
  a3 > 3000 and
  a3 < = 4000 Then lineto 163,123
    sept_act = found;
```

```
Rule sept_act_6 If axis_size = small and
  a3 > 4000 and
  a3 < = 5000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = small and
  a3 > 5000 and
  a3 < = 6000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = small and
  a3 > 6000 and
  a3 < = 7000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = small and
  a3 > 7000 and
  a3 < = 8000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = small and
  a3 > 8000 and
  a3 < = 9000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = small and
  a3 > 9000 and
  a3 < = 10000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = small and
  a3 > 10000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = small and
  a4 > 0 and
  a4 < = 1000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = small and
  a4 > 1000 and
  a4 < = 2000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = small and
  a4 > 2000 and
  a4 < = 3000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = small and
  a4 > 3000 and
  a4 < = 4000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = small and
  a4 > 4000 and
  a4 < = 5000 Then lineto 212,107
```

```
    oct_act = found;

Rule oct_act_7

If axis_size = small and
   a4 > 5000 and
   a4 < = 6000 Then lineto 212,91
     oct_act = found;

Rule oct_act_8

If axis_size = small and
   a4 > 6000 and
   a4 < = 7000 Then lineto 212,76
     oct_act = found;

Rule oct_act_9

If axis_size = small and
   a4 > 7000 and
   a4 < = 8000 Then lineto 212,61
     oct_act = found;

Rule oct_act_10

If axis_size = small and
   a4 > 8000 and
   a4 < = 9000 Then lineto 212,44
     oct_act = found;

Rule oct_act_11

If axis_size = small and
   a4 > 9000 and
   a4 < = 10000 Then lineto 212,28
     oct_act = found;

Rule oct_act_12

If axis_size = small and
   a4 > 10000 Then lineto 212,20
     oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
     nov_act = found;

Rule nov_act_2

If axis_size = small and
   a5 > 0 and
   a5 < = 1000 Then lineto 260,171
     nov_act = found;

Rule nov_act_3

If axis_size = small and
   a5 > 1000 and
   a5 < = 2000 Then lineto 260,155
     nov_act = found;

Rule nov_act_4

If axis_size = small and
   a5 > 2000 and
   a5 < = 3000 Then lineto 260,139
     nov_act = found;

Rule nov_act_5

If axis_size = small and
   a5 > 3000 and
   a5 < = 4000 Then lineto 260,123
     nov_act = found;

Rule nov_act_6

If axis_size = small and
   a5 > 4000 and
```

```
  a5 < = 5000 Then lineto 260,107
   nov_act = found;

Rule nov_act_7

If axis_size = small and
  a5 > 5000 and
  a5 < = 6000 Then lineto 260,91
   nov_act = found ;

Rule nov_act_8

If axis_size = small and
  a5 > 6000 and
  a5 < = 7000 Then lineto 260,76
   nov_act = found;

Rule nov_act_9

If axis_size = small and
  a5 > 7000 and
  a5 < = 8000 Then lineto 260,61
   nov_act = found;

Rule nov_act_10

If axis_size = small and
  a5 > 8000 and
  a5 < = 9000 Then lineto 260,44
   nov_act = found;

Rule nov_act_11

If axis_size = small and
  a5 > 9000 and
  a5 < = 10000 Then lineto 260,28
   nov_act = found;

Rule nov_act_12

If axis_size = small and
  a5 > 10000 Then lineto 260,20
   nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
   dec_act = found;

Rule dec_act_2

If axis_size = small and
  a6 > 0 and
  a6 < = 1000 Then lineto 308,171
   dec_act = found;

Rule dec_act_3

If axis_size = small and
  a6 > 1000 and
  a6 < = 2000 Then lineto 308,155
   dec_act = found;

Rule dec_act_4

If axis_size = small and
  a6 > 2000 and
  a6 < = 3000 Then lineto 308,139
   dec_act = found;

Rule dec_act_5

If axis_size = small and
  a6 > 3000 and
  a6 < = 4000 Then lineto 308,123
   dec_act = found;

Rule dec_act_6

If axis_size = small and
```

```
  a6 > 4000 and
  a6 < = 5000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = small and
  a6 > 5000 and
  a6 < = 6000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = small and
  a6 > 6000 and
  a6 < = 7000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = small and
  a6 > 7000 and
  a6 < = 8000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = small and
  a6 > 8000 and
  a6 < = 9000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = small and
  a6 > 9000 and
  a6 < = 10000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = small and
  a6 > 10000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = small and
  a7 > 0 and
  a7 < = 1000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = small and
  a7 > 1000 and
  a7 < = 2000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = small and
  a7 > 2000 and
  a7 < = 3000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = small and
  a7 > 3000 and
  a7 < = 4000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6
```

```
If axis_size = small and
  a7 > 4000 and
  a7 < = 5000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = small and
  a7 > 5000 and
  a7 < = 6000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = small and
  a7 > 6000 and
  a7 < = 7000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = small and
  a7 > 7000 and
  a7 < = 8000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = small and
  a7 > 8000 and
  a7 < = 9000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = small and
  a7 > 9000 and
  a7 < = 10000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = small and
  a7 > 10000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = small and
  a8 > 0 and
  a8 < = 1000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = small and
  a8 > 1000 and
  a8 < = 2000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = small and
  a8 > 2000 and
  a8 < = 3000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = small and
  a8 > 3000 and
  a8 < = 4000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6
```

```
If axis_size = small and
  a8 > 4000 and
  a8 < = 5000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = small and
  a8 > 5000 and
  a8 < = 6000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = small and
  a8 > 6000 and
  a8 < = 7000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = small and
  a8 > 7000 and
  a8 < = 8000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = small and
  a8 > 8000 and
  a8 < = 9000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = small and
  a8 > 9000 and
  a8 < = 10000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = small and
  a8 > 10000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = small and
  a9 > 0 and
  a9 < = 1000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = small and
  a9 > 1000 and
  a9 < = 2000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = small and
  a9 > 2000 and
  a9 < = 3000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = small and
  a9 > 3000 and
  a9 < = 4000 Then lineto 452,123
    march_act = found    ;
```

```
Rule march_act_6

If axis_size = small and
  a9 > 4000 and
  a9 < = 5000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = small and
  a9 > 5000 and
  a9 < = 6000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = small and
  a9 > 6000 and
  a9 < = 7000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = small and
  a9 > 7000 and
  a9 < = 8000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = small and
  a9 > 8000 and
  a9 < = 9000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = small and
  a9 > 9000 and
  a9 < = 10000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = small and
  a9 > 10000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = small and
  a10 > 0 and
  a10 < = 1000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = small and
  a10 > 1000 and
  a10 < = 2000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = small and
  a10 > 2000 and
  a10 < = 3000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = small and
  a10 > 3000 and
  a10 < = 4000 Then lineto 501,123
    april_act = found    ;
```

```
Rule april_act_6

If axis_size = small and
  a10 > 4000 and
  a10 < = 5000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = small and
  a10 > 5000 and
  a10 < = 6000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = small and
  a10 > 6000 and
  a10 < = 7000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = small and
  a10 > 7000 and
  a10 < = 8000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = small and
  a10 > 8000 and
  a10 < = 9000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = small and
  a10 > 9000 and
  a10 < = 10000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = small and
  a10 > 10000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = small and
  a11 > 0 and
  a11 < = 1000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = small and
  a11 > 1000 and
  a11 < = 2000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = small and
  a11 > 2000 and
  a11 < = 3000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = small and
  a11 > 3000 and
  a11 < = 4000 Then lineto 549,123
```

```
    may_act = found    ;

Rule may_act_6

If axis_size = small and
  a11 > 4000 and
  a11 < = 5000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = small and
  a11 > 5000 and
  a11 < = 6000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = small and
  a11 > 6000 and
  a11 < = 7000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = small and
  a11 > 7000 and
  a11 < = 8000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = small and
  a11 > 8000 and
  a11 < = 9000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = small and
  a11 > 9000 and
  a11 < = 10000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = small and
  a11 > 10000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = small and
  a12 > 0 and
  a12 < = 1000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = small and
  a12 > 1000 and
  a12 < = 2000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = small and
  a12 > 2000 and
  a12 < = 3000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = small and
  a12 > 3000 and
```

```
  a12 < = 4000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = small and
  a12 > 4000 and
  a12 < = 5000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = small and
  a12 > 5000 and
  a12 < = 6000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = small and
  a12 > 6000 and
  a12 < = 7000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = small and
  a12 > 7000 and
  a12 < = 8000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = small and
  a12 > 8000 and
  a12 < = 9000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = small and
  a12 > 9000 and
  a12 < = 10000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = small and
  a12 > 10000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_small

If axis_display = unknown

Then axis_display = found
    glocate 2,3
    gdisplay "10"
    glocate 3,7
    gdisplay "8"
    glocate 3,11
    gdisplay "6"
    glocate 3,15
    gdisplay "4"
    glocate 3,19
    gdisplay "2";


!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;
```

plural: new_personal_c,exp_personal_c,exp_personal;

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the
files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12
then
    new_corps_rev_c[z] = unknown_dummy
    new_public_rev_c[z] = unknown_dummy
    new_s_f_s_rev_c[z] = unknown_dummy
    new_interdept_rev_c[z] = unknown_dummy
    new_corps_costs_c[z] = unknown_dummy
    new_public_costs_c[z] = unknown_dummy
    new_s_f_s_costs_c[z] = unknown_dummy
    new_interdept_costs_c[z] = unknown_dummy

    z = (z + 1) end


find do_corps_seg find do_public_seg find do_s_f_s_seg find do_interdept_seg ;

! Rules Block

Rule begin_corps_seg_display

If do_corps_seg = unknown

Then do_corps_seg = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 12
    moveto 30,180
    x1 = (new_corps_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_corps_costs_c[2])
    find aug_bud
    reset aug_bud
    x3 = (new_corps_costs_c[3])
    find sept_bud
    reset sept_bud
```

```
x4 = (new_corps_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_corps_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_corps_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_corps_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_corps_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_corps_costs_c[9])
find march_bud
reset march_bud
x10 = (new_corps_costs_c[10])
find april_bud
reset april_bud
x11 = (new_corps_costs_c[11])
find may_bud
reset may_bud
x12 = (new_corps_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_corps_rev_c[1])
find july_act
reset july_act
a2 = (new_corps_rev_c[2])
find aug_act
reset aug_act
a3 = (new_corps_rev_c[3])
find sept_act
reset sept_act
a4 = (new_corps_rev_c[4])
find oct_act
reset oct_act
a5 = (new_corps_rev_c[5])
find nov_act
reset nov_act
a6 = (new_corps_rev_c[6])
find dec_act
reset dec_act
a7 = (new_corps_rev_c[7])
find jan_act
reset jan_act
a8 = (new_corps_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_corps_rev_c[9])
find march_act
reset march_act
a10 = (new_corps_rev_c[10])
find april_act
reset april_act
a11 = (new_corps_rev_c[11])
find may_act
reset may_act
a12 = (new_corps_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147
```

```
    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 28,1
    gdisplay "Corps of Cadets"
    glocate 28,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
  chain seggraph;
```

Rule begin_public_seg_display

If do_public_seg = unknown

Then do_public_seg = found

```
    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "Public Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
```

```
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_public_costs_c[1])
find july_bud
reset july_bud
x2 = (new_public_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_public_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_public_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_public_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_public_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_public_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_public_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_public_costs_c[9])
find march_bud
reset march_bud
x10 = (new_public_costs_c[10])
find april_bud
reset april_bud
x11 = (new_public_costs_c[11])
find may_bud
reset may_bud
x12 = (new_public_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_public_rev_c[1])
find july_act
reset july_act
a2 = (new_public_rev_c[2])
find aug_act
reset aug_act
a3 = (new_public_rev_c[3])
find sept_act
reset sept_act
a4 = (new_public_rev_c[4])
find oct_act
reset oct_act
a5 = (new_public_rev_c[5])
find nov_act.
reset nov_act
a6 = (new_public_rev_c[6])
find dec_act
reset dec_act
a7 = (new_public_rev_c[7])
find jan_act
reset jan_act
a8 = (new_public_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_public_rev_c[9])
```

```
    find march_act
    reset march_act
    a10 = (new_public_rev_c[10])
    find april_act
    reset april_act
    a11 = (new_public_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_public_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
    chain seggraph;



Rule begin_s_f_s_seg_display

If do_s_f_s_seg = unknown

Then do_s_f_s_seg = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 23,1
    gdisplay "Student/Faculty/Staff"
    glocate 27,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
```

```
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_s_f_s_costs_c[1])
find july_bud
reset july_bud
x2 = (new_s_f_s_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_s_f_s_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_s_f_s_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_s_f_s_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_s_f_s_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_s_f_s_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_s_f_s_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_s_f_s_costs_c[9])
find march_bud
reset march_bud
x10 = (new_s_f_s_costs_c[10])
find april_bud
reset april_bud
x11 = (new_s_f_s_costs_c[11])
find may_bud
reset may_bud
x12 = (new_s_f_s_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_s_f_s_rev_c[1])
find july_act
reset july_act
a2 = (new_s_f_s_rev_c[2])
find aug_act
reset aug_act
a3 = (new_s_f_s_rev_c[3])
find sept_act
```

```
reset sept_act
a4 = (new_s_f_s_rev_c[4])
find oct_act
reset oct_act
a5 = (new_s_f_s_rev_c[5])
find nov_act
reset nov_act
a6 = (new_s_f_s_rev_c[6])
find dec_act
reset dec_act
a7 = (new_s_f_s_rev_c[7])
find jan_act
reset jan_act
a8 = (new_s_f_s_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_s_f_s_rev_c[9])
find march_act
reset march_act
a10 = (new_s_f_s_rev_c[10])
find april_act
reset april_act
a11 = (new_s_f_s_rev_c[11])
find may_act
reset may_act
a12 = (new_s_f_s_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain seggraph;
```

Rule begin_interdept_seg_display

If do_interdept_seg = unknown

```
Then do_interdept_seg = found

    gmode 14
    exitbutton4 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 24,1
    gdisplay "Interdepartmental"
    glocate 26,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    find axis_display

    gcolor 12
    moveto 30,180
    x1 = (new_interdept_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_interdept_costs_c[2])
    find aug_bud
    reset aug_bud
    x3 = (new_interdept_costs_c[3])
    find sept_bud
    reset sept_bud
    x4 = (new_interdept_costs_c[4])
    find oct_bud
    reset oct_bud
    x5 = (new_interdept_costs_c[5])
    find nov_bud
    reset nov_bud
    x6 = (new_interdept_costs_c[6])
    find dec_bud
    reset dec_bud
    x7 = (new_interdept_costs_c[7])
    find jan_bud
    reset jan_bud
    x8 = (new_interdept_costs_c[8])
    find feb_bud
    reset feb_bud
    x9 = (new_interdept_costs_c[9])
    find march_bud
    reset march_bud
    x10 = (new_interdept_costs_c[10])
    find april_bud
```

```
reset april_bud
x11 = (new_interdept_costs_c[11])
find may_bud
reset may_bud
x12 = (new_interdept_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_interdept_rev_c[1])
find july_act
reset july_act
a2 = (new_interdept_rev_c[2])
find aug_act
reset aug_act
a3 = (new_interdept_rev_c[3])
find sept_act
reset sept_act
a4 = (new_interdept_rev_c[4])
find oct_act
reset oct_act
a5 = (new_interdept_rev_c[5])
find nov_act
reset nov_act
a6 = (new_interdept_rev_c[6])
find dec_act
reset dec_act
a7 = (new_interdept_rev_c[7])
find jan_act
reset jan_act
a8 = (new_interdept_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_interdept_rev_c[9])
find march_act
reset march_act
a10 = (new_interdept_rev_c[10])
find april_act
reset april_act
a11 = (new_interdept_rev_c[11])
find may_act
reset may_act
a12 = (new_interdept_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
```

```
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton4 = no then end

    reset axis_display
    tmode
   chain seggraph;


Rule aug_act_unknown_dummy
If a2 = unknown_dummy
Then aug_act = found;
Rule sept_act_unknown_dummy
If a3 = unknown_dummy
Then sept_act = found;
Rule oct_act_unknown_dummy
If a4 = unknown_dummy
Then oct_act = found;
Rule nov_act_unknown_dummy
If a5 = unknown_dummy
Then nov_act = found; Rule dec_act_unknown_dummy
If a6 = unknown_dummy
Then dec_act = found; Rule jan_act_unknown_dummy
If a7 = unknown_dummy
Then jan_act = found; Rule feb_act_unknown_dummy
If a8 = unknown_dummy
Then feb_act = found;
Rule march_act_unknown_dummy
If a9 = unknown_dummy
Then march_act = found;
Rule april_act_unknown_dummy
If a10 = unknown_dummy
Then april_act = found;
Rule may_act_unknown_dummy
If a11 = unknown_dummy
Then may_act = found;
Rule june_act_unknown_dummy
If a12 = unknown_dummy
Then june_act = found;
Rule aug_bud_unknown_dummy
If x2 = unknown_dummy
Then aug_bud = found;
Rule sept_bud_unknown_dummy
```

```
If x3 = unknown_dummy

Then sept_bud = found;

Rule oct_bud_unknown_dummy

If x4 = unknown_dummy

Then oct_bud = found;

Rule nov_bud_unknown_dummy

If x5 = unknown_dummy

Then nov_bud = found; Rule dec_bud_unknown_dummy

If x6 = unknown_dummy

Then dec_bud = found;

Rule jan_bud_unknown_dummy

If x7 = unknown_dummy

Then jan_bud = found; Rule feb_bud_unknown_dummy

If x8 = unknown_dummy

Then feb_bud = found;

Rule march_bud_unknown_dummy

If x9 = unknown_dummy

Then march_bud = found;

Rule april_bud_unknown_dummy

If x10 = unknown_dummy

Then april_bud = found;

Rule may_bud_unknown_dummy

If x11 = unknown_dummy

Then may_bud = found;

Rule june_bud_unknown_dummy

If x12 = unknown_dummy

Then june_bud = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 < = 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 < = 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 < = 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
```

```
  x1 < = 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 < = 100000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 100000 and
  x1 < = 120000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
```

```
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
```

```
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
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  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
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```
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 < = 20000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 < = 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 < = 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 < = 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 < = 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 < = 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 < = 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 < = 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 < = 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11
```

```
If axis_size = medium and
   x6 > 180000 and
   x6 < = 200000 Then lineto 308,29
     dec_bud = found;

Rule dec_bud_12

If axis_size = medium and
   x6 > 200000 Then lineto 308,20
     dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
     jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
   x7 > 0 and
   x7 < = 20000 Then lineto 357,172
     jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
   x7 > 20000 and
   x7 < = 40000 Then lineto 357,156
     jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
   x7 > 40000 and
   x7 < = 60000 Then lineto 357,140
     jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
   x7 > 60000 and
   x7 < = 80000 Then lineto 357,124
     jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
   x7 > 80000 and
   x7 < = 100000 Then lineto 357,108
     jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
   x7 > 100000 and
   x7 < = 120000 Then lineto 357,92
     jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
   x7 > 120000 and
   x7 < = 140000 Then lineto 357,77
     jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
   x7 > 140000 and
   x7 < = 160000 Then lineto 357,62
     jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
   x7 > 160000 and
   x7 < = 180000 Then lineto 357,45
     jan_bud = found;

Rule jan_bud_11
```

```
If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;
```

```
Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;
```

```
Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = medium and
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
```

```
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
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```
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10
```

```
If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
```

```
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 < = 20000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
```

```
    sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
```

```
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
```

```
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
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```
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5
```

```
If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = medium and
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5
```

```
If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;
```

```
Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;
```

```
Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = medium and
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
```

```
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = medium and
  a11 > 80000 and
  a11 < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
  a11 > 100000 and
  a11 < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
  a11 > 120000 and
  a11 < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
  a11 > 140000 and
  a11 < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
  a11 > 160000 and
  a11 < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
  a11 > 180000 and
  a11 < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
  a11 > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
  a12 > 0 and
  a12 < = 20000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = medium and
  a12 > 20000 and
  a12 < = 40000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = medium and
  a12 > 40000 and
```

```
  a12 < = 60000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = medium and
  a12 > 60000 and
  a12 < = 80000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";
```

```
!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = medium color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. Once the
files have loaded, the system will proceed directly" display "into the graph." loadfacts tempdata z = (count_it + 1) whiletrue z < = 12
then
    new_music_rev_c[z] = unknown_dummy
    new_state_rev_c[z] = unknown_dummy
    new_total_revs_c[z] = unknown_dummy

    new_music_costs_c[z] = unknown_dummy
    new_state_costs_c[z] = unknown_dummy
    new_total_costs_c[z] = unknown_dummy

    z = (z + 1) end


find do_music_seg find do_state_seg find do_total_seg ;

! Rules Block


Rule begin_music_seg_display

If do_music_seg = unknown

Then do_music_seg = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 12
    moveto 30,180
    x1 = (new_music_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_music_costs_c[2])
    find aug_bud
    reset aug_bud
    x3 = (new_music_costs_c[3])
    find sept_bud
    reset sept_bud
```

```
x4 = (new_music_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_music_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_music_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_music_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_music_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_music_costs_c[9])
find march_bud
reset march_bud
x10 = (new_music_costs_c[10])
find april_bud
reset april_bud
x11 = (new_music_costs_c[11])
find may_bud
reset may_bud
x12 = (new_music_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_music_rev_c[1])
find july_act
reset july_act
a2 = (new_music_rev_c[2])
find aug_act
reset aug_act
a3 = (new_music_rev_c[3])
find sept_act
reset sept_act
a4 = (new_music_rev_c[4])
find oct_act
reset oct_act
a5 = (new_music_rev_c[5])
find nov_act
reset nov_act
a6 = (new_music_rev_c[6])
find dec_act
reset dec_act
a7 = (new_music_rev_c[7])
find jan_act
reset jan_act
a8 = (new_music_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_music_rev_c[9])
find march_act
reset march_act
a10 = (new_music_rev_c[10])
find april_act
reset april_act
a11 = (new_music_rev_c[11])
find may_act
reset may_act
a12 = (new_music_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147
```

```
    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 27,1
    gdisplay "Music Department"
    glocate 28,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
   chain seggraph;


Rule begin_state_seg_display

If do_state_seg = unknown

Then do_state_seg = found


    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "State Related"
    glocate 26,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
```

```
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_state_costs_c[1])
find july_bud
reset july_bud
x2 = (new_state_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_state_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_state_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_state_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_state_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_state_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_state_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_state_costs_c[9])
find march_bud
reset march_bud
x10 = (new_state_costs_c[10])
find april_bud
reset april_bud
x11 = (new_state_costs_c[11])
find may_bud
reset may_bud
x12 = (new_state_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_state_rev_c[1])
find july_act
reset july_act
a2 = (new_state_rev_c[2])
find aug_act
reset aug_act
a3 = (new_state_rev_c[3])
find sept_act
reset sept_act
a4 = (new_state_rev_c[4])
find oct_act
reset oct_act
a5 = (new_state_rev_c[5])
find nov_act
reset nov_act
a6 = (new_state_rev_c[6])
find dec_act
reset dec_act
a7 = (new_state_rev_c[7])
find jan_act
reset jan_act
a8 = (new_state_rev_c[8])
find feb_act
```

```
    reset feb_act
     a9 = (new_state_rev_c[9])
    find march_act
    reset march_act
    a10 = (new_state_rev_c[10])
    find april_act
    reset april_act
    a11 = (new_state_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_state_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
   chain seggraph;



Rule begin_total_seg_display

If do_total_seg = unknown

Then do_total_seg = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 30,1
    gdisplay "Total Revenue & Expenses"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
```

```
gdisplay "000's"
glocate 76,23
gdisplay "Month"
glocate 9,24
gdisplay "J"
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_total_costs_c[1])
find july_bud
reset july_bud
x2 = (new_total_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_total_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_total_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_total_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_total_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_total_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_total_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_total_costs_c[9])
find march_bud
reset march_bud
x10 = (new_total_costs_c[10])
find april_bud
reset april_bud
x11 = (new_total_costs_c[11])
find may_bud
reset may_bud
x12 = (new_total_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_total_revs_c[1])
find july_act
reset july_act
a2 = (new_total_revs_c[2])
find aug_act
reset aug_act
a3 = (new_total_revs_c[3])
find sept_act
```

```
reset sept_act
a4 = (new_total_revs_c[4])
find oct_act
reset oct_act
a5 = (new_total_revs_c[5])
find nov_act
reset nov_act
a6 = (new_total_revs_c[6])
find dec_act
reset dec_act
a7 = (new_total_revs_c[7])
find jan_act
reset jan_act
a8 = (new_total_revs_c[8])
find feb_act
reset feb_act
 a9 = (new_total_revs_c[9])
find march_act
reset march_act
a10 = (new_total_revs_c[10])
find april_act
reset april_act
a11 = (new_total_revs_c[11])
find may_act
reset may_act
a12 = (new_total_revs_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain graph1;

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy
```

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found;

Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found;

Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found;

Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;

Rule aug_bud_unknown_dummy

If x2 = unknown_dummy

Then aug_bud = found;

Rule sept_bud_unknown_dummy

If x3 = unknown_dummy

Then sept_bud = found;

Rule oct_bud_unknown_dummy

If x4 = unknown_dummy

Then oct_bud = found;

Rule nov_bud_unknown_dummy

If x5 = unknown_dummy

Then nov_bud = found; Rule dec_bud_unknown_dummy

If x6 = unknown_dummy

Then dec_bud = found;

```
Rule jan_bud_unknown_dummy

If x7 = unknown_dummy

Then jan_bud = found; Rule feb_bud_unknown_dummy

If x8 = unknown_dummy

Then feb_bud = found;

Rule march_bud_unknown_dummy

If x9 = unknown_dummy

Then march_bud = found;

Rule april_bud_unknown_dummy

If x10 = unknown_dummy

Then april_bud = found;

Rule may_bud_unknown_dummy

If x11 = unknown_dummy

Then may_bud = found;

Rule june_bud_unknown_dummy

If x12 = unknown_dummy

Then june_bud = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 0 and
  x1 <= 20000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 20000 and
  x1 <= 40000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 40000 and
  x1 <= 60000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 60000 and
  x1 <= 80000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 80000 and
  x1 <= 100000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 100000 and
  x1 <= 120000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 120000 and
  x1 <= 140000 Then locate 30,180
    lineto 69,77
```

```
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 140000 and
  x1 < = 160000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 160000 and
  x1 < = 180000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 180000 and
  x1 < = 200000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = medium and
  x1 > 200000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = medium and
  x2 > 0 and
  x2 < = 20000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = medium and
  x2 > 20000 and
  x2 < = 40000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = medium and
  x2 > 40000 and
  x2 < = 60000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = medium and
  x2 > 60000 and
  x2 < = 80000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = medium and
  x2 > 80000 and
  x2 < = 100000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = medium and
  x2 > 100000 and
  x2 < = 120000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = medium and
  x2 > 120000 and
  x2 < = 140000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = medium and
  x2 > 140000 and
  x2 < = 160000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = medium and
  x2 > 160000 and
  x2 < = 180000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = medium and
  x2 > 180000 and
  x2 < = 200000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = medium and
```

```
  x2 > 200000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
    sept_bud = found;

Rule sept_bud_2 If axis_size = medium and
  x3 > 0 and
  x3 < = 20000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = medium and
  x3 > 20000 and
  x3 < = 40000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = medium and
  x3 > 40000 and
  x3 < = 60000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = medium and
  x3 > 60000 and
  x3 < = 80000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = medium and
  x3 > 80000 and
  x3 < = 100000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = medium and
  x3 > 100000 and
  x3 < = 120000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = medium and
  x3 > 120000 and
  x3 < = 140000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = medium and
  x3 > 140000 and
  x3 < = 160000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = medium and
  x3 > 160000 and
  x3 < = 180000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = medium and
  x3 > 180000 and
  x3 < = 200000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = medium and
  x3 > 200000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = medium and
  x4 > 0 and
  x4 < = 20000 Then lineto 212,172
    oct_bud = found;
```

```
Rule oct_bud_3

If axis_size = medium and
  x4 > 20000 and
  x4 < = 40000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = medium and
  x4 > 40000 and
  x4 < = 60000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = medium and
  x4 > 60000 and
  x4 < = 80000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = medium and
  x4 > 80000 and
  x4 < = 100000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = medium and
  x4 > 100000 and
  x4 < = 120000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = medium and
  x4 > 120000 and
  x4 < = 140000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = medium and
  x4 > 140000 and
  x4 < = 160000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = medium and
  x4 > 160000 and
  x4 < = 180000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = medium and
  x4 > 180000 and
  x4 < = 200000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = medium and
  x4 > 200000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = medium and
  x5 > 0 and
  x5 < = 20000 Then lineto 260,172
    nov_bud = found;
```

```
Rule nov_bud_3

If axis_size = medium and
  x5 > 20000 and
  x5 < = 40000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = medium and
  x5 > 40000 and
  x5 < = 60000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = medium and
  x5 > 60000 and
  x5 < = 80000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = medium and
  x5 > 80000 and
  x5 < = 100000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = medium and
  x5 > 100000 and
  x5 < = 120000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = medium and
  x5 > 120000 and
  x5 < = 140000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = medium and
  x5 > 140000 and
  x5 < = 160000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = medium and
  x5 > 160000 and
  x5 < = 180000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = medium and
  x5 > 180000 and
  x5 < = 200000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = medium and
  x5 > 200000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = medium and
  x6 > 0 and
  x6 < = 20000 Then lineto 308,172
```

```
    dec_bud = found;

Rule dec_bud_3

If axis_size = medium and
  x6 > 20000 and
  x6 < = 40000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = medium and
  x6 > 40000 and
  x6 < = 60000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = medium and
  x6 > 60000 and
  x6 < = 80000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = medium and
  x6 > 80000 and
  x6 < = 100000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = medium and
  x6 > 100000 and
  x6 < = 120000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = medium and
  x6 > 120000 and
  x6 < = 140000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = medium and
  x6 > 140000 and
  x6 < = 160000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = medium and
  x6 > 160000 and
  x6 < = 180000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = medium and
  x6 > 180000 and
  x6 < = 200000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = medium and
  x6 > 200000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = medium and
  x7 > 0 and
```

```
  x7 < = 20000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3

If axis_size = medium and
  x7 > 20000 and
  x7 < = 40000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = medium and
  x7 > 40000 and
  x7 < = 60000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = medium and
  x7 > 60000 and
  x7 < = 80000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = medium and
  x7 > 80000 and
  x7 < = 100000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = medium and
  x7 > 100000 and
  x7 < = 120000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = medium and
  x7 > 120000 and
  x7 < = 140000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = medium and
  x7 > 140000 and
  x7 < = 160000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = medium and
  x7 > 160000 and
  x7 < = 180000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = medium and
  x7 > 180000 and
  x7 < = 200000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = medium and
  x7 > 200000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = medium and
```

```
  x8 > 0 and
  x8 < = 20000 Then lineto 404,172
    feb_bud = found;

Rule feb_bud_3

If axis_size = medium and
  x8 > 20000 and
  x8 < = 40000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = medium and
  x8 > 40000 and
  x8 < = 60000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = medium and
  x8 > 60000 and
  x8 < = 80000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = medium and
  x8 > 80000 and
  x8 < = 100000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = medium and
  x8 > 100000 and
  x8 < = 120000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = medium and
  x8 > 120000 and
  x8 < = 140000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = medium and
  x8 > 140000 and
  x8 < = 160000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = medium and
  x8 > 160000 and
  x8 < = 180000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = medium and
  x8 > 180000 and
  x8 < = 200000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = medium and
  x8 > 200000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2
```

```
If axis_size = medium and
  x9 > 0 and
  x9 < = 20000 Then lineto 452,172
    march_bud = found;

Rule march_bud_3

If axis_size = medium and
  x9 > 20000 and
  x9 < = 40000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = medium and
  x9 > 40000 and
  x9 < = 60000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = medium and
  x9 > 60000 and
  x9 < = 80000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = medium and
  x9 > 80000 and
  x9 < = 100000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = medium and
  x9 > 100000 and
  x9 < = 120000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = medium and
  x9 > 120000 and
  x9 < = 140000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = medium and
  x9 > 140000 and
  x9 < = 160000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = medium and
  x9 > 160000 and
  x9 < = 180000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = medium and
  x9 > 180000 and
  x9 < = 200000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = medium and
  x9 > 200000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2
```

```
If axis_size = medium and
  x10 > 0 and
  x10 < = 20000 Then lineto 501,172
    april_bud = found;

Rule april_bud_3

If axis_size = medium and
  x10 > 20000 and
  x10 < = 40000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = medium and
  x10 > 40000 and
  x10 < = 60000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = medium and
  x10 > 60000 and
  x10 < = 80000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = medium and
  x10 > 80000 and
  x10 < = 100000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = medium and
  x10 > 100000 and
  x10 < = 120000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = medium and
  x10 > 120000 and
  x10 < = 140000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = medium and
  x10 > 140000 and
  x10 < = 160000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = medium and
  x10 > 160000 and
  x10 < = 180000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = medium and
  x10 > 180000 and
  x10 < = 200000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = medium and
  x10 > 200000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If  x11 = 0 Then lineto 549,180
    may_bud = found;
```

```
Rule may_bud_2

If axis_size = medium and
  x11 > 0 and
  x11 < = 20000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = medium and
  x11 > 20000 and
  x11 < = 40000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = medium and
  x11 > 40000 and
  x11 < = 60000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = medium and
  x11 > 60000 and
  x11 < = 80000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = medium and
  x11 > 80000 and
  x11 < = 100000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = medium and
  x11 > 100000 and
  x11 < = 120000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = medium and
  x11 > 120000 and
  x11 < = 140000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = medium and
  x11 > 140000 and
  x11 < = 160000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = medium and
  x11 > 160000 and
  x11 < = 180000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = medium and
  x11 > 180000 and
  x11 < = 200000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = medium and
  x11 > 200000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
```

```
    june_bud = found;

Rule june_bud_2

If axis_size = medium and
  x12 > 0 and
  x12 < = 20000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = medium and
  x12 > 20000 and
  x12 < = 40000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = medium and
  x12 > 40000 and
  x12 < = 60000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = medium and
  x12 > 60000 and
  x12 < = 80000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = medium and
  x12 > 80000 and
  x12 < = 100000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = medium and
  x12 > 100000 and
  x12 < = 120000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = medium and
  x12 > 120000 and
  x12 < = 140000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = medium and
  x12 > 140000 and
  x12 < = 160000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = medium and
  x12 > 160000 and
  x12 < = 180000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = medium and
  x12 > 180000 and
  x12 < = 200000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = medium and
  x12 > 200000 Then lineto 597,20
    june_bud = found;


Rule july_act If    a1 = 0 Then locate 38,180
```

```
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 0 and
  a1 < = 20000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 20000 and
  a1 < = 40000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 40000 and
  a1 < = 60000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 60000 and
  a1 < = 80000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 80000 and
  a1 < = 100000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 100000 and
  a1 < = 120000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 120000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 140000 and
  a1 < = 160000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 160000 and
  a1 < = 180000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = medium and
  a1 > 180000 and
  a1 < = 200000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If   a1 > 200000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = medium and
  a2 > 0 and
  a2 < = 20000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = medium and
  a2 > 20000 and
  a2 < = 40000 Then lineto 114,155
    aug_act = found;
```

```
Rule aug_act_4 If axis_size = medium and
  a2 > 40000 and
  a2 < = 60000 Then lineto 114,139
    aug_act = found;

Rule aug_act_5 If axis_size = medium and
  a2 > 60000 and
  a2 < = 80000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = medium and
  a2 > 80000 and
  a2 < = 100000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = medium and
  a2 > 100000 and
  a2 < = 120000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = medium and
  a2 > 120000 and
  a2 < = 140000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = medium and
  a2 > 140000 and
  a2 < = 160000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = medium and
  a2 > 160000 and
  a2 < = 180000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = medium and
  a2 > 180000 and
  a2 < = 200000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = medium and
  a2 > 200000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = medium and
  a3 > 0 and
  a3 < = 20000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = medium and
  a3 > 20000 and
  a3 < = 40000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = medium and
  a3 > 40000 and
  a3 < = 60000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = medium and
  a3 > 60000 and
  a3 < = 80000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = medium and
  a3 > 80000 and
  a3 < = 100000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = medium and
  a3 > 100000 and
  a3 < = 120000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = medium and
  a3 > 120000 and
  a3 < = 140000 Then lineto 163,76
```

```
    sept_act = found;

Rule sept_act_9

If axis_size = medium and
  a3 > 140000 and
  a3 < = 160000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = medium and
  a3 > 160000 and
  a3 < = 180000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = medium and
  a3 > 180000 and
  a3 < = 200000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = medium and
  a3 > 200000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = medium and
  a4 > 0 and
  a4 < = 20000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = medium and
  a4 > 20000 and
  a4 < = 40000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = medium and
  a4 > 40000 and
  a4 < = 60000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = medium and
  a4 > 60000 and
  a4 < = 80000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = medium and
  a4 > 80000 and
  a4 < = 100000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = medium and
  a4 > 100000 and
  a4 < = 120000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = medium and
  a4 > 120000 and
```

```
  a4 < = 140000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9

If axis_size = medium and
  a4 > 140000 and
  a4 < = 160000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = medium and
  a4 > 160000 and
  a4 < = 180000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = medium and
  a4 > 180000 and
  a4 < = 200000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = medium and
  a4 > 200000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = medium and
  a5 > 0 and
  a5 < = 20000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = medium and
  a5 > 20000 and
  a5 < = 40000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = medium and
  a5 > 40000 and
  a5 < = 60000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = medium and
  a5 > 60000 and
  a5 < = 80000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = medium and
  a5 > 80000 and
  a5 < = 100000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = medium and
  a5 > 100000 and
  a5 < = 120000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = medium and
```

```
  a5 > 120000 and
  a5 < = 140000 Then lineto 260,76
    nov_act = found;

Rule nov_act_9

If axis_size = medium and
  a5 > 140000 and
  a5 < = 160000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = medium and
  a5 > 160000 and
  a5 < = 180000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = medium and
  a5 > 180000 and
  a5 < = 200000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = medium and
  a5 > 200000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = medium and
  a6 > 0 and
  a6 < = 20000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = medium and
  a6 > 20000 and
  a6 < = 40000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = medium and
  a6 > 40000 and
  a6 < = 60000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = medium and
  a6 > 60000 and
  a6 < = 80000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = medium and
  a6 > 80000 and
  a6 < = 100000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = medium and
  a6 > 100000 and
  a6 < = 120000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8
```

```
If axis_size = medium and
  a6 > 120000 and
  a6 < = 140000 Then lineto 308,76
    dec_act = found;

Rule dec_act_9

If axis_size = medium and
  a6 > 140000 and
  a6 < = 160000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = medium and
  a6 > 160000 and
  a6 < = 180000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = medium and
  a6 > 180000 and
  a6 < = 200000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = medium and
  a6 > 200000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = medium and
  a7 > 0 and
  a7 < = 20000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = medium and
  a7 > 20000 and
  a7 < = 40000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = medium and
  a7 > 40000 and
  a7 < = 60000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = medium and
  a7 > 60000 and
  a7 < = 80000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = medium and
  a7 > 80000 and
  a7 < = 100000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = medium and
  a7 > 100000 and
  a7 < = 120000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8
```

```
If axis_size = medium and
  a7 > 120000 and
  a7 < = 140000 Then lineto 357,76
    jan_act = found    ;

Rule jan_act_9

If axis_size = medium and
  a7 > 140000 and
  a7 < = 160000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = medium and
  a7 > 160000 and
  a7 < = 180000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = medium and
  a7 > 180000 and
  a7 < = 200000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = medium and
  a7 > 200000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = medium and
  a8 > 0 and
  a8 < = 20000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = medium and
  a8 > 20000 and
  a8 < = 40000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = medium and
  a8 > 40000 and
  a8 < = 60000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = medium and
  a8 > 60000 and
  a8 < = 80000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = medium and
  a8 > 80000 and
  a8 < = 100000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = medium and
  a8 > 100000 and
  a8 < = 120000 Then lineto 404,91
    feb_act = found    ;
```

```
Rule feb_act_8

If axis_size = medium and
  a8 > 120000 and
  a8 < = 140000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = medium and
  a8 > 140000 and
  a8 < = 160000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = medium and
  a8 > 160000 and
  a8 < = 180000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = medium and
  a8 > 180000 and
  a8 < = 200000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = medium and
  a8 > 200000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = medium and
  a9 > 0 and
  a9 < = 20000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = medium and
  a9 > 20000 and
  a9 < = 40000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = medium and
  a9 > 40000 and
  a9 < = 60000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = medium and
  a9 > 60000 and
  a9 < = 80000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = medium and
  a9 > 80000 and
  a9 < = 100000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = medium and
  a9 > 100000 and
  a9 < = 120000 Then lineto 452,91
    march_act = found    ;
```

```
Rule march_act_8

If axis_size = medium and
  a9 > 120000 and
  a9 < = 140000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = medium and
  a9 > 140000 and
  a9 < = 160000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = medium and
  a9 > 160000 and
  a9 < = 180000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = medium and
  a9 > 180000 and
  a9 < = 200000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = medium and
  a9 > 200000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = medium and
  a10 > 0 and
  a10 < = 20000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = medium and
  a10 > 20000 and
  a10 < = 40000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = medium and
  a10 > 40000 and
  a10 < = 60000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = medium and
  a10 > 60000 and
  a10 < = 80000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = medium and
  a10 > 80000 and
  a10 < = 100000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = medium and
  a10 > 100000 and
  a10 < = 120000 Then lineto 501,91
```

```
    april_act = found    ;

Rule april_act_8

If axis_size = medium and
  a10 > 120000 and
  a10 < = 140000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = medium and
  a10 > 140000 and
  a10 < = 160000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = medium and
  a10 > 160000 and
  a10 < = 180000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = medium and
  a10 > 180000 and
  a10 < = 200000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = medium and
  a10 > 200000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = medium and
  a11 > 0 and
  a11 < = 20000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = medium and
  a11 > 20000 and
  a11 < = 40000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = medium and
  a11 > 40000 and
  a11 < = 60000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = medium and
  a11 > 60000 and
  a11 < = 80000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = medium and
  a11 > 80000 and
  a11 < = 100000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = medium and
  a11 > 100000 and
```

```
  a11 < = 120000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8

If axis_size = medium and
  a11 > 120000 and
  a11 < = 140000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = medium and
  a11 > 140000 and
  a11 < = 160000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = medium and
  a11 > 160000 and
  a11 < = 180000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = medium and
  a11 > 180000 and
  a11 < = 200000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = medium and
  a11 > 200000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = medium and
  a12 > 0 and
  a12 < = 20000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = medium and
  a12 > 20000 and
  a12 < = 40000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = medium and
  a12 > 40000 and
  a12 < = 60000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = medium and
  a12 > 60000 and
  a12 < = 80000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = medium and
  a12 > 80000 and
  a12 < = 100000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = medium and
```

```
  a12 > 100000 and
  a12 < = 120000 Then lineto 597,91
    june_act = found    ;

Rule june_act_8

If axis_size = medium and
  a12 > 120000 and
  a12 < = 140000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = medium and
  a12 > 140000 and
  a12 < = 160000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = medium and
  a12 > 160000 and
  a12 < = 180000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = medium and
  a12 > 180000 and
  a12 < = 200000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = medium and
  a12 > 200000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_medium

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "200"
    glocate 1,7
    gdisplay "160"
    glocate 1,11
    gdisplay "120"
    glocate 2,15
    gdisplay "80"
    glocate 2,19
    gdisplay "40";


!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;


plural: new_personal_c,exp_personal_c,exp_personal;
```

```
runtime; execute;

actions

axis_size = large color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded.  Once the files
have loaded, the system will proceed directly" display "into the graph."  loadfacts tempdata z = (count_it + 1) whiletrue z < = 12 then
    new_music_rev_c[z] = unknown_dummy
    new_state_rev_c[z] = unknown_dummy
    new_total_revs_c[z] = unknown_dummy
    new_music_costs_c[z] = unknown_dummy
    new_state_costs_c[z] = unknown_dummy
    new_total_costs_c[z] = unknown_dummy
    z = (z + 1) end


find do_music_seg find do_state_seg find do_total_seg ;

! Rules Block


Rule begin_music_seg_display

If do_music_seg = unknown

Then do_music_seg = found

    gmode 14
    exitbutton2 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    find axis_display

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
    gdisplay "M"
    glocate 63,24
    gdisplay "A"
    glocate 69,24
    gdisplay "M"
    glocate 75,24
    gdisplay "J"

    gcolor 12
    moveto 30,180
    x1 = (new_music_costs_c[1])
    find july_bud
    reset july_bud
    x2 = (new_music_costs_c[2])
    find aug_bud
    reset aug_bud
    x3 = (new_music_costs_c[3])
    find sept_bud
    reset sept_bud
    x4 = (new_music_costs_c[4])
    find oct_bud
    reset oct_bud
```

```
x5 = (new_music_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_music_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_music_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_music_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_music_costs_c[9])
find march_bud
reset march_bud
x10 = (new_music_costs_c[10])
find april_bud
reset april_bud
x11 = (new_music_costs_c[11])
find may_bud
reset may_bud
x12 = (new_music_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_music_rev_c[1])
find july_act
reset july_act
a2 = (new_music_rev_c[2])
find aug_act
reset aug_act
a3 = (new_music_rev_c[3])
find sept_act
reset sept_act
a4 = (new_music_rev_c[4])
find oct_act
reset oct_act
a5 = (new_music_rev_c[5])
find nov_act
reset nov_act
a6 = (new_music_rev_c[6])
find dec_act
reset dec_act
a7 = (new_music_rev_c[7])
find jan_act
reset jan_act
a8 = (new_music_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_music_rev_c[9])
find march_act
reset march_act
a10 = (new_music_rev_c[10])
find april_act
reset april_act
a11 = (new_music_rev_c[11])
find may_act
reset may_act
a12 = (new_music_rev_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
```

```
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    glocate 27,1
    gdisplay "Music Department"
    glocate 28,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

   whiletrue exitbutton2 = no then end

    reset axis_display
    tmode
  chain seggraph;


Rule begin_state_seg_display

If do_state_seg = unknown

Then do_state_seg = found

    gmode 14
    exitbutton1 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 26,1
    gdisplay "State Related"
    glocate 26,2
    gdisplay "Market Segment"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
    glocate 15,24
    gdisplay "A"
    glocate 21,24
    gdisplay "S"
    glocate 27,24
    gdisplay "O"
    glocate 33,24
    gdisplay "N"
    glocate 39,24
    gdisplay "D"
    glocate 45,24
    gdisplay "J"
    glocate 51,24
    gdisplay "F"
    glocate 57,24
```

```
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_state_costs_c[1])
find july_bud
reset july_bud
x2 = (new_state_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_state_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_state_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_state_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_state_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_state_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_state_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_state_costs_c[9])
find march_bud
reset march_bud
x10 = (new_state_costs_c[10])
find april_bud
reset april_bud
x11 = (new_state_costs_c[11])
find may_bud
reset may_bud
x12 = (new_state_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_state_rev_c[1])
find july_act
reset july_act
a2 = (new_state_rev_c[2])
find aug_act
reset aug_act
a3 = (new_state_rev_c[3])
find sept_act
reset sept_act
a4 = (new_state_rev_c[4])
find oct_act
reset oct_act
a5 = (new_state_rev_c[5])
find nov_act
reset nov_act
a6 = (new_state_rev_c[6])
find dec_act
reset dec_act
a7 = (new_state_rev_c[7])
find jan_act
reset jan_act
a8 = (new_state_rev_c[8])
find feb_act
reset feb_act
 a9 = (new_state_rev_c[9])
find march_act
reset march_act
a10 = (new_state_rev_c[10])
```

```
    find april_act
    reset april_act
    a11 = (new_state_rev_c[11])
    find may_act
    reset may_act
    a12 = (new_state_rev_c[12])
    find june_act
    reset june_act

    gcolor 14
    moveto 27,19
    lineto 33,19
    moveto 27,51
    lineto 33,51
    moveto 27,83
    lineto 33,83
    moveto 27,115
    lineto 33,115
    moveto 27,147
    lineto 33,147

    moveto 69,179
    lineto 69,181
    moveto 114,179
    lineto 114,181
    moveto 163,179
    lineto 163,181
    moveto 212,179
    lineto 212,181
    moveto 260,179
    lineto 260,181
    moveto 308,179
    lineto 308,181
    moveto 357,179
    lineto 357,181
    moveto 404,179
    lineto 404,181
    moveto 452,179
    lineto 452,181
    moveto 501,179
    lineto 501,181
    moveto 549,179
    lineto 549,181
    moveto 597,179
    lineto 597,181

    whiletrue exitbutton1 = no then end

    reset axis_display
    tmode
  chain seggraph;


Rule begin_total_seg_display

If do_total_seg = unknown

Then do_total_seg = found

    gmode 14
    exitbutton3 = no
    moveto 30,5
    lineto 30,180
    lineto 600,180

    glocate 30,1
    gdisplay "Total Revenue"
    glocate 31,2
    gdisplay "& Expenses"
    glocate 8,5
    gdisplay "Blue - Revenue"
    glocate 8,6
    gdisplay "Red - Expenses"

    glocate 1,0
    gdisplay "000's"
    glocate 76,23
    gdisplay "Month"
    glocate 9,24
    gdisplay "J"
```

```
glocate 15,24
gdisplay "A"
glocate 21,24
gdisplay "S"
glocate 27,24
gdisplay "O"
glocate 33,24
gdisplay "N"
glocate 39,24
gdisplay "D"
glocate 45,24
gdisplay "J"
glocate 51,24
gdisplay "F"
glocate 57,24
gdisplay "M"
glocate 63,24
gdisplay "A"
glocate 69,24
gdisplay "M"
glocate 75,24
gdisplay "J"

find axis_display

gcolor 12
moveto 30,180
x1 = (new_total_costs_c[1])
find july_bud
reset july_bud
x2 = (new_total_costs_c[2])
find aug_bud
reset aug_bud
x3 = (new_total_costs_c[3])
find sept_bud
reset sept_bud
x4 = (new_total_costs_c[4])
find oct_bud
reset oct_bud
x5 = (new_total_costs_c[5])
find nov_bud
reset nov_bud
x6 = (new_total_costs_c[6])
find dec_bud
reset dec_bud
x7 = (new_total_costs_c[7])
find jan_bud
reset jan_bud
x8 = (new_total_costs_c[8])
find feb_bud
reset feb_bud
x9 = (new_total_costs_c[9])
find march_bud
reset march_bud
x10 = (new_total_costs_c[10])
find april_bud
reset april_bud
x11 = (new_total_costs_c[11])
find may_bud
reset may_bud
x12 = (new_total_costs_c[12])
find june_bud
reset june_bud

gcolor 9
moveto 30,180

a1 = (new_total_revs_c[1])
find july_act
reset july_act
a2 = (new_total_revs_c[2])
find aug_act
reset aug_act
a3 = (new_total_revs_c[3])
find sept_act
reset sept_act
a4 = (new_total_revs_c[4])
find oct_act
reset oct_act
a5 = (new_total_revs_c[5])
```

```
find nov_act
reset nov_act
a6 = (new_total_revs_c[6])
find dec_act
reset dec_act
a7 = (new_total_revs_c[7])
find jan_act
reset jan_act
a8 = (new_total_revs_c[8])
find feb_act
reset feb_act
 a9 = (new_total_revs_c[9])
find march_act
reset march_act
a10 = (new_total_revs_c[10])
find april_act
reset april_act
a11 = (new_total_revs_c[11])
find may_act
reset may_act
a12 = (new_total_revs_c[12])
find june_act
reset june_act

gcolor 14
moveto 27,19
lineto 33,19
moveto 27,51
lineto 33,51
moveto 27,83
lineto 33,83
moveto 27,115
lineto 33,115
moveto 27,147
lineto 33,147

moveto 69,179
lineto 69,181
moveto 114,179
lineto 114,181
moveto 163,179
lineto 163,181
moveto 212,179
lineto 212,181
moveto 260,179
lineto 260,181
moveto 308,179
lineto 308,181
moveto 357,179
lineto 357,181
moveto 404,179
lineto 404,181
moveto 452,179
lineto 452,181
moveto 501,179
lineto 501,181
moveto 549,179
lineto 549,181
moveto 597,179
lineto 597,181

whiletrue exitbutton3 = no then end

reset axis_display
tmode
chain graph1;
```

Rule aug_act_unknown_dummy

If a2 = unknown_dummy

Then aug_act = found;

Rule sept_act_unknown_dummy

If a3 = unknown_dummy

Then sept_act = found;

Rule oct_act_unknown_dummy

If a4 = unknown_dummy

Then oct_act = found;

Rule nov_act_unknown_dummy

If a5 = unknown_dummy

Then nov_act = found; Rule dec_act_unknown_dummy

If a6 = unknown_dummy

Then dec_act = found; Rule jan_act_unknown_dummy

If a7 = unknown_dummy

Then jan_act = found; Rule feb_act_unknown_dummy

If a8 = unknown_dummy

Then feb_act = found;

Rule march_act_unknown_dummy

If a9 = unknown_dummy

Then march_act = found;

Rule april_act_unknown_dummy

If a10 = unknown_dummy

Then april_act = found;

Rule may_act_unknown_dummy

If a11 = unknown_dummy

Then may_act = found;

Rule june_act_unknown_dummy

If a12 = unknown_dummy

Then june_act = found;

Rule aug_bud_unknown_dummy

If x2 = unknown_dummy

Then aug_bud = found;

Rule sept_bud_unknown_dummy

If x3 = unknown_dummy

Then sept_bud = found;

Rule oct_bud_unknown_dummy

If x4 = unknown_dummy

Then oct_bud = found;

Rule nov_bud_unknown_dummy

If x5 = unknown_dummy

Then nov_bud = found; Rule dec_bud_unknown_dummy

If x6 = unknown_dummy

Then dec_bud = found;

Rule jan_bud_unknown_dummy

If x7 = unknown_dummy

```
Then jan_bud = found; Rule feb_bud_unknown_dummy

If x8 = unknown_dummy

Then feb_bud = found;

Rule march_bud_unknown_dummy

If x9 = unknown_dummy

Then march_bud = found;

Rule april_bud_unknown_dummy

If x10 = unknown_dummy

Then april_bud = found;

Rule may_bud_unknown_dummy

If x11 = unknown_dummy

Then may_bud = found;

Rule june_bud_unknown_dummy

If x12 = unknown_dummy

Then june_bud = found;


Rule july_bud If  x1 = 0 Then locate 38,180
    lineto 69,180
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 0 and
  x1 < = 35000 Then locate 30,180
    lineto 69,172
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 35000 and
  x1 < = 70000 Then locate 30,180
    lineto 69,156
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 70000 and
  x1 < = 105000 Then locate 30,180
    lineto 69,140
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 105000 and
  x1 < = 140000 Then locate 30,180
    lineto 69,124
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 140000 and
  x1 < = 175000 Then locate 30,180
    lineto 69,108
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 175000 and
  x1 < = 210000 Then locate 30,180
    lineto 69,92
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 210000 and
  x1 < = 245000 Then locate 30,180
    lineto 69,77
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 245000 and
```

```
  x1 < = 280000 Then locate 30,180
    lineto 69,62
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 280000 and
  x1 < = 315000 Then locate 30,180
    lineto 69,45
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 315000 and
  x1 < = 350000 Then locate 30,180
    lineto 69,29
    july_bud = found;

Rule july_bud If axis_size = large and
  x1 > 350000 Then locate 30,180
    lineto 69,20
    july_bud = found;

Rule aug_bud_1 If x2 = 0 Then lineto 114,180
    aug_bud = found;

Rule aug_bud_2 If axis_size = large and
  x2 > 0 and
  x2 < = 35000 Then lineto 114,172
    aug_bud = found;

Rule aug_bud_3 If axis_size = large and
  x2 > 35000 and
  x2 < = 70000 Then lineto 114,156
    aug_bud = found;

Rule aug_bud_4 If axis_size = large and
  x2 > 70000 and
  x2 < = 105000 Then lineto 114,140
    aug_bud = found;

Rule aug_bud_5 If axis_size = large and
  x2 > 105000 and
  x2 < = 140000 Then lineto 114,124
    aug_bud = found;

Rule aug_bud_6 If axis_size = large and
  x2 > 140000 and
  x2 < = 175000 Then lineto 114,108
    aug_bud = found;

Rule aug_bud_7 If axis_size = large and
  x2 > 175000 and
  x2 < = 210000 Then lineto 114,92
    aug_bud = found;

Rule aug_bud_8 If axis_size = large and
  x2 > 210000 and
  x2 < = 245000 Then lineto 114,77
    aug_bud = found;

Rule aug_bud_9 If axis_size = large and
  x2 > 245000 and
  x2 < = 280000 Then lineto 114,62
    aug_bud = found
    reset aug_bud;

Rule aug_bud_10 If axis_size = large and
  x2 > 280000 and
  x2 < = 315000 Then lineto 114,45
    aug_bud = found;

Rule aug_bud_11 If axis_size = large and
  x2 > 315000 and
  x2 < = 350000 Then lineto 114,29
    aug_bud = found;

Rule aug_bud_12 If axis_size = large and
  x2 > 350000 Then lineto 114,20
    aug_bud = found;

Rule sept_bud_1 If  x3 = 0 Then lineto 163,180
```

```
    sept_bud = found;

Rule sept_bud_2 If axis_size = large and
  x3 > 0 and
  x3 < = 35000 Then lineto 163,172
    sept_bud = found;

Rule sept_bud_3 If axis_size = large and
  x3 > 35000 and
  x3 < = 70000 Then lineto 163,156
    sept_bud = found;

Rule sept_bud_4 If axis_size = large and
  x3 > 70000 and
  x3 < = 105000 Then lineto 163,140
    sept_bud = found;

Rule sept_bud_5 If axis_size = large and
  x3 > 105000 and
  x3 < = 140000 Then lineto 163,124
    sept_bud = found;

Rule sept_bud_6 If axis_size = large and
  x3 > 140000 and
  x3 < = 175000 Then lineto 163,108
    sept_bud = found;

Rule sept_bud_7 If axis_size = large and
  x3 > 175000 and
  x3 < = 210000 Then lineto 163,92
    sept_bud = found;

Rule sept_bud_8 If axis_size = large and
  x3 > 210000 and
  x3 < = 245000 Then lineto 163,77
    sept_bud = found;

Rule sept_bud_9

If axis_size = large and
  x3 > 245000 and
  x3 < = 280000 Then lineto 163,62
    sept_bud = found;

Rule sept_bud_10

If axis_size = large and
  x3 > 280000 and
  x3 < = 315000 Then lineto 163,45
    sept_bud = found;

Rule sept_bud_11

If axis_size = large and
  x3 > 315000 and
  x3 < = 350000 Then lineto 163,29
    sept_bud = found;

Rule sept_bud_12

If axis_size = large and
  x3 > 350000 Then lineto 163,20
    sept_bud = found;

Rule oct_bud_1

If x4 = 0 Then lineto 212,180
    oct_bud = found;

Rule oct_bud_2

If axis_size = large and
  x4 > 0 and
  x4 < = 35000 Then lineto 212,172
    oct_bud = found;

Rule oct_bud_3

If axis_size = large and
  x4 > 35000 and
```

```
  x4 < = 70000 Then lineto 212,156
    oct_bud = found;

Rule oct_bud_4

If axis_size = large and
  x4 > 70000 and
  x4 < = 105000 Then lineto 212,140
    oct_bud = found;

Rule oct_bud_5

If axis_size = large and
  x4 > 105000 and
  x4 < = 140000 Then lineto 212,124
    oct_bud = found;

Rule oct_bud_6

If axis_size = large and
  x4 > 140000 and
  x4 < = 175000 Then lineto 212,108
    oct_bud = found;

Rule oct_bud_7

If axis_size = large and
  x4 > 175000 and
  x4 < = 210000 Then lineto 212,92
    oct_bud = found;

Rule oct_bud_8

If axis_size = large and
  x4 > 210000 and
  x4 < = 245000 Then lineto 212,77
    oct_bud = found;

Rule oct_bud_9

If axis_size = large and
  x4 > 245000 and
  x4 < = 280000 Then lineto 212,62
    oct_bud = found;

Rule oct_bud_10

If axis_size = large and
  x4 > 280000 and
  x4 < = 315000 Then lineto 212,45
    oct_bud = found;

Rule oct_bud_11

If axis_size = large and
  x4 > 315000 and
  x4 < = 350000 Then lineto 212,29
    oct_bud = found;

Rule oct_bud_12

If axis_size = large and
  x4 > 350000 Then lineto 212,20
    oct_bud = found;

Rule nov_bud_1

If x5 = 0 Then lineto 260,180
    nov_bud = found;

Rule nov_bud_2

If axis_size = large and
  x5 > 0 and
  x5 < = 35000 Then lineto 260,172
    nov_bud = found;

Rule nov_bud_3

If axis_size = large and
```

```
  x5 > 35000 and
  x5 < = 70000 Then lineto 260,156
    nov_bud = found;

Rule nov_bud_4

If axis_size = large and
  x5 > 70000 and
  x5 < = 105000 Then lineto 260,140
    nov_bud = found;

Rule nov_bud_5

If axis_size = large and
  x5 > 105000 and
  x5 < = 140000 Then lineto 260,124
    nov_bud = found;

Rule nov_bud_6

If axis_size = large and
  x5 > 140000 and
  x5 < = 175000 Then lineto 260,108
    nov_bud = found;

Rule nov_bud_7

If axis_size = large and
  x5 > 175000 and
  x5 < = 210000 Then lineto 260,92
    nov_bud = found;

Rule nov_bud_8

If axis_size = large and
  x5 > 210000 and
  x5 < = 245000 Then lineto 260,77
    nov_bud = found;

Rule nov_bud_9

If axis_size = large and
  x5 > 245000 and
  x5 < = 280000 Then lineto 260,62
    nov_bud = found;

Rule nov_bud_10

If axis_size = large and
  x5 > 280000 and
  x5 < = 315000 Then lineto 260,45
    nov_bud = found;

Rule nov_bud_11

If axis_size = large and
  x5 > 315000 and
  x5 < = 350000 Then lineto 260,29
    nov_bud = found;

Rule nov_bud_12

If axis_size = large and
  x5 > 350000 Then lineto 260,20
    nov_bud = found;

Rule dec_bud_1

If x6 = 0 Then lineto 308,180
    dec_bud = found;

Rule dec_bud_2

If axis_size = large and
  x6 > 0 and
  x6 < = 35000 Then lineto 308,172
    dec_bud = found;

Rule dec_bud_3
```

```
If axis_size = large and
  x6 > 35000 and
  x6 < = 70000 Then lineto 308,156
    dec_bud = found;

Rule dec_bud_4

If axis_size = large and
  x6 > 70000 and
  x6 < = 105000 Then lineto 308,140
    dec_bud = found;

Rule dec_bud_5

If axis_size = large and
  x6 > 105000 and
  x6 < = 140000 Then lineto 308,124
    dec_bud = found;

Rule dec_bud_6

If axis_size = large and
  x6 > 140000 and
  x6 < = 175000 Then lineto 308,108
    dec_bud = found;

Rule dec_bud_7

If axis_size = large and
  x6 > 175000 and
  x6 < = 210000 Then lineto 308,92
    dec_bud = found;

Rule dec_bud_8

If axis_size = large and
  x6 > 210000 and
  x6 < = 245000 Then lineto 308,77
    dec_bud = found;

Rule dec_bud_9

If axis_size = large and
  x6 > 245000 and
  x6 < = 280000 Then lineto 308,62
    dec_bud = found;

Rule dec_bud_10

If axis_size = large and
  x6 > 280000 and
  x6 < = 315000 Then lineto 308,45
    dec_bud = found;

Rule dec_bud_11

If axis_size = large and
  x6 > 315000 and
  x6 < = 350000 Then lineto 308,29
    dec_bud = found;

Rule dec_bud_12

If axis_size = large and
  x6 > 350000 Then lineto 308,20
    dec_bud = found;

Rule jan_bud_1

If x7 = 0 Then lineto 357,180
    jan_bud = found;

Rule jan_bud_2

If axis_size = large and
  x7 > 0 and
  x7 < = 35000 Then lineto 357,172
    jan_bud = found;

Rule jan_bud_3
```

```
If axis_size = large and
  x7 > 35000 and
  x7 < = 70000 Then lineto 357,156
    jan_bud = found;

Rule jan_bud_4

If axis_size = large and
  x7 > 70000 and
  x7 < = 105000 Then lineto 357,140
    jan_bud = found;

Rule jan_bud_5

If axis_size = large and
  x7 > 105000 and
  x7 < = 140000 Then lineto 357,124
    jan_bud = found;

Rule jan_bud_6

If axis_size = large and
  x7 > 140000 and
  x7 < = 175000 Then lineto 357,108
    jan_bud = found;

Rule jan_bud_7

If axis_size = large and
  x7 > 175000 and
  x7 < = 210000 Then lineto 357,92
    jan_bud = found;

Rule jan_bud_8

If axis_size = large and
  x7 > 210000 and
  x7 < = 245000 Then lineto 357,77
    jan_bud = found;

Rule jan_bud_9

If axis_size = large and
  x7 > 245000 and
  x7 < = 280000 Then lineto 357,62
    jan_bud = found;

Rule jan_bud_10

If axis_size = large and
  x7 > 280000 and
  x7 < = 315000 Then lineto 357,45
    jan_bud = found;

Rule jan_bud_11

If axis_size = large and
  x7 > 315000 and
  x7 < = 350000 Then lineto 357,29
    jan_bud = found;

Rule jan_bud_12

If axis_size = large and
  x7 > 350000 Then lineto 357,20
    jan_bud = found;

Rule feb_bud_1

If x8 = 0 Then lineto 404,180
    feb_bud = found;

Rule feb_bud_2

If axis_size = large and
  x8 > 0 and
  x8 < = 35000 Then lineto 404,172
    feb_bud = found;
```

```
Rule feb_bud_3

If axis_size = large and
  x8 > 35000 and
  x8 < = 70000 Then lineto 404,156
    feb_bud = found;

Rule feb_bud_4

If axis_size = large and
  x8 > 70000 and
  x8 < = 105000 Then lineto 404,140
    feb_bud = found;

Rule feb_bud_5

If axis_size = large and
  x8 > 105000 and
  x8 < = 140000 Then lineto 404,124
    feb_bud = found;

Rule feb_bud_6

If axis_size = large and
  x8 > 140000 and
  x8 < = 175000 Then lineto 404,108
    feb_bud = found;

Rule feb_bud_7

If axis_size = large and
  x8 > 175000 and
  x8 < = 210000 Then lineto 404,92
    feb_bud = found;

Rule feb_bud_8

If axis_size = large and
  x8 > 210000 and
  x8 < = 245000 Then lineto 404,77
    feb_bud = found;

Rule feb_bud_9

If axis_size = large and
  x8 > 245000 and
  x8 < = 280000 Then lineto 404,62
    feb_bud = found;

Rule feb_bud_10

If axis_size = large and
  x8 > 280000 and
  x8 < = 315000 Then lineto 404,45
    feb_bud = found;

Rule feb_bud_11

If axis_size = large and
  x8 > 315000 and
  x8 < = 350000 Then lineto 404,29
    feb_bud = found;

Rule feb_bud_12

If axis_size = large and
  x8 > 350000 Then lineto 404,20
    feb_bud = found;

Rule march_bud_1

If x9 = 0 Then lineto 452,180
    march_bud = found;

Rule march_bud_2

If axis_size = large and
  x9 > 0 and
  x9 < = 35000 Then lineto 452,172
    march_bud = found;
```

```
Rule march_bud_3

If axis_size = large and
  x9 > 35000 and
  x9 < = 70000 Then lineto 452,156
    march_bud = found;

Rule march_bud_4

If axis_size = large and
  x9 > 70000 and
  x9 < = 105000 Then lineto 452,140
    march_bud = found;

Rule march_bud_5

If axis_size = large and
  x9 > 105000 and
  x9 < = 140000 Then lineto 452,124
    march_bud = found;

Rule march_bud_6

If axis_size = large and
  x9 > 140000 and
  x9 < = 175000 Then lineto 452,108
    march_bud = found;

Rule march_bud_7

If axis_size = large and
  x9 > 175000 and
  x9 < = 210000 Then lineto 452,92
    march_bud = found;

Rule march_bud_8

If axis_size = large and
  x9 > 210000 and
  x9 < = 245000 Then lineto 452,77
    march_bud = found;

Rule march_bud_9

If axis_size = large and
  x9 > 245000 and
  x9 < = 280000 Then lineto 452,62
    march_bud = found;

Rule march_bud_10

If axis_size = large and
  x9 > 280000 and
  x9 < = 315000 Then lineto 452,45
    march_bud = found;

Rule march_bud_11

If axis_size = large and
  x9 > 315000 and
  x9 < = 350000 Then lineto 452,29
    march_bud = found;

Rule march_bud_12

If axis_size = large and
  x9 > 350000 Then lineto 452,20
    march_bud = found;

Rule april_bud_1

If x10 = 0 Then lineto 501,180
    april_bud = found;

Rule april_bud_2

If axis_size = large and
  x10 > 0 and
  x10 < = 35000 Then lineto 501,172
```

```
    april_bud = found;

Rule april_bud_3

If axis_size = large and
  x10 > 35000 and
  x10 < = 70000 Then lineto 501,156
    april_bud = found;

Rule april_bud_4

If axis_size = large and
  x10 > 70000 and
  x10 < = 105000 Then lineto 501,140
    april_bud = found;

Rule april_bud_5

If axis_size = large and
  x10 > 105000 and
  x10 < = 140000 Then lineto 501,124
    april_bud = found;

Rule april_bud_6

If axis_size = large and
  x10 > 140000 and
  x10 < = 175000 Then lineto 501,108
    april_bud = found;

Rule april_bud_7

If axis_size = large and
  x10 > 175000 and
  x10 < = 210000 Then lineto 501,92
    april_bud = found;

Rule april_bud_8

If axis_size = large and
  x10 > 210000 and
  x10 < = 245000 Then lineto 501,77
    april_bud = found;

Rule april_bud_9

If axis_size = large and
  x10 > 245000 and
  x10 < = 280000 Then lineto 501,62
    april_bud = found;

Rule april_bud_10

If axis_size = large and
  x10 > 280000 and
  x10 < = 315000 Then lineto 501,45
    april_bud = found;

Rule april_bud_11

If axis_size = large and
  x10 > 315000 and
  x10 < = 350000 Then lineto 501,29
    april_bud = found;

Rule april_bud_12

If axis_size = large and
  x10 > 350000 Then lineto 501,20
    april_bud = found
    reset april_bud;

Rule may_bud_1

If x11 = 0 Then lineto 549,180
    may_bud = found;

Rule may_bud_2

If axis_size = large and
```

```
  x11 > 0 and
  x11 < = 35000 Then lineto 549,172
    may_bud = found;

Rule may_bud_3

If axis_size = large and
  x11 > 35000 and
  x11 < = 70000 Then lineto 549,156
    may_bud = found;

Rule may_bud_4

If axis_size = large and
  x11 > 70000 and
  x11 < = 105000 Then lineto 549,140
    may_bud = found;

Rule may_bud_5

If axis_size = large and
  x11 > 105000 and
  x11 < = 140000 Then lineto 549,124
    may_bud = found;

Rule may_bud_6

If axis_size = large and
  x11 > 140000 and
  x11 < = 175000 Then lineto 549,108
    may_bud = found;

Rule may_bud_7

If axis_size = large and
  x11 > 175000 and
  x11 < = 210000 Then lineto 549,92
    may_bud = found;

Rule may_bud_8

If axis_size = large and
  x11 > 210000 and
  x11 < = 245000 Then lineto 549,77
    may_bud = found;

Rule may_bud_9

If axis_size = large and
  x11 > 245000 and
  x11 < = 280000 Then lineto 549,62
    may_bud = found;

Rule may_bud_10

If axis_size = large and
  x11 > 280000 and
  x11 < = 315000 Then lineto 549,45
    may_bud = found;

Rule may_bud_11

If axis_size = large and
  x11 > 315000 and
  x11 < = 350000 Then lineto 549,29
    may_bud = found;

Rule may_bud_12

If axis_size = large and
  x11 > 350000 Then lineto 549,20
    may_bud = found;

Rule june_bud_1

If x12 = 0 Then lineto 597,180
    june_bud = found;

Rule june_bud_2
```

```
If axis_size = large and
  x12 > 0 and
  x12 < = 35000 Then lineto 597,172
    june_bud = found;

Rule june_bud_3

If axis_size = large and
  x12 > 35000 and
  x12 < = 70000 Then lineto 597,156
    june_bud = found;

Rule june_bud_4

If axis_size = large and
  x12 > 70000 and
  x12 < = 105000 Then lineto 597,140
    june_bud = found;

Rule june_bud_5

If axis_size = large and
  x12 > 105000 and
  x12 < = 140000 Then lineto 597,124
    june_bud = found;

Rule june_bud_6

If axis_size = large and
  x12 > 140000 and
  x12 < = 175000 Then lineto 597,108
    june_bud = found;

Rule june_bud_7

If axis_size = large and
  x12 > 175000 and
  x12 < = 210000 Then lineto 597,92
    june_bud = found;

Rule june_bud_8

If axis_size = large and
  x12 > 210000 and
  x12 < = 245000 Then lineto 597,77
    june_bud = found;

Rule june_bud_9

If axis_size = large and
  x12 > 245000 and
  x12 < = 280000 Then lineto 597,62
    june_bud = found;

Rule june_bud_10

If axis_size = large and
  x12 > 280000 and
  x12 < = 315000 Then lineto 597,45
    june_bud = found;

Rule june_bud_11

If axis_size = large and
  x12 > 315000 and
  x12 < = 350000 Then lineto 597,29
    june_bud = found;

Rule june_bud_12

If axis_size = large and
  x12 > 350000 Then lineto 597,20
    june_bud = found;


Rule july_act If   a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;

Rule july_act If axis_size = large and
```

```
  a1 > 0 and
  a1 < = 35000 Then locate 30,180
    lineto 69,171
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 35000 and
  a1 < = 70000 Then locate 30,180
    lineto 69,155
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 70000 and
  a1 < = 105000 Then locate 30,180
    lineto 69,140
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 105000 and
  a1 < = 140000 Then locate 30,180
    lineto 69,124
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 140000 and
  a1 < = 175000 Then locate 30,180
    lineto 69,108
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 175000 and
  a1 < = 210000 Then locate 30,180
    lineto 69,92
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 210000 and
  a1 < = 245000 Then locate 30,180
    lineto 69,77
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 245000 and
  a1 < = 280000 Then locate 30,180
    lineto 69,62
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 280000 and
  a1 < = 315000 Then locate 30,180
    lineto 69,45
    july_act = found;

Rule july_act If axis_size = large and
  a1 > 315000 and
  a1 < = 350000 Then locate 30,180
    lineto 69,29
    july_act = found;

Rule july_act If    a1 > 350000 Then locate 30,180
    lineto 69,20
    july_act = found;

Rule aug_act_1 If a2 = 0 Then lineto 114,179
    aug_act = found;

Rule aug_act_2 If axis_size = large and
  a2 > 0 and
  a2 < = 35000 Then lineto 114,171
    aug_act = found;

Rule aug_act_3 If axis_size = large and
  a2 > 35000 and
  a2 < = 70000 Then lineto 114,155
    aug_act = found;

Rule aug_act_4 If axis_size = large and
  a2 > 70000 and
  a2 < = 105000 Then lineto 114,139
    aug_act = found;
```

```
Rule aug_act_5 If axis_size = large and
  a2 > 105000 and
  a2 < = 140000 Then lineto 114,123
    aug_act = found;

Rule aug_act_6 If axis_size = large and
  a2 > 140000 and
  a2 < = 175000 Then lineto 114,107
    aug_act = found;

Rule aug_act_7 If axis_size = large and
  a2 > 175000 and
  a2 < = 210000 Then lineto 114,91
    aug_act = found;

Rule aug_act_8 If axis_size = large and
  a2 > 210000 and
  a2 < = 245000 Then lineto 114,75
    aug_act = found;

Rule aug_act_9 If axis_size = large and
  a2 > 245000 and
  a2 < = 280000 Then lineto 114,61
    aug_act = found;

Rule aug_act_10 If axis_size = large and
  a2 > 280000 and
  a2 < = 315000 Then lineto 114,44
    aug_act = found;

Rule aug_act_11 If axis_size = large and
  a2 > 315000 and
  a2 < = 350000 Then lineto 114,28
    aug_act = found;

Rule aug_act_12 If axis_size = large and
  a2 > 350000 Then lineto 114,20
    aug_act = found;

Rule sept_act_1 If a3 = 0 Then lineto 163,180
    sept_act = found;

Rule sept_act_2 If axis_size = large and
  a3 > 0 and
  a3 < = 35000 Then lineto 163,171
    sept_act = found;

Rule sept_act_3 If axis_size = large and
  a3 > 35000 and
  a3 < = 70000 Then lineto 163,155
    sept_act = found;

Rule sept_act_4 If axis_size = large and
  a3 > 70000 and
  a3 < = 105000 Then lineto 163,139
    sept_act = found;

Rule sept_act_5 If axis_size = large and
  a3 > 105000 and
  a3 < = 140000 Then lineto 163,123
    sept_act = found;

Rule sept_act_6 If axis_size = large and
  a3 > 140000 and
  a3 < = 175000 Then lineto 163,107
    sept_act = found;

Rule sept_act_7 If axis_size = large and
  a3 > 175000 and
  a3 < = 210000 Then lineto 163,91
    sept_act = found;

Rule sept_act_8 If axis_size = large and
  a3 > 210000 and
  a3 < = 245000 Then lineto 163,76
    sept_act = found;

Rule sept_act_9
```

```
If axis_size = large and
  a3 > 245000 and
  a3 < = 280000 Then lineto 163,61
    sept_act = found;

Rule sept_act_10

If axis_size = large and
  a3 > 280000 and
  a3 < = 315000 Then lineto 163,44
    sept_act = found;

Rule sept_act_11

If axis_size = large and
  a3 > 315000 and
  a3 < = 350000 Then lineto 163,28
    sept_act = found;

Rule sept_act_12

If axis_size = large and
  a3 > 350000 Then lineto 163,20
    sept_act = found;

Rule oct_act_1

If a4 = 0 Then lineto 212,180
    oct_act = found;

Rule oct_act_2

If axis_size = large and
  a4 > 0 and
  a4 < = 35000 Then lineto 212,171
    oct_act = found;

Rule oct_act_3

If axis_size = large and
  a4 > 35000 and
  a4 < = 70000 Then lineto 212,155
    oct_act = found;

Rule oct_act_4

If axis_size = large and
  a4 > 70000 and
  a4 < = 105000 Then lineto 212,139
    oct_act = found;

Rule oct_act_5

If axis_size = large and
  a4 > 105000 and
  a4 < = 140000 Then lineto 212,123
    oct_act = found;

Rule oct_act_6

If axis_size = large and
  a4 > 140000 and
  a4 < = 175000 Then lineto 212,107
    oct_act = found;

Rule oct_act_7

If axis_size = large and
  a4 > 175000 and
  a4 < = 210000 Then lineto 212,91
    oct_act = found;

Rule oct_act_8

If axis_size = large and
  a4 > 210000 and
  a4 < = 245000 Then lineto 212,76
    oct_act = found;

Rule oct_act_9
```

```
If axis_size = large and
  a4 > 245000 and
  a4 < = 280000 Then lineto 212,61
    oct_act = found;

Rule oct_act_10

If axis_size = large and
  a4 > 280000 and
  a4 < = 315000 Then lineto 212,44
    oct_act = found;

Rule oct_act_11

If axis_size = large and
  a4 > 315000 and
  a4 < = 350000 Then lineto 212,28
    oct_act = found;

Rule oct_act_12

If axis_size = large and
  a4 > 350000 Then lineto 212,20
    oct_act = found;

Rule nov_act_1

If a5 = 0 Then lineto 260,180
    nov_act = found;

Rule nov_act_2

If axis_size = large and
  a5 > 0 and
  a5 < = 35000 Then lineto 260,171
    nov_act = found;

Rule nov_act_3

If axis_size = large and
  a5 > 35000 and
  a5 < = 70000 Then lineto 260,155
    nov_act = found;

Rule nov_act_4

If axis_size = large and
  a5 > 70000 and
  a5 < = 105000 Then lineto 260,139
    nov_act = found;

Rule nov_act_5

If axis_size = large and
  a5 > 105000 and
  a5 < = 140000 Then lineto 260,123
    nov_act = found;

Rule nov_act_6

If axis_size = large and
  a5 > 140000 and
  a5 < = 175000 Then lineto 260,107
    nov_act = found;

Rule nov_act_7

If axis_size = large and
  a5 > 175000 and
  a5 < = 210000 Then lineto 260,91
    nov_act = found ;

Rule nov_act_8

If axis_size = large and
  a5 > 210000 and
  a5 < = 245000 Then lineto 260,76
    nov_act = found;
```

```
Rule nov_act_9

If axis_size = large and
  a5 > 245000 and
  a5 < = 280000 Then lineto 260,61
    nov_act = found;

Rule nov_act_10

If axis_size = large and
  a5 > 280000 and
  a5 < = 315000 Then lineto 260,44
    nov_act = found;

Rule nov_act_11

If axis_size = large and
  a5 > 315000 and
  a5 < = 350000 Then lineto 260,28
    nov_act = found;

Rule nov_act_12

If axis_size = large and
  a5 > 350000 Then lineto 260,20
    nov_act = found;

Rule dec_act_1

If a6 = 0 Then lineto 308,180
    dec_act = found;

Rule dec_act_2

If axis_size = large and
  a6 > 0 and
  a6 < = 35000 Then lineto 308,171
    dec_act = found;

Rule dec_act_3

If axis_size = large and
  a6 > 35000 and
  a6 < = 70000 Then lineto 308,155
    dec_act = found;

Rule dec_act_4

If axis_size = large and
  a6 > 70000 and
  a6 < = 105000 Then lineto 308,139
    dec_act = found;

Rule dec_act_5

If axis_size = large and
  a6 > 105000 and
  a6 < = 140000 Then lineto 308,123
    dec_act = found;

Rule dec_act_6

If axis_size = large and
  a6 > 140000 and
  a6 < = 175000 Then lineto 308,107
    dec_act = found;

Rule dec_act_7

If axis_size = large and
  a6 > 175000 and
  a6 < = 210000 Then lineto 308,91
    dec_act = found;

Rule dec_act_8

If axis_size = large and
  a6 > 210000 and
  a6 < = 245000 Then lineto 308,76
    dec_act = found;
```

```
Rule dec_act_9

If axis_size = large and
  a6 > 245000 and
  a6 < = 280000 Then lineto 308,61
    dec_act = found;

Rule dec_act_10

If axis_size = large and
  a6 > 280000 and
  a6 < = 315000 Then lineto 308,44
    dec_act = found;

Rule dec_act_11

If axis_size = large and
  a6 > 315000 and
  a6 < = 350000 Then lineto 308,28
    dec_act = found;

Rule dec_act_12

If axis_size = large and
  a6 > 350000 Then lineto 308,20
    dec_act = found;

Rule jan_act_1

If a7 = 0 Then lineto 357,180
    jan_act = found;

Rule jan_act_2

If axis_size = large and
  a7 > 0 and
  a7 < = 35000 Then lineto 357,171
    jan_act = found;

Rule jan_act_3

If axis_size = large and
  a7 > 35000 and
  a7 < = 70000 Then lineto 357,155
    jan_act = found;

Rule jan_act_4

If axis_size = large and
  a7 > 70000 and
  a7 < = 105000 Then lineto 357,139
    jan_act = found;

Rule jan_act_5

If axis_size = large and
  a7 > 105000 and
  a7 < = 140000 Then lineto 357,123
    jan_act = found;

Rule jan_act_6

If axis_size = large and
  a7 > 140000 and
  a7 < = 175000 Then lineto 357,107
    jan_act = found;

Rule jan_act_7

If axis_size = large and
  a7 > 175000 and
  a7 < = 210000 Then lineto 357,91
    jan_act = found;

Rule jan_act_8

If axis_size = large and
  a7 > 210000 and
  a7 < = 245000 Then lineto 357,76
```

```
    jan_act = found    ;

Rule jan_act_9

If axis_size = large and
  a7 > 245000 and
  a7 < = 280000 Then lineto 357,61
    jan_act = found    ;

Rule jan_act_10

If axis_size = large and
  a7 > 280000 and
  a7 < = 315000 Then lineto 357,44
    jan_act = found    ;

Rule jan_act_11

If axis_size = large and
  a7 > 315000 and
  a7 < = 350000 Then lineto 357,28
    jan_act = found    ;

Rule jan_act_12

If axis_size = large and
  a7 > 350000 Then lineto 357,20
    jan_act = found    ;

Rule feb_act_1

If a8 = 0 Then lineto 404,180
    feb_act = found    ;

Rule feb_act_2

If axis_size = large and
  a8 > 0 and
  a8 < = 35000 Then lineto 404,171
    feb_act = found    ;

Rule feb_act_3

If axis_size = large and
  a8 > 35000 and
  a8 < = 70000 Then lineto 404,155
    feb_act = found    ;

Rule feb_act_4

If axis_size = large and
  a8 > 70000 and
  a8 < = 105000 Then lineto 404,139
    feb_act = found    ;

Rule feb_act_5

If axis_size = large and
  a8 > 105000 and
  a8 < = 140000 Then lineto 404,123
    feb_act = found    ;

Rule feb_act_6

If axis_size = large and
  a8 > 140000 and
  a8 < = 175000 Then lineto 404,107
    feb_act = found    ;

Rule feb_act_7

If axis_size = large and
  a8 > 175000 and
  a8 < = 210000 Then lineto 404,91
    feb_act = found    ;

Rule feb_act_8

If axis_size = large and
  a8 > 210000 and
```

```
  a8 < = 245000 Then lineto 404,76
    feb_act = found    ;

Rule feb_act_9

If axis_size = large and
  a8 > 245000 and
  a8 < = 280000 Then lineto 404,61
    feb_act = found    ;

Rule feb_act_10

If axis_size = large and
  a8 > 280000 and
  a8 < = 315000 Then lineto 404,44
    feb_act = found    ;

Rule feb_act_11

If axis_size = large and
  a8 > 315000 and
  a8 < = 350000 Then lineto 404,28
    feb_act = found    ;

Rule feb_act_12

If axis_size = large and
  a8 > 350000 Then lineto 404,20
    feb_act = found    ;

Rule march_act_1

If a9 = 0 Then lineto 452,180
    march_act = found    ;

Rule march_act_2

If axis_size = large and
  a9 > 0 and
  a9 < = 35000 Then lineto 452,171
    march_act = found    ;

Rule march_act_3

If axis_size = large and
  a9 > 35000 and
  a9 < = 70000 Then lineto 452,155
    march_act = found    ;

Rule march_act_4

If axis_size = large and
  a9 > 70000 and
  a9 < = 105000 Then lineto 452,139
    march_act = found    ;

Rule march_act_5

If axis_size = large and
  a9 > 105000 and
  a9 < = 140000 Then lineto 452,123
    march_act = found    ;

Rule march_act_6

If axis_size = large and
  a9 > 140000 and
  a9 < = 175000 Then lineto 452,107
    march_act = found    ;

Rule march_act_7

If axis_size = large and
  a9 > 175000 and
  a9 < = 210000 Then lineto 452,91
    march_act = found    ;

Rule march_act_8

If axis_size = large and
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  a9 > 210000 and
  a9 < = 245000 Then lineto 452,76
    march_act = found    ;

Rule march_act_9

If axis_size = large and
  a9 > 245000 and
  a9 < = 280000 Then lineto 452,61
    march_act = found    ;

Rule march_act_10

If axis_size = large and
  a9 > 280000 and
  a9 < = 315000 Then lineto 452,44
    march_act = found    ;

Rule march_act_11

If axis_size = large and
  a9 > 315000 and
  a9 < = 350000 Then lineto 452,28
    march_act = found    ;

Rule march_act_12

If axis_size = large and
  a9 > 350000 Then lineto 452,20
    march_act = found    ;

Rule april_act_1

If a10 = 0 Then lineto 501,180
    april_act = found    ;

Rule april_act_2

If axis_size = large and
  a10 > 0 and
  a10 < = 35000 Then lineto 501,171
    april_act = found    ;

Rule april_act_3

If axis_size = large and
  a10 > 35000 and
  a10 < = 70000 Then lineto 501,155
    april_act = found    ;

Rule april_act_4

If axis_size = large and
  a10 > 70000 and
  a10 < = 105000 Then lineto 501,139
    april_act = found    ;

Rule april_act_5

If axis_size = large and
  a10 > 105000 and
  a10 < = 140000 Then lineto 501,123
    april_act = found    ;

Rule april_act_6

If axis_size = large and
  a10 > 140000 and
  a10 < = 175000 Then lineto 501,107
    april_act = found    ;

Rule april_act_7

If axis_size = large and
  a10 > 175000 and
  a10 < = 210000 Then lineto 501,91
    april_act = found    ;

Rule april_act_8
```

```
If axis_size = large and
  a10 > 210000 and
  a10 < = 245000 Then lineto 501,76
    april_act = found    ;

Rule april_act_9

If axis_size = large and
  a10 > 245000 and
  a10 < = 280000 Then lineto 501,61
    april_act = found    ;

Rule april_act_10

If axis_size = large and
  a10 > 280000 and
  a10 < = 315000 Then lineto 501,44
    april_act = found    ;

Rule april_act_11

If axis_size = large and
  a10 > 315000 and
  a10 < = 350000 Then lineto 501,28
    april_act = found    ;

Rule april_act_12

If axis_size = large and
  a10 > 350000 Then lineto 501,20
    april_act = found    ;

Rule may_act_1

If a11 = 0 Then lineto 549,180
    may_act = found    ;

Rule may_act_2

If axis_size = large and
  a11 > 0 and
  a11 < = 35000 Then lineto 549,171
    may_act = found    ;

Rule may_act_3

If axis_size = large and
  a11 > 35000 and
  a11 < = 70000 Then lineto 549,155
    may_act = found    ;

Rule may_act_4

If axis_size = large and
  a11 > 70000 and
  a11 < = 105000 Then lineto 549,139
    may_act = found    ;

Rule may_act_5

If axis_size = large and
  a11 > 105000 and
  a11 < = 140000 Then lineto 549,123
    may_act = found    ;

Rule may_act_6

If axis_size = large and
  a11 > 140000 and
  a11 < = 175000 Then lineto 549,107
    may_act = found    ;

Rule may_act_7

If axis_size = large and
  a11 > 175000 and
  a11 < = 210000 Then lineto 549,91
    may_act = found    ;

Rule may_act_8
```

```
If axis_size = large and
  all > 210000 and
  all < = 245000 Then lineto 549,76
    may_act = found    ;

Rule may_act_9

If axis_size = large and
  all > 245000 and
  all < = 280000 Then lineto 549,61
    may_act = found    ;

Rule may_act_10

If axis_size = large and
  all > 280000 and
  all < = 315000 Then lineto 549,44
    may_act = found    ;

Rule may_act_11

If axis_size = large and
  all > 315000 and
  all < = 350000 Then lineto 549,28
    may_act = found    ;

Rule may_act_12

If axis_size = large and
  all > 350000 Then lineto 549,20
    may_act = found;

Rule june_act_1

If a12 = 0 Then lineto 597,180
    june_act = found    ;

Rule june_act_2

If axis_size = large and
  a12 > 0 and
  a12 < = 35000 Then lineto 597,171
    june_act = found    ;

Rule june_act_3

If axis_size = large and
  a12 > 35000 and
  a12 < = 70000 Then lineto 597,155
    june_act = found    ;

Rule june_act_4

If axis_size = large and
  a12 > 70000 and
  a12 < = 105000 Then lineto 597,139
    june_act = found    ;

Rule june_act_5

If axis_size = large and
  a12 > 105000 and
  a12 < = 140000 Then lineto 597,123
    june_act = found    ;

Rule june_act_6

If axis_size = large and
  a12 > 140000 and
  a12 < = 175000 Then lineto 597,107
    june_act = found    ;

Rule june_act_7

If axis_size = large and
  a12 > 175000 and
  a12 < = 210000 Then lineto 597,91
    june_act = found    ;
```

```
Rule june_act_8

If axis_size = large and
  a12 > 210000 and
  a12 < = 245000 Then lineto 597,76
    june_act = found    ;

Rule june_act_9

If axis_size = large and
  a12 > 245000 and
  a12 < = 280000 Then lineto 597,62
    june_act = found    ;

Rule june_act_10

If axis_size = large and
  a12 > 280000 and
  a12 < = 315000 Then lineto 597,44
    june_act = found    ;

Rule june_act_11

If axis_size = large and
  a12 > 315000 and
  a12 < = 350000 Then lineto 597,28
    june_act = found    ;

Rule june_act_12

If axis_size = large and
  a12 > 350000 Then lineto 597,20
    june_act = found    ;

Rule july_act If    a1 = 0 Then locate 38,180
    lineto 69,180
    july_act = found;


Rule axis_size_large

If axis_display = unknown

Then axis_display = found
    glocate 1,3
    gdisplay "350"
    glocate 1,7
    gdisplay "280"
    glocate 1,11
    gdisplay "210"
    glocate 1,15
    gdisplay "140"
    glocate 2,19
    gdisplay "70";


!statements block

bkcolor = 1;

lbutton exitbutton1: 10,2,14,14,exit; lbutton exitbutton2: 10,2,14,14,exit; lbutton exitbutton3: 10,2,14,14,exit; lbutton exitbutton4:
10,2,14,14,exit;

plural: new_personal_c,exp_personal_c,exp_personal;
```

```
execute; endoff; runtime;

actions color = 15 todo = what_if_analysis display "The system has just entered a new knowledge base and must load a large" display
"file.  You will be instructed when to continue."  loadfacts widata display " " display "Press any key to see the what if choices.¬" cls
whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end;

!Rules block

Rule display_for_which_stmt If todo = what_if_analysis Then cls
    color = 11
    locate 1,29
    display "What_If Questions"
    locate 4,5
    display "1  What if the composition of the corps were to change?"
    locate 5,5
    display "2  What if the size of the corps were to change?"
    locate 6,5
    display "3  What if commutation allowances were to change?"
    locate 7,5
    display "4  What if the price of a 'bag' of uniform items were to change?"
    locate 8,5
    display "5  What if non-corps prices were to change?"
    locate 9,5
    display "6  What if costs were to change?"
    locate 10,5
    display "7  What if the budget were to change?"
    locate 11,5
    display "8  What if one or more entire market segments were dropped?"
    locate 13,5
    display "9  Perform the analysis"
    locate 14,4
    display "10  Return to main menu"

    find stmt_number
    which_stmt = found
    find what_next;

Rule make_changes_for_corps_comp If stmt_number = 1 Then what_next = corps_composition
    find change_wica_1
    find change_wiis_1
    find change_wiabis_1
    find change_wicbis_1;

Rule make_changes_for_corps_size_change If stmt_number = 2 Then what_next = corps_composition
    find change_wica_2
    find change_wiis_2
    find change_wiabis_2
    find change_wicbis_2;

Rule make_changes_for_ca_changes If stmt_number = 3 Then what_next = ca_change
    find change_wica_3
    find change_wiis_3
    find change_wiabis_3
    find change_wicbis_3;

Rule make_changes_for_bag_price_changes If stmt_number = 4 Then what_next = bag_price_change
    find change_wiis_4
    find change_wiabis_4
    find change_wicbis_4;

Rule make_changes_for_non_corps_price_change If stmt_number = 5 Then what_next = non_corps_price_change
    find change_wiis_5
    find change_wiabis_5
    find change_wicbis_5;

Rule make_changes_for_cost_changes If stmt_number = 6 Then what_next = cost_change
    find change_wiis_6
    find change_wiabis_6
    find change_wicbis_6;

Rule make_changes_for_budget_changes If stmt_number = 7 Then what_next = budget_change
```

```
    find change_wibud_7;

Rule make_changes_for_seg_drops If stmt_number = 8 Then what_next = drop_segs
    cls
    find seg_drops
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      wages_wiis[x] = (wages_gen[x] + wages_stud[x])
      x = (x + 1)
    end
    find p_drop_abis
    find s_drop_abis
    find i_drop_abis
    find st_drop_abis
    find m_drop_abis
    t_drop_abis = (p_drop_abis + s_drop_abis + i_drop_abis + st_drop_abis + m_drop_abis)
    find change_stmts;

Rule p_drop If seg_drops < > public Then p_drop_abis = 0;

Rule s_drop If seg_drops < > student_fac_staff Then s_drop_abis = 0;

Rule i_drop If seg_drops < > interdepartmental Then i_drop_abis = 0;

Rule st_drop If seg_drops < > state_related Then st_drop_abis = 0;

Rule m_drop If seg_drops < > music_dept Then m_drop_abis = 0;


Rule p_drop

If t_wages > = (public_cost_this) and
   seg_drops = public

Then p_drop_abis = (public_cost_this)
    p_drop_cbis = (public_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      p_drop_is[x] = (public_cost_wiis[x])
      public_rev_wiis[x] = 0
      public_cost_wiis[x] = 0
      x = (x + 1)
    end
    public_rev_this = 0
    public_wicbis = 0
    public_cost_this = 0

else p_drop_abis = (t_wages)
    p_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      p_drop_is[x] = (wages_wiis[x])
      public_rev_wiis[x] = 0
      public_cost_wiis[x] = 0
      x = (x + 1)
    end
    public_rev_this = 0
    public_wicbis = 0
    public_cost_this = 0 ;

Rule s_drop

If t_wages > = (s_f_s_cost_this) and
   seg_drops = student_fac_staff

Then s_drop_abis = (s_f_s_cost_this)
    s_drop_cbis = (s_f_s_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      s_drop_is[x] = (s_f_s_cost_wiis[x])
      s_f_s_cost_wiis[x] = 0
      s_f_s_rev_wiis[x] = 0
      x = (x + 1)
    end
    s_f_s_cost_this = 0
    s_f_s_rev_this = 0
```

```
    s_f_s_wicbis = 0

else s_drop_abis = (t_wages)
    s_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      s_drop_is[x] = (wages_wiis[x])
      s_f_s_cost_wiis[x] = 0
      s_f_s_rev_wiis[x] = 0
      x = (x + 1)
    end
    s_f_s_cost_this = 0
    s_f_s_rev_this = 0
    s_f_s_wicbis = 0 ;

Rule i_drop

If t_wages > = (interdept_cost_this) and
   seg_drops = interdepartmental

Then i_drop_abis = (interdept_cost_this)
    i_drop_cbis = (interdept_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      i_drop_is[x] = (interdept_cost_wiis[x])
      interdept_rev_wiis[x] = 0
      interdept_cost_wiis[x] = 0
      x = (x + 1)
    end
    interdept_cost_this = 0
    interdept_rev_this = 0
    interdept_wicbis = 0

else i_drop_abis = (t_wages)
    i_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      i_drop_is[x] = (wages_wiis[x])
      interdept_rev_wiis[x] = 0
      interdept_cost_wiis[x] = 0
      x = (x + 1)
    end
    interdept_cost_this = 0
    interdept_rev_this = 0
    interdept_wicbis = 0

; Rule st_drop

If t_wages > = (state_cost_this) and
   seg_drops = state_related

Then st_drop_abis = (state_cost_this)
    st_drop_cbis = (state_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      st_drop_is[x] = (state_cost_wiis[x])
      state_rev_wiis[x] = 0
      state_cost_wiis[x] = 0
      x = (x + 1)
    end
    state_rev_this = 0
    state_cost_this = 0
    state_wicbis = 0

else st_drop_abis = (t_wages)
    st_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      st_drop_is[x] = (wages_wiis[x])
      state_rev_wiis[x] = 0
      state_cost_wiis[x] = 0
      x = (x + 1)
    end
    state_rev_this = 0
    state_cost_this = 0
```

```
    state_wicbis = 0 ;

Rule m_drop

If t_wages > = (music_cost_this) and
  seg_drops = music_dept

Then m_drop_abis = (music_cost_this)
    m_drop_cbis = (music_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      m_drop_is[x] = (music_cost_wiis[x])
      music_rev_wiis[x] = 0
      music_cost_wiis[x] = 0
      x = (x + 1)
    end
    music_rev_this = 0
    music_cost_this = 0
    music_wicbis = 0

else m_drop_abis = (t_wages)
    m_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      m_drop_is[x] = (wages_wiis[x])
      music_rev_wiis[x] = 0
      music_cost_wiis[x] = 0
      x = (x + 1)
    end
    music_rev_this = 0
    music_cost_this = 0
    music_wicbis = 0 ;

Rule get_stats_to_change_wica_1 If stmt_number = 1 Then change_wica_1 = found
    cls
    display "There are currently (freshmen_number) freshmen.  Would you like to increase, decrease, or"
    find change_freshmen
    find actual_freshmen_change
    display "There are currently (sophomore_number) sophomores.  Would you like to increase, decrease, or"
    find change_sophomore
    find actual_sophomore_change
    display "There are currently (junior_number) juniors.  Would you like to increase, decrease, or"
    find change_junior
    find actual_junior_change
    display "There are currently (senior_number) senior.  Would you like to increase, decrease, or"
    find change_senior
    find actual_senior_change
    display " "
    display " "
    display " "
    display "Please Wait"
    total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    freshmen_number = (freshmen_number + actual_freshmen_change)
    sophomore_number = (sophomore_number + actual_sophomore_change)
    junior_number = (junior_number + actual_junior_change)
    senior_number = (senior_number + actual_senior_change)
    inc_due_to_freshmen_change = (freshmen_ca * actual_freshmen_change)
    inc_due_to_sophomore_change = (sophomore_ca * actual_sophomore_change)
    inc_due_to_junior_change = (junior_ca * actual_junior_change)
    inc_due_to_senior_change = (senior_ca * actual_senior_change)
    total_corps_number_change1 = (actual_freshmen_change + actual_sophomore_change + actual_junior_change)
    total_corps_number_change = (total_corps_number_change1 + actual_senior_change)
    change_due_to_corps_comp1 = (inc_due_to_freshmen_change + inc_due_to_sophomore_change + inc_due_to_junior_change)
    change_due_to_corps_comp = (change_due_to_corps_comp1 + inc_due_to_senior_change)
    uniform_cost_per_cadet = (cost_uniforms_this / total_corps_number)
    reset change_freshmen
    reset change_sophomore
    reset change_junior
    reset change_senior
    reset actual_freshmen_change
    reset actual_sophomore_change
    reset actual_junior_change
    reset actual_senior_change;

Rule get_stats_to_change_wica_2 If stmt_number = 2 Then change_wica_2 = found
    cls
    display "There are currently (freshmen_number) freshmen.  Would you like to increase, decrease, or"
    find change_freshmen
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```
    find actual_freshmen_change
    display "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    find change_sophomore
    find actual_sophomore_change
    display "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    find change_junior
    find actual_junior_change
    display "There are currently {senior_number} senior.  Would you like to increase, decrease, or"
    find change_senior
    find actual_senior_change
    display " "
    display " "
    display " "
    display "Please Wait"
    total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    freshmen_number = (freshmen_number + actual_freshmen_change)
    sophomore_number = (sophomore_number + actual_sophomore_change)
    junior_number = (junior_number + actual_junior_change)
    senior_number = (senior_number + actual_senior_change)
    inc_due_to_freshmen_change = (freshmen_ca * actual_freshmen_change)
    inc_due_to_sophomore_change = (sophomore_ca * actual_sophomore_change)
    inc_due_to_junior_change = (junior_ca * actual_junior_change)
    inc_due_to_senior_change = (senior_ca * actual_senior_change)
    total_corps_number_change1 = (actual_freshmen_change + actual_sophomore_change + actual_junior_change)
    total_corps_number_change = (total_corps_number_change1 + actual_senior_change)
    new_total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    change_due_to_corps_comp1 = (inc_due_to_freshmen_change + inc_due_to_sophomore_change + inc_due_to_junior_change)
    change_due_to_corps_comp = (change_due_to_corps_comp1 + inc_due_to_senior_change)
    uniform_cost_per_cadet = (cost_uniforms_this / total_corps_number)
    reset change_freshmen
    reset change_sophomore
    reset change_junior
    reset change_senior
    reset actual_freshmen_change
    reset actual_sophomore_change
    reset actual_junior_change
    reset actual_senior_change;

Rule get_stats_to_change_wica_3 If stmt_number = 3 Then change_wica_3 = found
    cls
    display "The average commutation allowance for freshmen at this time is ${freshmen_ca}.  Would"
    find change_freshmen_ca
    find actual_freshmen_change_ca
    display "The average commutation allowance for sophomores at this time is ${sophomore_ca}.  Would"
    find change_sophomore_ca
    find actual_sophomore_change_ca
    display "The average commutation allowance for juniors at this time is ${junior_ca}.  Would"
    find change_junior_ca
    find actual_junior_change_ca
    display "The average commutation allowance for seniors at this time is ${senior_ca}.  Would"
    find change_senior_ca
    find actual_senior_change_ca
    display " "
    display " "
    display " "
    display "Please Wait"
    x = ((freshmen_number * actual_freshmen_change_ca) + (sophomore_number * actual_sophomore_change_ca))
    change_due_to_ca_changes = (x + (junior_number * actual_junior_change_ca) + (senior_number * actual_senior_change_ca));

Rule change_freshmen_same If change_freshmen = same Then actual_freshmen_change = 0;

Rule change_freshmen_increase If change_freshmen = increase Then find change_freshmen_number
    actual_freshmen_change = (change_freshmen_number);

Rule change_freshmen_decrease If change_freshmen = decrease Then find change_freshmen_number
    actual_freshmen_change = (0 - change_freshmen_number);

Rule change_sophomore_same If change_sophomore = same Then actual_sophomore_change = 0;

Rule change_sophomore_increase If change_sophomore = increase Then find change_sophomore_number
    actual_sophomore_change = (change_sophomore_number);

Rule change_sophomore_decrease If change_sophomore = decrease Then find change_sophomore_number
    actual_sophomore_change = (0 - change_sophomore_number);

Rule change_junior_same If change_junior = same Then actual_junior_change = 0;

Rule change_junior_increase If change_junior = increase Then find change_junior_number
    actual_junior_change = (change_junior_number);
```

```
Rule change_junior_decrease If change_junior = decrease Then find change_junior_number
    actual_junior_change = (0 - change_junior_number);

Rule change_senior_same If change_senior = same Then actual_senior_change = 0;

Rule change_senior_increase If change_senior = increase Then find change_senior_number
    actual_senior_change = (change_senior_number);

Rule change_senior_decrease If change_senior = decrease Then find change_senior_number
    actual_senior_change = (0 - change_senior_number);

Rule change_freshmen_same_ca If change_freshmen_ca = same Then actual_freshmen_change_ca = 0;

Rule change_freshmen_increase_ca If change_freshmen_ca = increase Then find change_freshmen_number_ca
    actual_freshmen_change_ca = (change_freshmen_number_ca);

Rule change_freshmen_decrease_ca If change_freshmen_ca = decrease Then find change_freshmen_number_ca
    actual_freshmen_change_ca = (0 - change_freshmen_number_ca);

Rule change_sophomore_same_ca If change_sophomore_ca = same Then actual_sophomore_change_ca = 0;

Rule change_sophomore_increase_ca If change_sophomore_ca = increase Then find change_sophomore_number_ca
    actual_sophomore_change_ca = (change_sophomore_number_ca);

Rule change_sophomore_decrease_ca If change_sophomore_ca = decrease Then find change_sophomore_number_ca
    actual_sophomore_change_ca = (0 - change_sophomore_number_ca);

Rule change_junior_same_ca If change_junior_ca = same Then actual_junior_change_ca = 0;

Rule change_junior_increase_ca If change_junior_ca = increase Then find change_junior_number_ca
    actual_junior_change_ca = (change_junior_number_ca);

Rule change_junior_decrease_ca If change_junior_ca = decrease Then find change_junior_number_ca
    actual_junior_change_ca = (0 - change_junior_number_ca);

Rule change_senior_same_ca If change_senior_ca = same Then actual_senior_change_ca = 0;

Rule change_senior_increase_ca If change_senior_ca = increase Then find change_senior_number_ca
    actual_senior_change_ca = (change_senior_number_ca);

Rule change_senior_decrease_ca If change_senior_ca = decrease Then find change_senior_number_ca
    actual_senior_change_ca = (0 - change_senior_number_ca);

Rule get_stats_to_change_wiis_1 If stmt_number = 1 Then change_wiis_1 = found
    x = 1
    whiletrue x <= 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x <= (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      x = (x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number <= 400 Then change_wiis_2 = found
    x = 1
    whiletrue x <= 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x <= (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] - wages_gen[x] - wages_stud[x])
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl - wages_gen[x] - wages_stud[x])
      x = (x + 1)
      y = (y + 1)
    end;
```

```
Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] - (1/2 * wages_gen[x]) - (1/2 * wages_stud[x]))
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl - (1/2 * wages_gen[x]) - (1/2 * wages_stud[x]))
      x = (x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_exp_uniforms_%[y]*total_corps_number_change*uniform_cost_per_cadet))
      x = (x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] * 10 / 9)
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl + (1/9 * personal_wiis[x]))
      x = (x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_3 If stmt_number = 3 Then change_wiis_3 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_ca_changes))
      x = (x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_4 If stmt_number = 4 Then change_wiis_4 = found
```

```
    cls
    display "Would you like to increase or decrease the cost of putting together a 'bag'"
    find bag_price_direction
    find amount_bag_change
    new_total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    find total_bag_price_change
    x = 1
    whiletrue x < = 12 then
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_bag_price_change))
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_exp_uniforms_%[y] * total_bag_price_change))
      x = (x + 1)
      y = (y + 1)
    end;

Rule increase_$_bag If bag_price_direction = increase Then total_bag_price_change = (new_total_corps_number * amount_bag_change);

Rule decrease_$_bag If bag_price_direction = decrease Then total_bag_price_change = (0 - (new_total_corps_number *
amount_bag_change));

Rule get_stats_to_change_wiis_5 If stmt_number = 5 Then change_wiis_5 = found
    cls
    display "For which market segments would you like to change the prices? Choose"
    find which_segments
    find public_increment
    find s_f_s_increment
    find interdept_increment
    find music_increment
    find state_increment
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      public_rev_wiis[x] = (public_rev_wiis[x] * public_increment)
      s_f_s_rev_wiis[x] = (s_f_s_rev_wiis[x] * s_f_s_increment)
      interdept_rev_wiis[x] = (interdept_rev_wiis[x] * interdept_increment)
      music_rev_wiis[x] = (music_rev_wiis[x] * music_increment)
      state_rev_wiis[x] = (state_rev_wiis[x] * state_increment)
      x = (x + 1)
    end;

Rule get_stats_to_change_wiis_6 If stmt_number = 6 Then change_wiis_6 = found
    cls
    display "For which expense categories would you like to change the amounts?"
    find which_expenses
    find personal_increment
    find contract_increment
    find s_&_m_increment
    find contin_increment
    find equip_increment
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] * personal_increment)
      contract_wiis[x] = (contract_wiis[x] * contract_increment)
      s_&_m_wiis[x] = (s_&_m_wiis[x] * s_&_m_increment)
      contin_wiis[x] = (contin_wiis[x] * contin_increment)
      equip_wiis[x] = (equip_wiis[x] * equip_increment)
      x = (x + 1)
    end
    find personal_directs    ! leads to a series of rules which
    find contract_directs    ! determine how each of the changes
    find s_&_m_directs       ! in these costs will affect the direct costs
    find contin_directs
    find equip_directs;

Rule public_increment_0 If which_segments < > public Then public_increment = 1.0;

Rule public_increment_positive If which_segments = public and
  public_direction = increase Then find public_%
    public_increment = (1 + (public_% / 100));

Rule public_increment_negative If which_segments = public and
  public_direction = decrease Then find public_%
    public_increment = (1 - (public_% / 100));
```

```
Rule s_f_s_increment_0 If which_segments < > student_fac_staff Then s_f_s_increment = 1.0;

Rule s_f_s_increment_positive If which_segments = student_fac_staff and
  s_f_s_direction = increase Then find s_f_s_%
    s_f_s_increment = (1 + (s_f_s_% / 100));

Rule s_f_s_increment_negative If which_segments = student_fac_staff and
  s_f_s_direction = decrease Then find s_f_s_%
    s_f_s_increment = (1 - (s_f_s_% / 100));

Rule interdept_increment_0 If which_segments < > interdepartmental Then interdept_increment = 1.0;

Rule interdept_increment_positive If which_segments = interdepartmental and
  interdept_direction = increase Then find interdept_%
    interdept_increment = (1 + (interdept_% / 100));

Rule interdept_increment_negative If which_segments = interdepartmental and
  interdept_direction = decrease Then find interdept_%
    interdept_increment = (1 - (interdept_% / 100));

Rule music_increment_0 If which_segments < > Music_Dept Then music_increment = 1.0;

Rule music_increment_positive If which_segments = Music_Dept and
  music_direction = increase Then find music_%
    music_increment = (1 + (music_% / 100));

Rule music_increment_negative If which_segments = Music_Dept and
  music_direction = decrease Then find music_%
    music_increment = (1 - (music_% / 100));

Rule state_increment_0 If which_segments < > State_Related Then state_increment = 1.0;

Rule state_increment_positive If which_segments = State_Related and
  state_direction = increase Then find state_%
    state_increment = (1 + (state_% / 100));

Rule state_increment_negative If which_segments = State_Related and
  state_direction = decrease Then find state_%
    state_increment = (1 - (state_% / 100));

Rule get_stats_to_change_wiabis_1 If stmt_number = 1 Then change_wiabis_1 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet));

Rule personal_increment_0 If which_expenses < > personnel Then personal_increment = 1.0;

Rule personal_increment_positive_% If which_expenses = personnel and
  personal_direction = increase and
  personal_terms = percentage Then find personal_%
    personal_increment = (1 + (personal_% / 100));

Rule personal_increment_positive_abs If which_expenses = personnel and
  personal_direction = increase and
  personal_terms = dollar Then find personal_$
    personal_% = (personal_$ / cbis_personal_x)
    personal_increment = (1 + personal_%);

Rule personal_increment_negative_% If which_expenses = personnel and
  personal_direction = decrease and
  personal_terms = percentage Then find personal_%
    personal_increment = (1 - (personal_% / 100));

Rule personal_increment_negative_abs If which_expenses = personnel and
  personal_direction = decrease and
  personal_terms = dollar Then find personal_$
    personal_% = (personal_$ / cbis_personal_x)
    personal_increment = (1 - personal_%);

Rule contract_increment_0 If which_expenses < > contractual Then contract_increment = 1.0;

Rule contract_increment_positive_% If which_expenses = contractual and
  contract_direction = increase and
  contract_terms = percentage Then find contract_%
    contract_increment = (1 + (contract_% / 100));

Rule contract_increment_positive_abs If which_expenses = contractual and
  contract_direction = increase and
  contract_terms = dollar Then find contract_$
```

```
    contract_% = (contract_$ / cbis_contract_x)
    contract_increment = (1 + contract_% );

Rule contract_increment_negative_% If which_expenses = contractual and
  contract_direction = decrease and
  contract_terms = percentage Then find contract_%
    contract_increment = (1 - (contract_% / 100));

Rule contract_increment_negative_abs If which_expenses = contractual and
  contract_direction = decrease and
  contract_terms = dollar Then find contract_$
    contract_% = (contract_$ / cbis_contract_x)
    contract_increment = (1 - contract_% );

Rule s_&_m_increment_0 If which_expenses < > supplies_&_materials Then s_&_m_increment = 1.0;

Rule s_&_m_increment_positive_% If which_expenses = supplies_&_materials and
  s_&_m_direction = increase and
  s_&_m_terms = percentage Then find s_&_m_%
    s_&_m_increment = (1 + (s_&_m_% / 100));

Rule s_&_m_increment_positive_abs If which_expenses = supplies_&_materials and
  s_&_m_direction = increase and
  s_&_m_terms = dollar Then find s_&_m_$
    s_&_m_% = (s_&_m_$ / cbis_s_&_m_x)
    s_&_m_increment = (1 + s_&_m_% );

Rule s_&_m_increment_negative_% If which_expenses = supplies_&_materials and
  s_&_m_direction = decrease and
  s_&_m_terms = percentage Then find s_&_m_%
    s_&_m_increment = (1 - (s_&_m_% / 100));

Rule s_&_m_increment_negative_abs If which_expenses = supplies_&_materials and
  s_&_m_direction = decrease and
  s_&_m_terms = dollar Then find s_&_m_$
    s_&_m_% = (s_&_m_$ / cbis_s_&_m_x)
    s_&_m_increment = (1 - s_&_m_% );

Rule contin_increment_0 If which_expenses < > continuous Then contin_increment = 1.0;

Rule contin_increment_positive_% If which_expenses = continuous and
  contin_direction = increase and
  contin_terms = percentage Then find contin_%
    contin_increment = (1 + (contin_% / 100));

Rule contin_increment_positive_abs If which_expenses = continuous and
  contin_direction = increase and
  contin_terms = dollar Then find contin_$
    contin_% = (contin_$ / cbis_contin_x)
    contin_increment = (1 + contin_% );

Rule contin_increment_negative_% If which_expenses = continuous and
  contin_direction = decrease and
  contin_terms = percentage Then find contin_%
    contin_increment = (1 - (contin_% / 100));

Rule contin_increment_negative_abs If which_expenses = continuous and
  contin_direction = decrease and
  contin_terms = dollar Then find contin_$
    contin_% = (contin_$ / cbis_contin_x)
    contin_increment = (1 - contin_% );

Rule equip_increment_0 If which_expenses < > equipment Then equip_increment = 1.0;

Rule equip_increment_positive_% If which_expenses = equipment and
  equip_direction = increase and
  equip_terms = percentage Then find equip_%
    equip_increment = (1 + (equip_% / 100));

Rule equip_increment_positive_abs If which_expenses = equipment and
  equip_direction = increase and
  equip_terms = dollar Then find equip_$
    equip_% = (equip_$ / act_equip_x)
    equip_increment = (1 + equip_% );

Rule equip_increment_negative_% If which_expenses = equipment and
  equip_direction = decrease and
  equip_terms = percentage Then find equip_%
    equip_increment = (1 - (equip_% / 100));
```

```
Rule equip_increment_negative_abs If which_expenses = equipment and
  equip_direction = decrease and
  equip_terms = dollar Then find equip_$
    equip_% = (equip_$ / act_equip_x)
    equip_increment = (1 - equip_% );

Rule personal_directs If personal_increment > 1.0 Then personal_directs = found
    z = (count_it)
    y = (((personal_increment - 1) * cbis_personal) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule personal_directs If personal_increment < 1.0 Then personal_directs = found
    z = (count_it)
    y = (((1 - personal_increment) * cbis_personal) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule contract_directs If contract_increment > 1.0 Then contract_directs = found
    z = (count_it)
    y = (((contract_increment - 1) * cbis_contract) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule contract_directs If contract_increment < 1.0 Then contract_directs = found
    z = (count_it)
    y = (((1 - contract_increment) * cbis_contract) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
```

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    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule s_&_m_directs If s_&_m_increment > 1.0 Then s_&_m_directs = found
    z = (count_it)
    y = (((s_&_m_increment - 1) * cbis_s_&_m) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule s_&_m_directs If s_&_m_increment < 1.0 Then s_&_m_directs = found
    z = (count_it)
    y = (((1 - s_&_m_increment) * cbis_s_&_m) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule contin_directs If contin_increment > 1.0 Then contin_directs = found
    z = (count_it)
    y = (((contin_increment - 1) * cbis_contin) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule contin_directs If contin_increment < 1.0 Then contin_directs = found
    z = (count_it)
    y = (((1 - contin_increment) * cbis_contin) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
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    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule equip_directs If equip_increment > 1.0 Then equip_directs = found
    z = (count_it)
    y = (((equip_increment - 1) * act_equip) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule equip_directs If equip_increment < 1.0 Then equip_directs = found
    z = (count_it)
    y = (((1 - equip_increment) * act_equip) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal - wages_gen_wiabis - wages_stud_wiabis)
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl - wages_gen_wiabis - wages_stud_wiabis)
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 + wages_gen_wiabis + wages_stud_wiabis);

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal - (1/2 * wages_gen_wiabis) - (1/2 *wages_stud_wiabis))
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl - (1/2 * wages_gen_wiabis) - (1/2 *wages_stud_wiabis))
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 + (1/2 * wages_gen_wiabis) + (1/2 * wages_stud_wiabis));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    corps_cost_this = (corps_cost_this + (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal * 10/9)
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    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl + (1/9 * t_personal))
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 - (1/9 * t_personal));

Rule get_stats_to_change_wiabis_3 If stmt_number = 3 Then change_wiabis_3 = found
    t_mil_rev = (t_mil_rev + change_due_to_ca_changes);

Rule get_stats_to_change_wiabis_4 If stmt_number = 4 Then change_wiabis_4 = found
    cost_uniforms_this = (cost_uniforms_this + total_bag_price_change)
    corps_cost_this = (corps_cost_this + total_bag_price_change);

Rule get_stats_to_change_wiabis_5 If stmt_number = 5 Then change_wiabis_5 = found
    public_rev_this = (public_rev_this * public_increment)
    s_f_s_rev_this = (s_f_s_rev_this * s_f_s_increment)
    interdept_rev_this = (interdept_rev_this * interdept_increment)
    music_rev_this = (music_rev_this * music_increment)
    state_rev_this = (state_rev_this * state_increment);

Rule get_stats_to_change_wiabis_6 If stmt_number = 6 Then change_wiabis_6 = found
    t_personal = (t_personal * personal_increment)
    contract_this = (contract_this * contract_increment)
    s_&_m_this = (s_&_m_this * s_&_m_increment)
    contin_this = (contin_this * contin_increment)
    deprec_this = (deprec_this * equip_increment);

Rule get_stats_to_change_wicbis_1 If stmt_number = 1 Then change_wicbis_1 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal - wages_gen_wiabis - wages_stud_wiabis)
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + wages_gen_wiabis + wages_stud_wiabis);

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal - (1/2 * wages_gen_wiabis) - (1/2 * wages_stud_wiabis))
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + (1/2 * wages_gen_wiabis) + (1/2 * wages_stud_wiabis));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wicbis_2 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal * 10,9)
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + (1/9 * cbis_personal));

Rule get_stats_to_change_wicbis_3 If stmt_number = 3 Then change_wicbis_3 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_ca_changes);

Rule get_stats_to_change_wicbis_4 If stmt_number = 4 Then change_wicbis_4 = found
    uniforms = (uniforms + total_bag_price_change);

Rule get_stats_to_change_wicbis_5 If stmt_number = 5 Then change_wicbis_5 = found
    public_wicbis = (public_wicbis * public_increment)
    s_f_s_wicbis = (s_f_s_wicbis * s_f_s_increment)
    interdept_wicbis = (interdept_wicbis * interdept_increment)
    music_wicbis = (music_wicbis * music_increment)
    state_wicbis = (state_wicbis * state_increment);

Rule get_stats_to_change_wicbis_6 If stmt_number = 6 Then change_wicbis_6 = found
    cbis_personal = (cbis_personal * personal_increment)
    cbis_contract = (cbis_contract * contract_increment)
    cbis_s_&_m = (cbis_s_&_m * s_&_m_increment)
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    cbis_contin = (cbis_contin * contin_increment)
    act_equip = (act_equip * equip_increment);

Rule get_stats_to_change_wibud_7 If stmt_number = 7 Then change_wibud_7 = found
    cls
    display "Which budget items would you like to change?"
    find which_bud_items
    find rev_bud_increment
    find equip_bud_increment
    find uniforms_bud_increment
    find salaries_bud_increment
    find wages_bud_increment
    find fringes_bud_increment
    find tele_bud_increment
    find r_&_m_bud_increment
    find travel_bud_increment
    find other_contract_bud_increment
    find repair_s_&_m_bud_increment
    find other_s_&_m_bud_increment
    find elect_bud_increment
    find w_&_s_bud_increment
    find agency_charges_bud_increment
    find insure_bud_increment
    find other_contin_bud_increment
    rev_bud = (rev_bud * rev_bud_increment)
    equip_bud = (equip_bud_increment * equip_bud)
    fringes_bud = (fringes_bud_increment * fringes_bud)
    salaries_bud = (salaries_bud_increment * salaries_bud)
    wages_bud = (wages_bud_increment * wages_bud)
    uniforms_bud = (uniforms_bud_increment * uniforms_bud)
    tele_bud = (tele_bud_increment * tele_bud)
    r_&_m_bud = (r_&_m_bud_increment * r_&_m_bud)
    travel_bud = (travel_bud_increment * travel_bud)
    other_contract_bud = (other_contract_bud_increment * other_contract_bud)
    repair_s_&_m_bud = (repair_s_&_m_bud_increment * repair_s_&_m_bud)
    other_s_&_m_bud = (other_s_&_m_bud_increment * other_s_&_m_bud)
    elect_bud = (elect_bud_increment * elect_bud)
    w_&_s_bud = (w_&_s_bud_increment * w_&_s_bud)
    agency_charges_bud = (agency_charges_bud_increment * agency_charges_bud)
    insure_bud = (insure_bud_increment * insure_bud)
    other_contin_bud = (other_contin_bud_increment * other_contin_bud);

Rule rev_bud_increment_increase_% If which_bud_items = revenue and
  rev_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    rev_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule rev_bud_increment_increase_abs If which_bud_items = revenue and
  rev_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    rev_bud_increment = (1 + (bud_$ / rev_bud))
    reset bud_$;

Rule rev_bud_increment_decrease_% If which_bud_items = revenue and
  rev_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    rev_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule rev_bud_increment_decrease_abs If which_bud_items = revenue and
  rev_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    rev_bud_increment = (1 - (bud_$ / rev_bud))
    reset bud_$ else rev_bud_increment = 1.0;

Rule equip_bud_increment_increase_% If which_bud_items = equipment and
  equip_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    equip_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule equip_bud_increment_increase_abs If which_bud_items = equipment and
  equip_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
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    find bud_$
    equip_bud_increment = (1 + (bud_$ / equip_bud))
    reset bud_$;

Rule equip_bud_increment_decrease_% If which_bud_items = equipment and
  equip_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    equip_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule equip_bud_increment_decrease_abs If which_bud_items = equipment and
  equip_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    equip_bud_increment = (1 - (bud_$ / equip_bud))
    reset bud_$ else equip_bud_increment = 1.0;

Rule uniforms_bud_increment_increase_% If which_bud_items = uniforms and
  uniforms_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    uniforms_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule uniforms_bud_increment_increase_abs If which_bud_items = uniforms and
  uniforms_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    uniforms_bud_increment = (1 + (bud_$ / uniforms_bud))
    reset bud_$;

Rule uniforms_bud_increment_decrease_% If which_bud_items = uniforms and
  uniforms_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    uniforms_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule uniforms_bud_increment_decrease_abs If which_bud_items = uniforms and
  uniforms_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    uniforms_bud_increment = (1 - (bud_$ / uniforms_bud))
    reset bud_$ else uniforms_bud_increment = 1.0;

Rule salaries_bud_increment_increase_% If which_bud_items = salaries and
  salaries_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    salaries_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule salaries_bud_increment_increase_abs If which_bud_items = salaries and
  salaries_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    salaries_bud_increment = (1 + (bud_$ / salaries_bud))
    reset bud_$;

Rule salaries_bud_increment_decrease_% If which_bud_items = salaries and
  salaries_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    salaries_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule salaries_bud_increment_decrease_abs If which_bud_items = salaries and
  salaries_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    salaries_bud_increment = (1 - (bud_$ / salaries_bud))
    reset bud_$ else salaries_bud_increment = 1.0;

Rule wages_bud_increment_increase_% If which_bud_items = wages and
  wages_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    wages_bud_increment = (1 + (bud_% / 100))
    reset bud_%;
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Rule wages_bud_increment_increase_abs If which_bud_items = wages and
  wages_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    wages_bud_increment = (1 + (bud_$ / wages_bud))
    reset bud_$;

Rule wages_bud_increment_decrease_% If which_bud_items = wages and
  wages_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    wages_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule wages_bud_increment_decrease_abs If which_bud_items = wages and
  wages_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    wages_bud_increment = (1 - (bud_$ / wages_bud))
    reset bud_$ else wages_bud_increment = 1.0;

Rule fringes_bud_increment_increase_% If which_bud_items = fringe_benefits and
  fringes_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    fringes_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule fringes_bud_increment_increase_abs If which_bud_items = fringe_benefits and
  fringes_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    fringes_bud_increment = (1 + (bud_$ / fringes_bud))
    reset bud_$;

Rule fringes_bud_increment_decrease_% If which_bud_items = fringe_benefits and
  fringes_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    fringes_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule fringes_bud_increment_decrease_abs If which_bud_items = fringe_benefits and
  fringes_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    fringes_bud_increment = (1 - (bud_$ / fringes_bud))
    reset bud_$ else fringes_bud_increment = 1.0;

Rule tele_bud_increment_increase_% If which_bud_items = telecommunications and
  tele_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    tele_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule tele_bud_increment_increase_abs If which_bud_items = telecommunications and
  tele_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    tele_bud_increment = (1 + (bud_$ / tele_bud))
    reset bud_$;

Rule tele_bud_increment_decrease_% If which_bud_items = telecommunications and
  tele_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    tele_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule tele_bud_increment_decrease_abs If which_bud_items = telecommunications and
  tele_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    tele_bud_increment = (1 - (bud_$ / tele_bud))
    reset bud_$ else tele_bud_increment = 1.0;

Rule r_&_m_bud_increment_increase_% If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = increase and
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  bud_terms = percentage Then reset bud_terms
    find bud_%
    r_&_m_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule r_&_m_bud_increment_increase_abs If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    r_&_m_bud_increment = (1 + (bud_$ / r_&_m_bud))
    reset bud_$;

Rule r_&_m_bud_increment_decrease_% If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    r_&_m_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule r_&_m_bud_increment_decrease_abs If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    r_&_m_bud_increment = (1 - (bud_$ / r_&_m_bud))
    reset bud_$ else r_&_m_bud_increment = 1.0;

Rule travel_bud_increment_increase_% If which_bud_items = travel and
  travel_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    travel_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule travel_bud_increment_increase_abs If which_bud_items = travel and
  travel_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    travel_bud_increment = (1 + (bud_$ / travel_bud))
    reset bud_$;

Rule travel_bud_increment_decrease_% If which_bud_items = travel and
  travel_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    travel_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule travel_bud_increment_decrease_abs If which_bud_items = travel and
  travel_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    travel_bud_increment = (1 - (bud_$ / travel_bud))
    reset bud_$ else travel_bud_increment = 1.0;

Rule other_contract_bud_inc_increase_% If which_bud_items = other_contractual and
  other_contract_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    other_contract_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule other_contract_bud_inc_increase_abs If which_bud_items = other_contractual and
  other_contract_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    other_contract_bud_increment = (1 + (bud_$ / other_contract_bud))
    reset bud_$;

Rule other_contract_bud_inc_decrease_% If which_bud_items = other_contractual and
  other_contract_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    other_contract_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule other_contract_bud_inc_decrease_abs If which_bud_items = other_contractual and
  other_contract_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    other_contract_bud_increment = (1 - (bud_$ / other_contract_bud))
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    reset bud_$ else other_contract_bud_increment = 1.0;

Rule repair_s_&_m_bud_increment_increase_% If which_bud_items = repair_supplies and
  repair_s_&_m_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    repair_s_&_m_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule repair_s_&_m_bud_inc_increase_abs If which_bud_items = repair_supplies and
  repair_s_&_m_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    repair_s_&_m_bud_increment = (1 + (bud_$ / repair_s_&_m_bud))
    reset bud_$;

Rule repair_s_&_m_bud_inc_decrease_% If which_bud_items = repair_supplies and
  repair_s_&_m_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    repair_s_&_m_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule repair_s_&_m_bud_inc_decrease_abs If which_bud_items = repair_supplies and
  repair_s_&_m_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    repair_s_&_m_bud_increment = (1 - (bud_$ / repair_s_&_m_bud))
    reset bud_$ else repair_s_&_m_bud_increment = 1.0;

Rule other_s_&_m_bud_inc_increase_% If which_bud_items = other_supplies and
  other_s_&_m_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    other_s_&_m_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule other_s_&_m_bud_inc_increase_abs If which_bud_items = other_supplies and
  other_s_&_m_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    other_s_&_m_bud_increment = (1 + (bud_$ / other_s_&_m_bud))
    reset bud_$;

Rule other_s_&_m_bud_inc_decrease_% If which_bud_items = other_supplies and
  other_s_&_m_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    other_s_&_m_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule other_s_&_m_bud_inc_decrease_abs If which_bud_items = other_supplies and
  other_s_&_m_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    other_s_&_m_bud_increment = (1 - (bud_$ / other_s_&_m_bud))
    reset bud_$ else other_s_&_m_bud_increment = 1.0;

Rule elect_bud_increment_increase_% If which_bud_items = electrocity and
  elect_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    elect_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule elect_bud_increment_increase_abs If which_bud_items = electricity and
  elect_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    elect_bud_increment = (1 + (bud_$ / elect_bud))
    reset bud_$;

Rule elect_bud_increment_decrease_% If which_bud_items = electricity and
  elect_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    elect_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule elect_bud_increment_decrease_abs If which_bud_items = electricity and
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```
  elect_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    elect_bud_increment = (1 - (bud_$ / elect_bud))
    reset bud_$ else elect_bud_increment = 1.0;

Rule w_&_s_bud_increment_increase_% If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    w_&_s_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule w_&_s_bud_increment_increase_abs If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    w_&_s_bud_increment = (1 + (bud_$ / w_&_s_bud))
    reset bud_$;

Rule w_&_s_bud_increment_decrease_% If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    w_&_s_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule w_&_s_bud_increment_decrease_abs If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    w_&_s_bud_increment = (1 - (bud_$ / w_&_s_bud))
    reset bud_$ else w_&_s_bud_increment = 1.0;

Rule agency_charges_bud_inc_increase_% If which_bud_items = agency_charges and
  agency_charges_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    agency_charges_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule agency_charges_bud_inc_increase_abs If which_bud_items = agency_charges and
  agency_charges_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    agency_charges_bud_increment = (1 + (bud_$ / agency_charges_bud))
    reset bud_$;

Rule agency_charges_bud_inc_decrease_% If which_bud_items = agency_charges and
  agency_charges_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    agency_charges_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule agency_charges_bud_inc_decrease_abs If which_bud_items = agency_charges and
  agency_charges_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    agency_charges_bud_increment = (1 - (bud_$ / agency_charges_bud))
    reset bud_$ else agency_charges_bud_increment = 1.0;

Rule insure_bud_increment_increase_% If which_bud_items = insurance and
  insure_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    insure_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule insure_bud_increment_increase_abs If which_bud_items = insurance and
  insure_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    insure_bud_increment = (1 + (bud_$ / insure_bud))
    reset bud_$;

Rule insure_bud_increment_decrease_% If which_bud_items = insurance and
  insure_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
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```
    insure_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule insure_bud_increment_decrease_abs If which_bud_items = insurance and
  insure_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    insure_bud_increment = (1 - (bud_$ / insure_bud))
    reset bud_$ else insure_bud_increment = 1.0;

Rule other_contin_bud_increment_increase_% If which_bud_items = other_continuous and
  other_contin_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    other_contin_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule other_contin_bud_increment_increase_abs If which_bud_items = other_continuous and
  other_contin_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    other_contin_bud_increment = (1 + (bud_$ / other_contin_bud))
    reset bud_$;

Rule other_contin_bud_increment_decrease_% If which_bud_items = other_continuous and
  other_contin_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    find bud_%
    other_contin_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule other_contin_bud_increment_decrease_abs If which_bud_items = other_continuous and
  other_contin_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    find bud_$
    other_contin_bud_increment = (1 - (bud_$ / other_contin_bud))
    reset bud_$ else other_contin_bud_increment = 1.0;

Rule change_wiis_wiabis_wicbis_8

If t_drop_abis < = (t_wages)

Then change_stmts = found !display "t_personal = {t_personal}" !display "cbis_personal = {cbis_personal} ¬"

    t_personal = (t_personal - t_drop_abis)
    cbis_personal = (cbis_personal - t_drop_abis) !display "t_personal = {t_personal}" !display "cbis_personal = {cbis_personal} ¬"
    z = (count_it)
    x = 1
    whiletrue x < = (z) then !display "personal_wiis[x] = {personal_wiis[x]}"
      personal_wiis[x] = (personal_wiis[x] - p_drop_is[x] - s_drop_is[x] - i_drop_is[x] - st_drop_is[x] - m_drop_is[x]) !display
"personal_wiis[x] = {personal_wiis[x]} ¬"
      x = (x + 1)
    end else
    t_personal = (t_personal - t_wages)
    cbis_personal = (cbis_personal - t_wages)
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] - wages_wiis[x])
      x = (x + 1)
    end;

Rule put_files_away_&_start_analysis

If stmt_number = 9

Then what_next = analysis
    savefacts widata
    chain widoit;

Rule forget_wi_analysis

If stmt_number = 10

Then what_next = leave
    chain npts;


! Statement Block
```

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5,6,7,8,9,10; ask change_freshmen: "leave this number the same?"; ask change_sophomore: "leave this number the same?"; ask change_junior: "leave this number the same?"; ask change_senior: "leave this number the same?"; choices change_freshmen,change_sophomore,change_junior,change_senior: increase, decrease, same;

ask change_freshmen_number: "By how many?"; ask change_sophomore_number: "By how many?"; ask change_junior_number: "By how many?"; ask change_senior_number: "By how many?";

ask change_freshmen_ca: "you like to increase, decrease or leave this amount the same?"; ask change_sophomore_ca: "you like to increase, decrease or leave this amount the same?"; ask change_junior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_senior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_freshmen_number_ca: "By how much?"; ask change_sophomore_number_ca: "By how much?"; ask change_junior_number_ca: "By how much?"; ask change_senior_number_ca: "By how much?"; choices change_freshmen_ca,change_sophomore_ca,change_junior_ca,change_senior_ca: increase, decrease,same;

ask bag_price_direction: "of uniform items?"; choices bag_price_direction: increase, decrease; ask amount_bag_change: "By how much per cadet?";

ask which_segments: "as many as you like.";

choices which_segments, seg_drops: Public, Student_Fac_Staff, Interdepartmental, Music_Dept, State_Related;

ask public_direction: "Would you like to increase or decrease prices charged to the public?"; ask s_f_s_direction: "Would you like to increase or decrease prices charged to students, faculty, and staff?"; ask interdept_direction: "Would you like to increase or decrease prices charged to other departments?"; ask music_direction: "Would you like to increase or decrease prices charged to the music department?"; ask state_direction: "Would you like to increase or decrease prices charged to state related activities?"; choices public_direction,s_f_s_direction,interdept_direction,music_direction,state_direction: increase, decrease;

ask public_%: "By what percentage? Do not enter as a decimal."; ask s_f_s_%: "By what percentage? Do not enter as a decimal."; ask interdept_%: "By what percentage? Do not enter as a decimal."; ask music_%: "By what percentage? Do not enter as a decimal."; ask state_%: "By what percentage? Do not enter as a decimal."; ask personal_%: "By what percentage? Do not enter as a decimal."; ask contract_%: "By what percentage? Do not enter as a decimal."; ask s_&_m_%: "By what percentage? Do not enter as a decimal."; ask contin_%: "By what percentage? Do not enter as a decimal."; ask equip_%: "By what percentage? Do not enter as a decimal."; ask personal_$: "On an annual basis, how much would you like to change personnel expenses?"; ask contract_$: "On an annual basis, how much would you like to change contractual expenses?"; ask s_&_m_$: "On an annual basis, how much would you like to change supplies & materials?"; ask contin_$: "On an annual basis, how much would you like to change continuous expenses?"; ask equip_$: "On an annual basis, how much would you like to change equipment purchases?";

ask which_expenses: "Choose as many as you like."; choices which_expenses: personnel, contractual, supplies_&_materials, continuous, equipment;

ask personal_direction: "Would you like to increase or decrease personnel expenses?"; ask contract_direction: "Would you like to increase or decrease contractual expenses?"; ask s_&_m_direction: "Would you like to increase or decrease supplies & materials?"; ask contin_direction: "Would you like to increase or decrease continuous expenses?"; ask equip_direction: "Would you like to increase or decrease equipment purchases?"; choices personal_direction,contract_direction,s_&_m_direction,contin_direction,equip_direction: increase, decrease;

ask personal_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contract_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask s_&_m_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contin_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask equip_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices personal_terms,contract_terms,s_&_m_terms,contin_terms,equip_terms: percentage, dollar;

ask which_bud_items: "Choose as many as you like."; choices which_bud_items:revenue,equipment,uniforms,salaries,wages,fringe_benefits,telecommunications,repair_&_maintenance, travel,other_contractual,repair_supplies,other_supplies,electricity,water_&_sewer,agency_charges,insurance,other_continuous;

ask rev_bud_direction: "Would you like to increase or decrease the budget for revenue?"; ask equip_bud_direction: "Would you like to increase or decrease the budget for equipment?"; ask uniforms_bud_direction: "Would you like to increase or decrease the budget for uniforms?"; ask salaries_bud_direction: "Would you like to increase or decrease the budget for salaries?"; ask wages_bud_direction: "Would you like to increase or decrease the budget for wages?"; ask fringes_bud_direction: "Would you like to increase or decrease the budget for fringe benefits?"; ask tele_bud_direction: "Would you like to increase or decrease the budget for telecommunications?"; ask r_&_m_bud_direction: "Would you like to increase or decrease the budget for repairs & maintenance?"; ask travel_bud_direction: "Would you like to increase or decrease the budget for travel?"; ask other_contract_bud_direction: "Would you like to increase or decrease the budget for other contractual expenses?"; ask repair_s_&_m_bud_direction: "Would you like to increase or decrease the budget for repair supplies?"; ask other_s_&_m_bud_direction: "Would you like to increase or decrease the budget for other supplies and maintenance?"; ask elect_bud_direction: "Would you like to increase or decrease the budget for electricity?"; ask w_&_s_bud_direction: "Would you like to increase or decrease the budget for water and sewer?"; ask agency_charges_bud_direction: "Would you like to increase or decrease the budget for agency_charges?"; ask insure_bud_direction: "Would you like to increase or decrease the budget for insurance?"; ask other_contin_bud_direction: "Would you like to increase or decrease the budget for other continuous expenses?";

choices rev_bud_direction,equip_bud_direction,uniforms_bud_direction,salaries_bud_direction: increase,decrease; choices wages_bud_direction,fringes_bud_direction,tele_bud_direction,r_&_m_bud_direction: increase, decrease; choices travel_bud_direction,other_contract_bud_direction,repair_s_&_m_bud_direction: increase,decrease; choices other_s_&_m_bud_direction,elect_bud_direction,w_&_s_bud_direction,agency_charges_bud_direction: increase,decrease; choices insure_bud_direction, other_contin_bud_direction: increase, decrease;

ask bud_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices bud_terms: percentage, dollar;

ask bud_%: "By what percentage? Do not enter as a decimal."; ask bud_$: "By how many dollars per year?";

ask seg_drops: "Which market segments should be dropped?";

```
plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis,
s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15

!bcall killit !bcall create

locate 4,6 display "The processing in progress now is quite extensive. Seven new" display "worksheets are being created. This takes quite some time, so please" display "be patient. You will be instructed when to continue." loadfacts widata

wks is_this,b1..b76,\vpp\playabis

is_this[9] = (t_mil_rev) is_this[15] = (cost_uniforms_this) is_this[36] = (t_personal) is_this[47] = (contract_this) is_this[54] = (s_&_m_this) is_this[62] = (contin_this) is_this[63] = (deprec_this) is_this[19] = (public_rev_this) is_this[20] = (s_f_s_rev_this) is_this[21] = (interdept_rev_this) is_this[22] = (music_rev_this) is_this[23] = (state_rev_this) is_this[68] = (corps_cost_this) is_this[70] = (public_cost_this) is_this[71] = (s_f_s_cost_this) is_this[72] = (interdept_cost_this) is_this[73] = (music_cost_this) is_this[74] = (state_cost_this)

is_this[16] = (is_this[9] - is_this[15]) is_this[24] = (is_this[19] + is_this[20] + is_this[21] + is_this[22] + is_this[23]) is_this[25] = (is_this[16] + is_this[24]) is_this[64] = (is_this[36] + is_this[47] + is_this[54] + is_this[62] + is_this[63]) is_this[65] = (is_this[25] - is_this[64]) net_income = (is_this[65])

pwks is_this,b1..b76,\vpp\wiabis reset is_this wks is_last,c1..c76,\vpp\playabis pwks is_last,c1..c76,\vpp\wiabis reset is_last wks is_2,d1..d76,\vpp playabis pwks is_2,d1..d76,\vpp\wiabis reset is_2

ca[8] = (freshmen_number) ca[9] = (sophomore_number) ca[10] = (junior_number) ca[11] = (senior_number) ca[3] = (freshmen_ca) ca[4] = (sophomore_ca) ca[5] = (junior_ca) ca[6] = (senior_ca)

ca[1] = (current_year) ca[2] = 0 ca[7] = 0 pwks ca,b1..b11,\vpp\wica wks ca_last,c1..c11,\vpp\playca pwks ca_last,c1..c11,\vpp\wica reset ca_last wks ca_2,d1..d11,\vpp\playca pwks ca_2,d1..d11,\vpp\wica reset ca_2

bud[3] = (rev_bud) bud[5] = (equip_bud) bud[7] = (fringes_bud) bud[8] = (salaries_bud) bud[9] = (wages_bud) bud[29] = (uniforms_bud) bud[12] = (tele_bud) bud[13] = (r_&_m_bud) bud[14] = (travel_bud) bud[15] = (other_contract_bud) bud[18] = (repair_s_&_m_bud) bud[19] = (other_s_&_m_bud) bud[22] = (elect_bud) bud[23] = (w_&_s_bud) bud[24] = (steam_bud) bud[25] = (insure_bud) bud[26] = (other_contin_bud) bud[1] = (current_yr) bud[2] = 0 bud[4] = 0 bud[6] = 0 bud[11] = 0 bud[17] = 0 bud[21] = 0 bud[28] = 0 bud[10] = (bud[7] + bud[8] + bud[9]) bud[16] = (bud[12] + bud[13] + bud[14] + bud[15]) bud[20] = (bud[18] + bud[19]) bud[27] = (bud[22] + bud[23] + bud[24] + bud[25] + bud[26]) pwks bud,b1..b29,\vpp\wibud reset bud wks bud_last,c1..c29,\vpp\playbud pwks bud_last,c1..c29,\vpp\wibud reset bud_last wks bud_2,d1..d29,\vpp\playbud pwks bud_2,d1..d19,\vpp\wibud reset bud_2

wks cb,b1..b68,\vpp\playcbis cb[10] = (uniforms) cb[55] = (act_equip) cb[31] = (cbis_personal) cb[9] = (cbis_corps_rev) cb[41] = (cbis_contract) cb[47] = (cbis_s_&_m) cb[51] = (cbis_contin) cb[14] = (public_wicbis)

cb[14] = (public_wicbis) cb[15] = (s_f_s_wicbis) cb[16] = (interdept_wicbis) cb[17] = (music_wicbis) cb[18] = (state_wicbis)

cb[11] = (cb[9] - cb[10]) cb[19] = (cb[14] + cb[15] + cb[16] + cb[17] + cb[18]) cb[20] = (cb[11] + cb[19]) cb[56] = (cb[31] + cb[41] + cb[47] + cb[54] + cb[55]) cb[57] = (cb[11] + cb[19] - cb[56]) pwks cb,b1..b68,\vpp\wicbis reset cb wks cb_last,c1..c68,\vpp\playcbis pwks cb_last,c1..c68,\vpp\wicbis reset cb_last wks cb_2,d1..d68,\vpp\playcbis pwks cb_2,d1..d68,\vpp\wicbis reset cb_2 find monthly_info_here

wks cth,c1..c14,\vpp\playabbs pwks cth,c1..c14,\vpp\wiabbs wks dth,d1..d14,\vpp\playabbs pwks dth,d1..d14,\vpp\wiabbs reset dth wks bs,b1..b14,\vpp playabbs bs[13] = (cth[13] + net_income)  !! reserve calculation bs[12] = (bs[14] - bs[13])  !! due to calculation pwks bs,b1..b14,\vpp\wiabbs reset cth reset bs chain wts ;


Rule monthly_info_here_1 If count_it = 1 Then monthly_info_here = found
    pwks corps_rev_wiis,b12,\vpp\wiis
    pwks uniforms_wiis,b13,\vpp\wiis
    pwks public_rev_wiis,b17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18,\vpp\wiis
    pwks interdept_rev_wiis,b19,\vpp\wiis
    pwks music_rev_wiis,b20,\vpp\wiis
    pwks state_rev_wiis,b21,\vpp\wiis
    pwks personal_wiis,b34,\vpp\wiis
    pwks contract_wiis,b45,\vpp\wiis
    pwks s_&_m_wiis,b52,\vpp\wiis
    pwks contin_wiis,b60,\vpp\wiis
    pwks equip_wiis,b61,\vpp\wiis
    pwks corps_cost_wiis,b66,\vpp\wiis
    pwks public_cost_wiis,b68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69,\vpp\wiis
    pwks interdept_cost_wiis,b70,\vpp\wiis
    pwks music_cost_wiis,b71,\vpp\wiis
    pwks state_cost_wiis,b72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
```

```
    gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
    vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
    t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
    t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
    vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
    t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
    ni[x] = (t_gr_profit[x] - t_oper[x])
    x = (x + 1)
  end

  pwks gr_profit_uniforms,b14,\vpp\wiis
  pwks t_other_rev,b22,\vpp\wiis
  pwks t_gr_profit,b23,\vpp\wiis
  pwks t_oper,b62,\vpp\wiis
  pwks ni,b63,\vpp\wiis

  wks var,c1..c74,\vpp\playis
  pwks var,c1..c74,\vpp\wiis
  pwks var,aa1..aa74,\vpp\wiis
  reset var
  wks var,d1..d74,\vpp\playis
  pwks var,d1..d74,\vpp\wiis
  reset var
  wks var,e1..e74,\vpp\playis
  pwks var,e1..e74,\vpp\wiis
  reset var
  wks var,f1..f74,\vpp\playis
  pwks var,f1..f74,\vpp\wiis
  reset var
  wks var,g1..g74,\vpp\playis
  pwks var,g1..g74,\vpp\wiis
  reset var
  wks var,h1..h74,\vpp\playis
  pwks var,h1..h74,\vpp\wiis
  reset var
  wks var,i1..i74,\vpp\playis
  pwks var,i1..i74,\vpp\wiis
  reset var
  wks var,j1..j74,\vpp\playis
  pwks var,j1..j74,\vpp\wiis
  reset var
  wks var,k1..k74,\vpp\playis
  pwks var,k1..k74,\vpp\wiis
  reset var
  wks var,l1..l74,\vpp\playis
  pwks var,l1..l74,\vpp\wiis
  reset var
  wks var,m1..m74,\vpp\playis
  pwks var,m1..m74,\vpp\wiis
  reset var
  wks var,n1..n74,\vpp\playis
  pwks var,n1..n74,\vpp\wiis
  reset var;

Rule monthly_info_here_2 If count_it = 2 Then monthly_info_here = found
  pwks corps_rev_wiis,b12..c12,\vpp\wiis
  pwks uniforms_wiis,b13..c13,\vpp\wiis
  pwks public_rev_wiis,b17..c17,\vpp\wiis
  pwks s_f_s_rev_wiis,b18..c18,\vpp\wiis
  pwks interdept_rev_wiis,b19..c19,\vpp\wiis
  pwks music_rev_wiis,b20..c20,\vpp\wiis
  pwks state_rev_wiis,b21..c21,\vpp\wiis
  pwks personal_wiis,b34..c34,\vpp\wiis
  pwks contract_wiis,b45..c45,\vpp\wiis
  pwks s_&_m_wiis,b52..c52,\vpp\wiis
  pwks contin_wiis,b60..c60,\vpp\wiis
  pwks equip_wiis,b61..c61,\vpp\wiis
  pwks corps_cost_wiis,b66..c66,\vpp\wiis
  pwks public_cost_wiis,b68..c68,\vpp\wiis
  pwks s_f_s_cost_wiis,b69..c69,\vpp\wiis
  pwks interdept_cost_wiis,b70..c70,\vpp\wiis
  pwks music_cost_wiis,b71..c71,\vpp\wiis
  pwks state_cost_wiis,b72..c72,\vpp\wiis

!!!!! start
  wks retire,b26..c26,\vpp\playis
  wks fica_o,b27..c27,\vpp\playis
  wks fica_s,b28..c28,\vpp\playis
  wks gr_ins,b29..c29,\vpp\playis
  wks med_hosp,b30..c30,\vpp\playis
```

```
wks sals,b31..c31,\vpp\playis !     wks wages_g,b32..c32,\vpp\playis !     wks wages_s,b33..c33,\vpp\playis
wks tele,b36..c36,\vpp\playis
wks r_&_m,b37..c37,\vpp\playis
wks x1,b38..c38,\vpp\playis
wks x2,b39..c39,\vpp\playis
wks x3,b40..c40,\vpp\playis
wks x4,b41..c41,\vpp\playis
wks x5,b42..c42,\vpp\playis
wks x6,b43..c43,\vpp\playis
wks travel,b44..c44,\vpp\playis
wks r1,b50..c50,\vpp\playis
wks r2,b51..c51,\vpp\playis
wks s1,b47..c47,\vpp\playis
wks s2,b48..c48,\vpp\playis
wks s3,b49..c49,\vpp\playis
wks elect,b54..c54,\vpp\playis
wks w_&_s,b55..c55,\vpp\playis
wks insure,b56..c56,\vpp\playis
wks agency,b57..c57,\vpp\playis
wks other1,b58..c58,\vpp\playis
wks other2,b59..c59,\vpp\playis !!!!!!      stop


x = 1
z = (count_it)
whiletrue x < = (z) then
  gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
  vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
  t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
  t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
  vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
  t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
  ni[x] = (t_gr_profit[x] - t_oper[x])

!!!!!   start
  retire[x] = (retire[x] + fica_o[x] + fica_s[x] + gr_ins[x] + med_hosp[x])
  wages_gen[x] = (personal_wiis[x] - retire[x] - sals[x])
  other_contract[x] = (x1[x] + x2[x] + x3[x] + x4[x] + x5[x] + x6[x])
  repair[x] = (r1[x] + r2[x])
  other_sup[x] = (s1[x] + s2[x] + s3[x])
  other_contin[x] = (other1[x] + other2[x]) !!!!!!      stop

  x = (x + 1)
end

pwks gr_profit_uniforms,b14..c14,\vpp\wiis
pwks t_other_rev,b22..c22,\vpp\wiis
pwks t_gr_profit,b23..c23,\vpp\wiis
pwks t_oper,b62..c62,\vpp\wiis
pwks ni,b63..c63,\vpp\wiis

!!!!!! start

pwks retire,b26..c26,\vpp\wiis
pwks wages_gen,b32..c32,\vpp\wiis
pwks sals,b31..c31,\vpp\wiis
reset retire
reset wages_gen
reset sals
reset fica_o
reset fica_s
reset gr_ins
reset med_hosp
pwks tele,b36..c36,\vpp\wiis
pwks r_&_m,b37..c37,\vpp\wiis
pwks travel,b44..c44,\vpp\wiis
pwks other_contract,b38..c38,\vpp\wiis
reset tele
reset r_&_m
reset travel
reset other_contract
reset x1
reset x2
reset x3
reset x4
reset x5
reset x6

pwks repair,b50..c50,\vpp\wiis
pwks other_sup,b47..c47,\vpp\wiis
```

```
    reset r1
    reset r2
    reset s1
    reset s2
    reset s3
    reset repair
    reset other_sup
    pwks elect,b54..c54,\vpp\wiis
    pwks w_&_s,b55..c55,\vpp\wiis
    pwks insure,b56..c56,\vpp\wiis
    pwks agency,b57..c57,\vpp\wiis
    pwks other_contin,b58..c58,\vpp\wiis
    reset elect
    reset w_&_s
    reset insure
    reset agency
    reset other_contin
    reset other1
    reset other2

!!!!! stop



    wks var,d1..d74,\vpp\playis
    pwks var,d1..d74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,e1..e74,\vpp\playis
    pwks var,e1..e74,\vpp\wiis
    reset var
    wks var,f1..f74,\vpp\playis
    pwks var,f1..f74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var;

Rule monthly_info_here_3 If count_it = 3 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..d12,\vpp\wiis
    pwks uniforms_wiis,b13..d13,\vpp\wiis
    pwks public_rev_wiis,b17..d17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..d18,\vpp\wiis
    pwks interdept_rev_wiis,b19..d19,\vpp\wiis
    pwks music_rev_wiis,b20..d20,\vpp\wiis
    pwks state_rev_wiis,b21..d21,\vpp\wiis
    pwks personal_wiis,b34..d34,\vpp\wiis
    pwks contract_wiis,b45..d45,\vpp\wiis
    pwks s_&_m_wiis,b52..d52,\vpp\wiis
    pwks contin_wiis,b60..d60,\vpp\wiis
    pwks equip_wiis,b61..d61,\vpp\wiis
    pwks corps_cost_wiis,b66..d66,\vpp\wiis
    pwks public_cost_wiis,b68..d68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..d69,\vpp\wiis
    pwks interdept_cost_wiis,b70..d70,\vpp\wiis
```

```
    pwks music_cost_wiis,b71..d71,\vpp\wiis
    pwks state_cost_wiis,b72..d72,\vpp\wiis

!!!!!  start
    wks retire,b26..d26,\vpp\playis
    wks fica_o,b27..d27,\vpp\playis
    wks fica_s,b28..d28,\vpp\playis
    wks gr_ins,b29..d29,\vpp\playis
    wks med_hosp,b30..d30,\vpp\playis
    wks sals,b31..d31,\vpp\playis !     wks wages_g,b32..d32,\vpp\playis !     wks wages_s,b33..d33,\vpp\playis
    wks tele,b36..d36,\vpp\playis
    wks r_&_m,b37..d37,\vpp\playis
    wks x1,b38..d38,\vpp\playis
    wks x2,b39..d39,\vpp\playis
    wks x3,b40..d40,\vpp\playis
    wks x4,b41..d41,\vpp\playis
    wks x5,b42..d42,\vpp\playis
    wks x6,b43..d43,\vpp\playis
    wks travel,b44..d44,\vpp\playis
    wks r1,b50..d50,\vpp\playis
    wks r2,b51..d51,\vpp\playis
    wks s1,b47..d47,\vpp\playis
    wks s2,b48..d48,\vpp\playis
    wks s3,b49..d49,\vpp\playis
    wks elect,b54..d54,\vpp\playis
    wks w_&_s,b55..d55,\vpp\playis
    wks insure,b56..d56,\vpp\playis
    wks agency,b57..d57,\vpp\playis
    wks other1,b58..d58,\vpp\playis
    wks other2,b59..d59,\vpp\playis !!!!!!      stop




    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])

!!!!!   start
      retire[x] = (retire[x] + fica_o[x] + fica_s[x] + gr_ins[x] + med_hosp[x])
      wages_gen[x] = (personal_wiis[x] - retire[x] - sals[x])
      other_contract[x] = (x1[x] + x2[x] + x3[x] + x4[x] + x5[x] + x6[x])
      repair[x] = (r1[x] + r2[x])
      other_sup[x] = (s1[x] + s2[x] + s3[x])
      other_contin[x] = (other1[x] + other2[x]) !!!!!!      stop

      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..d14,\vpp\wiis
    pwks t_other_rev,b22..d22,\vpp\wiis
    pwks t_gr_profit,b23..d23,\vpp\wiis
    pwks t_oper,b62..d62,\vpp\wiis
    pwks ni,b63..d63,\vpp\wiis

!!!!!!  start

    pwks retire,b26..d26,\vpp\wiis
    pwks wages_gen,b32..d32,\vpp\wiis
    pwks sals,b31..d31,\vpp\wiis
    reset retire
    reset wages_gen
    reset sals
    reset fica_o
    reset fica_s
    reset gr_ins
    reset med_hosp
    pwks tele,b36..d36,\vpp\wiis
    pwks r_&_m,b37..d37,\vpp\wiis
    pwks travel,b44..d44,\vpp\wiis
    pwks other_contract,b38..d38,\vpp\wiis
```

```
    reset tele
    reset r_&_m
    reset travel
    reset other_contract
    reset x1
    reset x2
    reset x3
    reset x4
    reset x5
    reset x6

    pwks repair,b50..d50,\vpp\wiis
    pwks other_sup,b47..d47,\vpp\wiis
    reset r1
    reset r2
    reset s1
    reset s2
    reset s3
    reset repair
    reset other_sup
    pwks elect,b54..d54,\vpp\wiis
    pwks w_&_s,b55..d55,\vpp\wiis
    pwks insure,b56..d56,\vpp\wiis
    pwks agency,b57..d57,\vpp\wiis
    pwks other_contin,b58..d58,\vpp\wiis
    reset elect
    reset w_&_s
    reset insure
    reset agency
    reset other_contin
    reset other1
    reset other2

!!!!! stop


    wks var,e1..e74,\vpp\playis
    pwks var,e1..e74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,f1..f74,\vpp\playis
    pwks var,f1..f74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var;

Rule monthly_info_here_4 If count_it = 4 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..e12,\vpp\wiis
    pwks uniforms_wiis,b13..e13,\vpp\wiis
    pwks public_rev_wiis,b17..e17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..e18,\vpp\wiis
    pwks interdept_rev_wiis,b19..e19,\vpp\wiis
```

```
    pwks music_rev_wiis,b20..e20,\vpp\wiis
    pwks state_rev_wiis,b21..e21,\vpp\wiis
    pwks personal_wiis,b34..e34,\vpp\wiis
    pwks contract_wiis,b45..e45,\vpp\wiis
    pwks s_&_m_wiis,b52..e52,\vpp\wiis
    pwks contin_wiis,b60..e60,\vpp\wiis
    pwks equip_wiis,b61..e61,\vpp\wiis
    pwks corps_cost_wiis,b66..e66,\vpp\wiis
    pwks public_cost_wiis,b68..e68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..e69,\vpp\wiis
    pwks interdept_cost_wiis,b70..e70,\vpp\wiis
    pwks music_cost_wiis,b71..e71,\vpp\wiis
    pwks state_cost_wiis,b72..e72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..e14,\vpp\wiis
    pwks t_other_rev,b22..e22,\vpp\wiis
    pwks t_gr_profit,b23..e23,\vpp\wiis
    pwks t_oper,b62..e62,\vpp\wiis
    pwks ni,b63..e63,\vpp\wiis

    wks var,f1..f74,\vpp\playis
    pwks var,f1..f74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var;

Rule monthly_info_here_5 If count_it = 5 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..f12,\vpp\wiis
    pwks uniforms_wiis,b13..f13,\vpp\wiis
    pwks public_rev_wiis,b17..f17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..f18,\vpp\wiis
    pwks interdept_rev_wiis,b19..f19,\vpp\wiis
    pwks music_rev_wiis,b20..f20,\vpp\wiis
    pwks state_rev_wiis,b21..f21,\vpp\wiis
    pwks personal_wiis,b34..f34,\vpp\wiis
```

```
    pwks contract_wiis,b45..f45,\vpp\wiis
    pwks s_&_m_wiis,b52..f52,\vpp\wiis
    pwks contin_wiis,b60..f60,\vpp\wiis
    pwks equip_wiis,b61..f61,\vpp\wiis
    pwks corps_cost_wiis,b66..f66,\vpp\wiis
    pwks public_cost_wiis,b68..f68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..f69,\vpp\wiis
    pwks interdept_cost_wiis,b70..f70,\vpp\wiis
    pwks music_cost_wiis,b71..f71,\vpp\wiis
    pwks state_cost_wiis,b72..f72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..f14,\vpp\wiis
    pwks t_other_rev,b22..f22,\vpp\wiis
    pwks t_gr_profit,b23..f23,\vpp\wiis
    pwks t_oper,b62..f62,\vpp\wiis
    pwks ni,b63..f63,\vpp\wiis

    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var;

Rule monthly_info_here_6 If count_it = 6 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..g12,\vpp\wiis
    pwks uniforms_wiis,b13..g13,\vpp\wiis
    pwks public_rev_wiis,b17..g17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..g18,\vpp\wiis
    pwks interdept_rev_wiis,b19..g19,\vpp\wiis
    pwks music_rev_wiis,b20..g20,\vpp\wiis
    pwks state_rev_wiis,b21..g21,\vpp\wiis
    pwks personal_wiis,b34..g34,\vpp\wiis
    pwks contract_wiis,b45..g45,\vpp\wiis
    pwks s_&_m_wiis,b52..g52,\vpp\wiis
    pwks contin_wiis,b60..g60,\vpp\wiis
```

```
    pwks equip_wiis,b61..g61,\vpp\wiis
    pwks corps_cost_wiis,b66..g66,\vppiis
    pwks public_cost_wiis,b68..g68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..g69,\vpp\wiis
    pwks interdept_cost_wiis,b70..g70,\vpp\wiis
    pwks music_cost_wiis,b71..g71,\vpp\wiis
    pwks state_cost_wiis,b72..g72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..g14,\vpp\wiis
    pwks t_other_rev,b22..g22,\vpp\wiis
    pwks t_gr_profit,b23..g23,\vpp\wiis
    pwks t_oper,b62..g62,\vpp\wiis
    pwks ni,b63..g63,\vpp\wiis

    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var;

Rule monthly_info_here_7 If count_it = 7 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..h12,\vpp\wiis
    pwks uniforms_wiis,b13..h13,\vpp\wiis
    pwks public_rev_wiis,b17..h17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..h18,\vpp\wiis
    pwks interdept_rev_wiis,b19..h19,\vpp\wiis
    pwks music_rev_wiis,b20..h20,\vpp\wiis
    pwks state_rev_wi,b21..h21,\vpp\wiis
    pwks personal_wiis,b34..h34,\vpp\wiis
    pwks contract_wiis,b45..h45,\vpp\wiis
    pwks s_&_m_wiis,b52..h52,\vpp\wiis
    pwks contin_wiis,b60..h60,\vpp\wiis
    pwks equip_wiis,b61..h61,\vpp\wiis
    pwks corps_cost_wiis,b66..h66,\vpp\wiis
    pwks public_cost_wiis,b68..h68,\vpp\wiis
```

```
    pwks s_f_s_cost_wiis,b69..h69,\vpp\wiis
    pwks interdept_cost_wiis,b70..h70,\vpp\wiis
    pwks music_cost_wiis,b71..h71,\vpp\wiis
    pwks state_cost_wiis,b72..h72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..h14,\vpp\wiis
    pwks t_other_rev,b22..h22,\vpp\wiis
    pwks t_gr_profit,b23..h23,\vpp\wiis
    pwks t_oper,b62..h62,\vpp\wiis
    pwks ni,b63..h63,\vpp\wiis

    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var
    wks var,t1..t74,\vpp\playis
    pwks var,t1..t74,\vpp\wiis
    reset var;

Rule monthly_info_here_8 If count_it = 8 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..i12,\vpp\wiis
    pwks uniforms_wiis,b13..i13,\vpp\wiis
    pwks public_rev_wiis,b17..i17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..i18,\vpp\wiis
    pwks interdept_rev_wiis,b19..i19,\vpp\wiis
    pwks music_rev_wiis,b20..i20,\vpp\wiis
    pwks state_rev_wiis,b21..i21,\vpp\wiis
    pwks personal_wiis,b34..i34,\vpp\wiis
    pwks contract_wiis,b45..i45,\vpp\wiis
    pwks s_&_m_wiis,b52..i52,\vpp\wiis
    pwks contin_wiis,b60..i60,\vpp\wiis
    pwks equip_wiis,b61..i61,\vpp\wiis
    pwks corps_cost_wiis,b66..i66,\vpp\wiis
    pwks public_cost_wiis,b68..i68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..i69,\vpp\wiis
    pwks interdept_cost_wiis,b70..i70,\vpp\wiis
    pwks music_cost_wiis,b71..i71,\vpp\wiis
```

```
    pwks state_cost_wiis,b72..i72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..i14,\vpp\wiis
    pwks t_other_rev,b22..i22,\vpp\wiis
    pwks t_gr_profit,b23..i23,\vpp\wiis
    pwks t_oper,b62..i62,\vpp\wiis
    pwks ni,b63..i63,\vpp\wiis

    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var
    wks var,t1..t74,\vpp\playis
    pwks var,t1..t74,\vpp\wiis
    reset var
    wks var,u1..u74,\vpp\playis
    pwks var,u1..u74,\vpp\wiis
    reset var;

Rule monthly_info_here_9 If count_it = 9 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..j12,\vpp\wiis
    pwks uniforms_wiis,b13..j13,\vpp\wiis
    pwks public_rev_wiis,b17..j17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..j18,\vpp\wiis
    pwks interdept_rev_wiis,b19..j19,\vpp\wiis
    pwks music_rev_wiis,b20..j20,\vpp\wiis
    pwks state_rev_wiis,b21..j21,\vpp\wiis
    pwks personal_wiis,b34..j34,\vpp\wiis
    pwks contract_wiis,b45..j45,\vpp\wiis
    pwks s_&_m_wiis,b52..j52,\vpp\wiis
    pwks contin_wiis,b60..j60,\vpp\wiis
    pwks equip_wiis,b61..j61,\vpp\wiis
    pwks corps_cost_wiis,b66..j66,\vpp\wiis
    pwks public_cost_wiis,b68..j68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..j69,\vpp\wiis
    pwks interdept_cost_wiis,b70..j70,\vpp\wiis
    pwks music_cost_wiis,b71..j71,\vpp\wiis
    pwks state_cost_wiis,b72..j72,\vpp\wiis

    x = 1
```

```
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..j14,\vpp\wiis
    pwks t_other_rev,b22..j22,\vpp\wiis
    pwks t_gr_profit,b23..j23,\vpp\wiis
    pwks t_oper,b62..j62,\vpp\wiis
    pwks ni,b63..j63,\vpp\wiis

    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var
    wks var,t1..t74,\vpp\playis
    pwks var,t1..t74,\vpp\wiis
    reset var
    wks var,u1..u74,\vpp\playis
    pwks var,u1..u74,\vpp\wiis
    reset var
    wks var,v1..v74,\vpp\playis
    pwks var,v1..v74,\vpp\wiis
    reset var;

Rule monthly_info_here_10 If count_it = 10 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..k12,\vpp\wiis
    pwks uniforms_wiis,b13..k13,\vpp\wiis
    pwks public_rev_wiis,b17..k17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..k18,\vpp\wiis
    pwks interdept_rev_wiis,b19..k19,\vpp\wiis
    pwks music_rev_wiis,b20..k20,\vpp\wiis
    pwks state_rev_wiis,b21..k21,\vpp\wiis
    pwks personal_wiis,b34..k34,\vpp\wiis
    pwks contract_wiis,b45..k45,\vpp\wiis
    pwks s_&_m_wiis,b52..k52,\vpp\wiis
    pwks contin_wiis,b60..k60,\vpp\wiis
    pwks equip_wiis,b61..k61,\vpp\wiis
    pwks corps_cost_wiis,b66..k66,\vpp\wiis
    pwks public_cost_wiis,b68..k68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..k69,\vpp\wiis
    pwks interdept_cost_wiis,b70..k70,\vpp\wiis
    pwks music_cost_wiis,b71..k71,\vpp\wiis
    pwks state_cost_wiis,b72..k72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
```

```
    vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
    t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
    t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
    vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
    t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
    ni[x] = (t_gr_profit[x] - t_oper[x])
    x = (x + 1)
  end

  pwks gr_profit_uniforms,b14..k14,\vpp\wiis
  pwks t_other_rev,b22..k22,\vpp\wiis
  pwks t_gr_profit,b23..k23,\vpp\wiis
  pwks t_oper,b62..k62,\vpp\wiis
  pwks ni,b63..k63,\vpp\wiis

  wks var,l1..l74,\vpp\playis
  pwks var,l1..l74,\vpp\wiis
  pwks var,aa1..aa74,\vpp\wiis
  reset var
  wks var,m1..m74,\vpp\playis
  pwks var,m1..m74,\vpp\wiis
  reset var
  wks var,n1..n74,\vpp\playis
  pwks var,n1..n74,\vpp\wiis
  reset var
  wks var,o1..o74,\vpp\playis
  pwks var,o1..o74,\vpp\wiis
  reset var
  wks var,p1..p74,\vpp\playis
  pwks var,p1..p74,\vpp\wiis
  reset var
  wks var,q1..q74,\vpp\playis
  pwks var,q1..q74,\vpp\wiis
  reset var
  wks var,r1..r74,\vpp\playis
  pwks var,r1..r74,\vpp\wiis
  reset var
  wks var,s1..s74,\vpp\playis
  pwks var,s1..s74,\vpp\wiis
  reset var
  wks var,t1..t74,\vpp\playis
  pwks var,t1..t74,\vpp\wiis
  reset var
  wks var,u1..u74,\vpp\playis
  pwks var,u1..u74,\vpp\wiis
  reset var
  wks var,v1..v74,\vpp\playis
  pwks var,v1..v74,\vpp\wiis
  reset var
  wks var,w1..w74,\vpp\playis
  pwks var,w1..w74,\vpp\wiis
  reset var;

Rule monthly_info_here_11 If count_it = 11 Then monthly_info_here = found
  pwks corps_rev_wiis,b12..l12,\vpp\wiis
  pwks uniforms_wiis,b13..l13,\vpp\wiis
  pwks public_rev_wiis,b17..l17,\vpp\wiis
  pwks s_f_s_rev_wiis,b18..l18,\vpp\wiis
  pwks interdept_rev_wiis,b19..l19,\vpp\wiis
  pwks music_rev_wiis,b20..l20,\vpp\wiis
  pwks state_rev_wiis,b21..l21,\vpp\wiis
  pwks personal_wiis,b34..l34,\vpp\wiis
  pwks contract_wiis,b45..l45,\vpp\wiis
  pwks s_&_m_wiis,b52..l52,\vpp\wiis
  pwks contin_wiis,b60..l60,\vpp\wiis
  pwks equip_wiis,b61..l61,\vpp\wiis
  pwks corps_cost_wiis,b66..l66,\vpp\wiis
  pwks public_cost_wiis,b68..l68,\vpp\wiis
  pwks s_f_s_cost_wiis,b69..l69,\vpp\wiis
  pwks interdept_cost_wiis,b70..l70,\vpp\wiis
  pwks music_cost_wiis,b71..l71,\vpp\wiis
  pwks state_cost_wiis,b72..l72,\vpp\wiis

  x = 1
  z = (count_it)
  whiletrue x < = (z) then
    gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
    vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
    t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
    t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
```

```
    vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
    t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
    ni[x] = (t_gr_profit[x] - t_oper[x])
    x = (x + 1)
  end

  pwks gr_profit_uniforms,b14..114,\vpp\wiis
  pwks t_other_rev,b22..122,\vpp\wiis
  pwks t_gr_profit,b23..123,\vpp\wiis
  pwks t_oper,b62..162,\vpp\wiis
  pwks ni,b63..163,\vpp\wiis

  wks var,m1..m74,\vpp\playis
  pwks var,m1..m74,\vpp\wiis
  pwks var,aa1..aa74,\vpp\wiis
  reset var
  wks var,n1..n74,\vpp\playis
  pwks var,n1..n74,\vpp\wiis
  reset var
  wks var,o1..o74,\vpp\playis
  pwks var,o1..o74,\vpp\wiis
  reset var
  wks var,p1..p74,\vpp\playis
  pwks var,p1..p74,\vpp\wiis
  reset var
  wks var,q1..q74,\vpp\playis
  pwks var,q1..q74,\vpp\wiis
  reset var
  wks var,r1..r74,\vpp\playis
  pwks var,r1..r74,\vpp\wiis
  reset var
  wks var,s1..s74,\vpp\playis
  pwks var,s1..s74,\vpp\wiis
  reset var
  wks var,t1..t74,\vpp\playis
  pwks var,t1..t74,\vpp\wiis
  reset var
  wks var,u1..u74,\vpp\playis
  pwks var,u1..u74,\vpp\wiis
  reset var
  wks var,v1..v74,\vpp\playis
  pwks var,v1..v74,\vpp\wiis
  reset var
  wks var,w1..w74,\vpp\playis
  pwks var,w1..w74,\vpp\wiis
  reset var
  wks var,x1..x74,\vpp\playis
  pwks var,x1..x74,\vpp\wiis
  reset var;

Rule monthly_info_here_12 If count_it = 12 Then monthly_info_here = found
  pwks corps_rev_wiis,b12..m12,\vpp\wiis
  pwks uniforms_wiis,b13..m13,\vpp\wiis
  pwks public_rev_wiis,b17..m17,\vpp\wiis
  pwks s_f_s_rev_wiis,b18..m18,\vpp\wiis
  pwks interdept_rev_wiis,b19..m19,\vpp\wiis
  pwks music_rev_wiis,b20..m20,\vpp\wiis
  pwks state_rev_wiis,b21..m21,\vpp\wiis
  pwks personal_wiis,b34..m34,\vpp\wiis
  pwks contract_wiis,b45..m45,\vpp\wiis
  pwks s_&_m_wiis,b52..m52,\vpp\wiis
  pwks contin_wiis,b60..m60,\vpp\wiis
  pwks equip_wiis,b61..m61,\vpp\wiis
  pwks corps_cost_wiis,b66..m66,\vpp\wiis
  pwks public_cost_wiis,b68..m68,\vpp\wiis
  pwks s_f_s_cost_wiis,b69..m69,\vpp\wiis
  pwks interdept_cost_wiis,b70..m70,\vpp\wiis
  pwks music_cost_wiis,b71..m71,\vpp\wiis
  pwks state_cost_wiis,b72..m72,\vpp\wiis

  x = 1
  z = (count_it)
  whiletrue x < = (z) then
    gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
    vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
    t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
    t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
    vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
    t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
    ni[x] = (t_gr_profit[x] - t_oper[x])
```

```
    x = (x + 1)
  end

  pwks gr_profit_uniforms,b14..m14,\vpp\wiis
  pwks t_other_rev,b22..m22,\vpp\wiis
  pwks t_gr_profit,b23..m23,\vpp\wiis
  pwks t_oper,b62..m62,\vpp\wiis
  pwks ni,b63..m63,\vpp\wiis

  wks var,n1..n74,\vpp\playis
  pwks var,n1..n74,\vpp\wiis
  pwks var,aa1..aa74,\vpp\wiis
  reset var
  wks var,o1..o74,\vpp\playis
  pwks var,o1..o74,\vpp\wiis
  reset var
  wks var,p1..p74,\vpp\playis
  pwks var,p1..p74,\vpp\wiis
  reset var
  wks var,q1..q74,\vpp\playis
  pwks var,q1..q74,\vpp\wiis
  reset var
  wks var,r1..r74,\vpp\playis
  pwks var,r1..r74,\vpp\wiis
  reset var
  wks var,s1..s74,\vpp\playis
  pwks var,s1..s74,\vpp\wiis
  reset var
  wks var,t1..t74,\vpp\playis
  pwks var,t1..t74,\vpp\wiis
  reset var
  wks var,u1..u74,\vpp\playis
  pwks var,u1..u74,\vpp\wiis
  reset var
  wks var,v1..v74,\vpp\playis
  pwks var,v1..v74,\vpp\wiis
  reset var
  wks var,w1..w74,\vpp\playis
  pwks var,w1..w74,\vpp\wiis
  reset var
  wks var,x1..x74,\vpp\playis
  pwks var,x1..x74,\vpp\wiis
  reset var
  wks var,y1..y74,\vpp\playis
  pwks var,y1..y74,\vpp\wiis
  reset var;

!statements block

plural: gr_profit_uniforms, t_other_rev, t_gr_profit, t_oper, ni;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15

whileknown todo
  find todo
  find dummy
  reset todo
  reset dummy
  cls
  find todo end

;

!Rules Block

Rule go_to_wibudget_kbs

if todo = budget_analysis

then dummy = found
    chain wibudget;


Rule go_to_wiratio6_kbs

If todo = ratio_analysis

then dummy = found
    chain wiratio6;


Rule go_to_witrend_kbs

If todo = trend_statements

Then dummy = found
    chain witrend;


Rule go_to_graph1_kbs

If todo = graphics

Then dummy = found
    bcall killwigr
    chain wigraph;

Rule return_to_main_menu

If todo = return_to_main_menu

Then dummy = found
    chain npts;


!Statements Block

ask todo: "What would you like to do?  Answer /Q when finished"; choices todo:budget_analysis,ratio_analysis,
trend_statements,return_to_main_menu;

bkcolor = 1;
```

```
endoff; execute; runtime;

actions

color = 15 todo = budget_analysis find beg_display find farse chain wits;

!Rules block

Rule beginning_display

If todo = budget_analysis Then beg_display = found
    cls
    locate 1,29
    display "BUDGET ANALYSIS"
    locate 3,6 display "Budget analysis is used to determine whether or not the organiztion's" display "revenues and expenses have been
within budget over time. For the Tailor" display "Shop, a budget is determined in advance for the year. A monthly review" display "of the
budget versus actual data is conducted to determine whether or" display "not the Tailor Shop is operating within its budget. An acceptance
" display "range, which is currently + or - 20% of the expected amount for each" display "revenue and expense category, is used to deter-
mine whether or not each" display "item is within budget." display " ";

Rule tell_user_of_budget_limits If todo = budget_analysis Then find change_limits  ! statement allows user to specify which limits to
change
    find change_limits_costs ! statement allows user to specify limits
    farse = ok
    military_ll_b = 20
    military_ul_b = 20
    public_ll_b = 20
    public_ul_b = 20
    s_f_s_ll_b = 20
    s_f_s_ul_b = 20
    interdept_ll_b = 20
    interdept_ul_b = 20
    music_ll_b = 20
    music_ul_b = 20
    state_ll_b = 20
    state_ul_b = 20
    fringes_ll_b = 20
    salaries_ll_b = 20
    wages_ll_b = 20
    total_personal_ll_b = 20
    tele_ll_b = 20
    R_and_M_ll_b = 20
    travel_ll_b = 20
    other_contract_ll_b = 20
    total_contract_ll_b = 20
    repair_ll_b = 20
    other_s_and_m_ll_b = 20
    total_s_and_m_ll_b = 20
    equip_ll_b = 20
    uniforms_ll_b = 20
    elect_ll_b = 20
    w_and_s_ll_b = 20
    insure_ll_b = 20
    agency_ll_b = 20
    other_contin_ll_b = 20
    total_contin_ll_b = 20
    fringes_ul_b = 20
    salaries_ul_b = 20
    wages_ul_b = 20
    total_personal_ul_b = 20
    tele_ul_b = 20
    R_and_M_ul_b = 20
    travel_ul_b = 20
    other_contract_ul_b = 20
    total_contract_ul_b = 20
    repair_ul_b = 20
    other_s_and_m_ul_b = 20
    total_s_and_m_ul_b = 20
    equip_ul_b = 20
    uniforms_ul_b = 20
    elect_ul_b = 20
    w_and_s_ul_b = 20
    insure_ul_b = 20
    agency_ul_b = 20
    other_contin_ul_b = 20
    total_contin_ul_b = 20
    find change_values ! leads to a series of rules to change or leave limits on revenues
```

```
    find change_values_costs ! leads to rules as above, but for costs
    find explain_rev_budget
    find rev_budget ! leads to a series of rules which get budget and if there
                    ! is a difference, accounts for it through prompts
     reset rev_budget
    find kill_time_display
    find expectations  ! find expected values for all revenue categories
    find cost_expectations ! fill in later
    cls
    display "The calculations are now complete.  Press any key to examine"
    display "the revenue part of the analysis. ~"
    find mil_rev_to_display        ! leads to rules which determine whether or
    find public_rev_to_display     ! not each revenue category is within its
    find s_f_s_rev_to_display      ! limits, and then informs the user
    find interdept_rev_to_display
    find music_rev_to_display
    find state_rev_to_display
    find within_rev_to_display
    cls
    display "The revenue section of budgeting anlaysis is now finished.  Press any"
    display "key to examine the expense section. ~" savefacts tdata
    find personal_to_display
    find contract_to_display
    find contin_to_display
    find s_and_m_to_display
    find uniforms_to_display
    find equip_to_display savefacts tdata;

Rule display_explanation_and_kill_time If todo = budget_analysis Then kill_time_display = found
    cls
    locate 1,4 display "The following analysis will determine whether or not each revenue and" display "expense category is over budget,
under budget, or within budget (i.e., over," display "under, or within the previously prescribed ranges).  In this analysis, if" display "an item
is over or under budget, this will be indicated along with the " display "percentage by which it is over or under budget.  The actual and
budget" display "values will not be displayed.  Given the annual budget, one must break the" display "budget down into 12 monthly inter-
vals.  This is done by using the previous" display "year's actual figures to determine how much of the current year's budget" display "should
have been used thus far in any given month.  For categories which" display "provide a fairly steady flow of income or expense (e.g. sala-
ries), any" display "exception is important.  For other categories however, the flow of funds" display "may be discontinuous.  For example,
most of the revenue from the corps is" display "booked to the Tailor Shop late in the year, while revenue from the music" display "depart-
ment is typically paid twice, once in the fall and once in the" display "spring.  Repairs and maintenance will be erratic.  For categories such
" display "as these, an early or late payment will appear as an exception."  locate 18,4 display "At this time, calculation of all expected
values is in progress.  Please" display "be patient as this takes time.  You will be instructed when to continue.";

Rule display_to_explain_rev_budget If todo = budget_analysis Then explain_rev_budget = found
    cls
    locate 3,6 display "The annual budget for the Tailor Shop is determined for revenue in" display "total, and by category for expenses (eg.
personal, continuous, etc.)."  display "In order to determine whether or not revenue is within budget, the" display "budget is first divided
into market segments.  Thus, any increase or" display "decrease in the expected revenues must be allocated to one or more of" display "these
revenue segments.  If such an increase or decrease does occur," display "you will be asked to determine which segments are responsible for"
display "the change."  display " " display "  ";

Rule current_fringes_lt_lb If act_fringes_this_yr < (lb_fringes) and
  todo = budget_analysis Then personal_to_display = found
    under_lb_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;


Rule current_fringes_gt_ub If act_fringes_this_yr > (ub_fringes) and
  todo = budget_analysis Then personal_to_display = found
    over_ub_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_w_in_bounds If act_fringes_this_yr > = (lb_fringes) and
  act_fringes_this_yr < = (ub_fringes) Then personal_to_display = found
    w_in_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_salaries_lt_lb If act_salaries_this_yr < (lb_salaries) Then salaries_to_display = found
    under_lb_personal = salaries;

Rule current_salaries_gt_ub If act_salaries_this_yr > (ub_salaries) Then salaries_to_display = found
    over_ub_personal = salaries;
```

```
Rule current_salaries_w_in_bounds If act_salaries_this_yr > = (lb_salaries) and
  act_salaries_this_yr < = (ub_salaries) Then salaries_to_display = found
    w_in_personal = salaries;

Rule current_wages_lt_lb If act_wages_this_yr < (lb_wages) Then wages_to_display = found
    under_lb_personal = wages;


Rule current_wages_gt_ub If act_wages_this_yr > (ub_wages) Then wages_to_display = found
    over_ub_personal = wages;

Rule current_wages_w_in_bounds If act_wages_this_yr > = (lb_wages) and
  act_wages_this_yr < = (ub_wages) Then wages_to_display = found
    w_in_personal = wages;

Rule total_personal_lt_lb If act_total_personal_this_yr < (lb_total_personal) Then personal_total_to_display = found
    total_personal = under;

Rule total_personal_gt_ub If act_total_personal_this_yr > (ub_total_personal) Then personal_total_to_display = found
    total_personal = over;


Rule total_personal_w_in_bounds If act_total_personal_this_yr > = (lb_total_personal) and
  act_total_personal_this_yr < = (ub_total_personal) Then personal_total_to_display = found
    total_personal = within;

Rule display_total_personal_under If total_personal = under and
  under_lb_personal < > unknown Then actual_display_personal = found
    color = 14
    display ' '
    display "Total Personal expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is (are)
under budget:" display "(under_lb_personal) ¬ "
    color = 15
    reset act_total_personal_this_yr !!!
    reset ub_total_personal !!!
    reset lb_total_personal !!!
    reset act_fringes_this_yr !!!
    reset lb_fringes !!!
    reset ub_fringes !!!
    reset under_lb_personal !!!
    reset over_ub_personal !!!
    reset act_salaries_this_yr !!!
    reset ub_salaries !!!
    reset lb_salaries !!!
    reset act_wages_this_yr !!!
    reset lb_wages !!!
    reset ub_wages; !!!


Rule display_total_personal_over If total_personal = over and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display ' '
    display "Total Personal expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is (are)
over budget:" display "(over_ub_personal) ¬ "
    color = 15
    reset act_total_personal_this_yr !!!
    reset ub_total_personal !!!
    reset lb_total_personal !!!
    reset act_fringes_this_yr !!!
    reset lb_fringes !!!
    reset ub_fringes !!!
    reset under_lb_personal !!!
    reset over_ub_personal !!!
    reset act_salaries_this_yr !!!
    reset ub_salaries !!!
    reset lb_salaries !!!
    reset act_wages_this_yr !!!
    reset lb_wages !!!
    reset ub_wages; !!!


Rule display_total_personal_within If total_personal = within and
```

```
  under_lb_personal = unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 10
    display " "
    display "Personal expenses are all within budget.¬"
    color = 15
    reset act_total_personal_this_yr !!!
    reset ub_total_personal !!!
    reset lb_total_personal !!!
    reset act_fringes_this_yr !!!
    reset lb_fringes !!!
    reset ub_fringes !!!
    reset under_lb_personal !!!
    reset over_ub_personal !!!
    reset act_salaries_this_yr !!!
    reset ub_salaries !!!
    reset lb_salaries !!!
    reset act_wages_this_yr !!!
    reset lb_wages !!!
    reset ub_wages; !!!


Rule display_personal_within_w_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display " "
    display "Total personal expenses are within budget. However, the following are" display "under budget," display "{under_lb_personal}"
display "and the following are over budget," display "{over_ub_personal}¬"
    color = 15
    reset act_total_personal_this_yr !!!
    reset ub_total_personal !!!
    reset lb_total_personal !!!
    reset act_fringes_this_yr !!!
    reset lb_fringes !!!
    reset ub_fringes !!!
    reset under_lb_personal !!!
    reset over_ub_personal !!!
    reset act_salaries_this_yr !!!
    reset ub_salaries !!!
    reset lb_salaries !!!
    reset act_wages_this_yr !!!
    reset lb_wages !!!
    reset ub_wages; !!!


Rule display_personal_within_high_outliers If total_personal = within and
  under_lb_personal = unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display " "
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_personal}¬"
    color = 15
    reset act_total_personal_this_yr !!!
    reset ub_total_personal !!!
    reset lb_total_personal !!!
    reset act_fringes_this_yr !!!
    reset lb_fringes !!!
    reset ub_fringes !!!
    reset under_lb_personal !!!
    reset over_ub_personal !!!
    reset act_salaries_this_yr !!!
    reset ub_salaries !!!
    reset lb_salaries !!!
    reset act_wages_this_yr !!!
    reset lb_wages !!!
    reset ub_wages; !!!


Rule display_personal_within_w_low_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 14
    display " "
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_personal}¬"
```

```
    color = 15
    reset act_total_personal_this_yr !!!
    reset ub_total_personal          !!!
    reset lb_total_personal            !!!
    reset act_fringes_this_yr            !!!
    reset lb_fringes        !!!
    reset ub_fringes          !!!
    reset under_lb_personal       !!!
    reset over_ub_personal          !!!
    reset act_salaries_this_yr        !!!
    reset ub_salaries                   !!!
    reset lb_salaries                     !!!
    reset act_wages_this_yr                     !!!
    reset lb_wages  !!!
    reset ub_wages;     !!!


!!!!!!!!!!!!!!!!!!!! contract begins

Rule current_tele_lt_lb If act_tele_this_yr < (lb_tele) and
  todo = budget_analysis Then contract_to_display = found
    under_lb_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_teles_gt_ub If act_tele_this_yr > (ub_tele) and
  todo = budget_analysis Then contract_to_display = found
    over_ub_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_tele_w_in_bounds If act_tele_this_yr > = (lb_tele) and
  act_tele_this_yr < = (ub_tele) Then contract_to_display = found
    w_in_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_R_and_M_lt_lb If act_R_and_M_this_yr < (lb_R_and_M) Then R_and_M_to_display = found
    under_lb_contract = repair_and_maintenance;

Rule current_R_and_M_gt_ub If act_R_and_M_this_yr > (ub_R_and_M) Then R_and_M_to_display = found
    over_ub_contract = repair_and_maintenance;

Rule current_R_and_M_w_in_bounds If act_R_and_M_this_yr > = (lb_R_and_M) and
  act_R_and_M_this_yr < = (ub_R_and_M) Then R_and_M_to_display = found
    w_in_contract = repair_and_maintenance;

Rule current_travel_lt_lb If act_travel_this_yr < (lb_travel) Then travel_to_display = found
    under_lb_contract = travel;

Rule current_travel_gt_ub If act_travel_this_yr > (ub_travel) Then travel_to_display = found
    over_ub_contract = travel;

Rule current_travel_w_in_bounds If act_travel_this_yr > = (lb_travel) and
  act_travel_this_yr < = (ub_travel) Then travel_to_display = found
    w_in_contract = travel;

Rule current_other_contract_lt_lb If act_contract_other_this_yr < (lb_other_contract) Then other_contract_to_display = found
    under_lb_contract = other_contractual;

Rule current_other_contract_gt_ub If act_contract_other_this_yr > (ub_other_contract) Then other_contract_to_display = found
    over_ub_contract = other_contractual;

Rule other_contract_w_in_bounds If act_contract_other_this_yr > = (lb_other_contract) and
  act_contract_other_this_yr < = (ub_other_contract) Then other_contract_to_display = found
    w_in_contract = other_contractual;

Rule total_contract_lt_lb If act_total_contract_this_yr < (lb_total_contract) Then contract_total_to_display = found
    total_contract = under;
```

```
Rule total_contract_gt_ub If act_total_contract_this_yr > (ub_total_contract) Then contract_total_to_display = found
    total_contract = over;

Rule total_contract_w_in_bounds If act_total_contract_this_yr > = (lb_total_contract) and
  act_total_contract_this_yr < = (ub_total_contract) Then contract_total_to_display = found
    total_contract = within;

Rule display_total_contract_under If total_contract = under and
  under_lb_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_contract) ¬"
    color = 15;

Rule display_total_contract_over If total_contract = over and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display ' '
    display "Total contractual expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "(over_ub_contract) ¬"
    color = 15;

Rule display_total_contract_within If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 10
    display ' '
    display "Contractual expenses are all within budget. ¬"
    color = 15;

Rule display_contract_within_w_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are within budget. However, the following are" display "under budget," display
"(under_lb_contract)" display "and the following are over budget," display "(over_ub_contract) ¬"
    color = 15;

Rule display_contract_within_high_outliers If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display ' '
    display "Total contractual expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "(over_ub_contract) ¬"
    color = 15;

Rule display_contract_within_w_low_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "(under_lb_contract) ¬"
    color = 15;

!!!!!!!!!!!!!!contin starts


Rule current_elect_lt_lb If act_elect_this_yr < (lb_elect) and
  todo = budget_analysis Then contin_to_display = found
    under_lb_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_gt_ub If act_elect_this_yr > (ub_elect) and
  todo = budget_analysis Then contin_to_display = found
    over_ub_contract = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;
```

```
Rule current_elect_w_in_bounds If act_elect_this_yr > = (lb_elect) and
  act_elect_this_yr < = (ub_elect) Then contin_to_display = found
    w_in_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find other_contin_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_w_and_s_lt_lb If act_w_and_s_this_yr < (lb_w_and_s) Then w_and_s_to_display = found
    under_lb_contin = water_and_sewer;

Rule current_w_and_s_gt_ub If act_w_and_s_this_yr > (ub_w_and_s) Then w_and_s_to_display = found
    over_ub_contin = water_and_sewer;

Rule current_w_and_s_w_in_bounds If act_w_and_s_this_yr > = (lb_w_and_s) and
  act_w_and_s_this_yr < = (ub_w_and_s) Then w_and_s_to_display = found
    w_in_contin = water_and_sewer;

Rule current_insure_lt_lb If act_insure_this_yr < (lb_insure) Then insure_to_display = found
    under_lb_contin = insurance;

Rule current_insure_gt_ub If act_insure_this_yr > (ub_insure) Then insure_to_display = found
    over_ub_contin = insurance;

Rule current_insure_w_in_bounds If act_insure_this_yr > = (lb_insure) and
  act_insure_this_yr < = (ub_insure) Then insure_to_display = found
    w_in_contin = travel;

Rule current_agency_lt_lb If act_agency_this_yr < (lb_agency) Then agency_to_display = found
    under_lb_contin = agency_charges;

Rule current_agency_gt_ub If act_agency_this_yr > (ub_agency) Then agency_to_display = found
    over_ub_contin = agency_charges;

Rule agency_w_in_bounds If act_agency_this_yr > = (lb_agency) and
  act_agency_this_yr < = (ub_agency) Then agency_to_display = found
    w_in_contin = agency;

Rule current_other_contin_lt_lb If act_comp_perp_this_yr < (lb_other_contin) Then other_contin_to_display = found
    under_lb_contin = other_continuous_charges;

Rule current_other_contin_gt_ub If act_comp_perp_this_yr > (ub_other_contin) Then other_contin_to_display = found
    over_ub_contin = computer_peripheral;

Rule other_contin_w_in_bounds If act_comp_perp_this_yr > = (lb_other_contin) and
  act_comp_perp_this_yr < = (ub_other_contin) Then other_contin_to_display = found
    w_in_contin = other;

Rule total_contin_lt_lb If act_total_contin_this_yr < (lb_total_contin) Then contin_total_to_display = found
    total_contin = under;

Rule total_contin_gt_ub If act_total_contin_this_yr > (ub_total_contin) Then contin_total_to_display = found
    total_contin = over;

Rule total_contin_w_in_bounds If act_total_contin_this_yr > = (lb_total_contin) and
  act_total_contin_this_yr < = (ub_total_contin) Then contin_total_to_display = found
    total_contin = within;

Rule display_total_contin_under If total_contin = under and
  under_lb_contin < > unknown Then actual_display_contin = found
    color = 14
    display ' '
    display "Total continuous expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "{under_lb_contin} ¬"
    color = 15;

Rule display_total_contin_over If total_contin = over and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "{over_ub_contin} ¬"
    color = 15;

Rule display_total_contin_within If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin = unknown Then actual_display_contin = found
```

```
    color = 10
    display "Continuous expenses are all within budget. ¬"
    color = 15;

Rule display_contin_within_w_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display " "
    display "Total continuous expenses are within budget. However, the following are" display "under budget," display "(under_lb_contin)"
display "and the following are over budget," display "(over_ub_contin) ¬"
    color = 15;

Rule display_contin_within_high_outliers If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display " "
    display "Total continuous expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "(over_ub_contin) ¬"
    color = 15;

Rule display_contin_within_w_low_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin = unknown Then actual_display_contin = found
    color = 14
    display " "
    display "Total continuous expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "(under_lb_contin) ¬"
    color = 15;

!!!!!!!!!s & m begins

Rule current_repair_lt_lb If act_repair_this_yr < (lb_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    under_lb_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_gt_ub If act_repair_this_yr > (ub_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    over_ub_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_w_in_bounds If act_repair_this_yr > = (lb_repair) and
  act_repair_this_yr < = (ub_repair) Then s_and_m_to_display = found
    w_in_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_other_s_and_m_lt_lb If act_s_and_m_other_this_yr < (lb_other_s_and_m) Then other_s_and_m_to_display = found
    under_lb_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_M_gt_ub If act_s_and_m_other_this_yr > (ub_other_s_and_m) Then other_s_and_m_to_display = found
    over_ub_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_m_w_in_bounds If act_s_and_m_other_this_yr > = (lb_other_s_and_m) and
  act_s_and_m_other_this_yr < = (ub_other_s_and_m) Then other_s_and_m_to_display = found
    w_in_s_and_m = other_supplies_&_materials;

Rule total_s_and_m_lt_lb If act_total_s_and_m_this_yr < (lb_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = under;

Rule total_s_and_m_gt_ub If act_total_s_and_m_this_yr > (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = over;

Rule total_s_and_m_w_in_bounds If act_total_s_and_m_this_yr > = (lb_total_s_and_m) and
  act_total_s_and_m_this_yr < = (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = within;

Rule display_total_s_and_m_under If total_s_and_m = under and
  under_lb_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 14
    display " "
    display "Total supplies & materials are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_s_and_m) ¬"
```

```
    color = 15;

Rule display_total_s_and_m_over If total_s_and_m = over and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display " "
    display "Total supplies and materials are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "{over_ub_s_and_m} ¬"
    color = 15;

Rule display_total_s_and_m_within If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 10
    display " "
    display "Supplies & materials are all within budget. ¬"
    color = 15;

Rule display_s_and_m_within_w_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display " "
    display "Total supplies and materials are within budget. However, the following are" display "under budget," display
"{under_lb_s_and_m" display "and the following are over budget," display "{over_ub_s_and_m} ¬"
    color = 15;

Rule display_s_and_m_within_high_outliers If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12 .
    display " "
    display "Total supplies & materials are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_s_and_m} ¬"
    color = 15;

Rule display_s_and_m_within_w_low_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 14
    display " "
    display "Total supplies & materials are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_contin} ¬"
    color = 15;

!!!!!!!!!! uniforms begins

Rule current_uniforms_lt_lb If act_uniforms_this_yr < (lb_uniforms) and
  todo = budget_analysis Then uniforms_to_display = found
    under_uniforms = yes
    color = 14
    percent = (((exp_uniforms - act_uniforms_this_yr)/exp_uniforms) * 100)
    format percent, 6.2
    display " "
    display "Expenses for uniforms so far this year are under budget by {percent}%. ¬"
    color = 15;

Rule current_uniforms_gt_ub If act_uniforms_this_yr > (ub_uniforms) and
  todo = budget_analysis Then uniforms_to_display = found
    over_uniforms = yes
     color = 12
     percent = (((act_uniforms_this_yr - exp_uniforms) / exp_uniforms) * 100)
    display " "
    format percent, 6.2
     display "Expenses for uniforms are over budget this year by {percent}%. ¬"
     color = 15;

Rule current_uniforms_w_in_bounds If act_uniforms_this_yr > = (lb_uniforms) and
  act_uniforms_this_yr < = (ub_uniforms) Then uniforms_to_display = found
    w_in_uniforms = yes
    color = 10
    display " "
    display "Expenses for uniforms are within the budgeted amount. ¬"
    color = 15;

Rule current_equip_lt_budget If act_equip_this_yr < (lb_equip) and
  todo = budget_analysis Then equip_to_display = found
    under_equip = yes
    color = 14
    percent = (((exp_equip - act_equip_this_yr)/exp_equip) * 100)
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```
    left = (bud_equip_this_yr - act_equip_this_yr)
    format percent, 6.2
    display " "
    display "Expenses for equipment so far this year are under budget by (percent)%." display "In fact, there is ${left) left in the budget
for equipment. ¬"
    color = 15;

Rule current_equip_gt_ub If act_equips_this_yr > (ub_equip) and
  todo = budget_analysis Then equip_to_display = found
    over_equip = yes
     color = 12
     percent = (((act_equip_this_yr - exp_equip) / exp_equip) * 100)
    actual = (act_equip_this_yr - exp_equip)
    format percent, 6.2
    display " "
     display "Expenses for equipment are over budget this year by (percent)%, i.e., ${actual}. ¬"
     color = 15;

Rule current_equip_w_in_bounds If act_equip_this_yr > = (lb_equip) and
  act_equip_this_yr < = (ub_equip) Then equip_to_display = found
    w_in_equip = yes
    color = 10
    display " "
    display "Expenses for equipment is within the budgeted amount. ¬"
    color = 15;

Rule budget_limits_ok If change_limits = no Then military_ll = (military_ll_b)
    military_ul = (military_ul_b)
    public_ll = (public_ll_b)
    public_ul = (public_ul_b)
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b)
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b)
    music_ll = (music_ll_b)
    music_ul = (music_ul_b)
    state_ll = (state_ll_b)
    state_ul = (state_ul_b)
    change_values = found;

Rule budget_limits_not_ok If change_limits = yes Then find which_rev_limits
    find mil_limits
    find public_limits
    find s_f_s_limits
    find interdept_limits
    find music_limits
    find state_limits
    change_values = found;

Rule budget_cost_limits_ok If change_limits_costs = no Then fringes_ll = (fringes_ll_b)
    salaries_ll = (salaries_ll_b)
    wages_ll = (wages_ll_b)
    total_personal_ll = (total_personal_ll_b)
    tele_ll = (tele_ll_b)
    R_and_M_ll = (R_and_M_ll_b)
    travel_ll = (travel_ll_b)
    other_contract_ll = (other_contract_ll_b)
    total_contract_ll = (total_contract_ll_b)
    repair_ll = (repair_ll_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    total_s_and_m_ll = (total_s_and_m_ll_b)
    equip_ll = (equip_ll_b)
    uniforms_ll = (uniforms_ll_b)
    elect_ll = (elect_ll_b)
    w_and_s_ll = (w_and_s_ll_b)
    insure_ll = (insure_ll_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    total_contin_ll = (total_contin_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ul = (salaries_ul_b)
    wages_ul = (wages_ul_b)
    total_personal_ul = (total_personal_ul_b)
    tele_ul = (tele_ul_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ul = (travel_ul_b)
    other_contract_ul = (other_contract_ul_b)
    total_contract_ul = (total_contract_ul_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ul = (other_s_and_m_ul_b)
```

```
    total_s_and_m_ul = (total_s_and_m_ul_b)
    equip_ul = (equip_ul_b)
    uniforms_ul = (uniforms_ul_b)
    elect_ul = (elect_ul_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ul = (insure_ul_b)
    agency_ul = (agency_ul_b)
    other_contin_ul = (other_contin_ul_b)
    total_contin_ul = (total_contin_ul_b)
    change_values_costs = found;

Rule budget_cost_limits_not_ok If change_limits_costs = yes Then find which_cost_limits
    find equip_limits
    find uniforms_limits
    find personal_limits
    find contract_limits
    find s_and_m_limits
    find contin_limits
    change_values_costs = found;

Rule go_get_rev_budget_data If todo = budget_analysis Then !wks budget_rev, b3..c3, \vpp\wibud
    rev_budget = found
    wks budget_rev_now,b3,\vpp\wibud
    wks budget_rev_past,c3,\vpp\wibud !    budget_rev_now = (budget_rev[1]) !    budget_rev_past = (budget_rev[2])
    diff = (budget_rev_now - budget_rev_past)
    find rev_diff;

Rule rev_budget_same If diff = 0 Then mil_exp_inc = 0
    public_exp_inc = 0
    s_f_s_exp_inc = 0
    interdept_exp_inc = 0
    music_exp_inc = 0
    state_exp_inc = 0
    rev_diff = found;

Rule rev_budget_higher If diff > 0 Then display "The amount budgeted for revenue this year has increased from the "
    display "previous year by ${diff}.  Which market segments are responsible for "
    display "contributing more this year to total revenue?  Please make certain that your"
    find resp_rev_mkt_segments  ! statement - determines which segments
                        ! are expected to contribute more this year
    rev_diff = found
    find mil_higher? ! leads to a series of rules which calculate
                ! changes in expectations
    find check_math;

Rule rev_budget_lower If diff < 0 Then diff = (@abs(diff))
    display "The amount budgeted for revenue this year has decreased from the "
    display "previous year by ${diff}.  Which market segments are responsible for"
    display "contributing less this year to total revenue?  Please make certain that your"
    find resp_rev_mkt_segments_l  ! statement - determines which segments
                        ! are expected to contribute less this year
    diff = (0 - diff)
    rev_diff = found
    find mil_lower? ! leads to a series of rules which calculate
                ! changes in expectations
    find check_math;

Rule military_exp_higher If resp_rev_mkt_segments = military Then find mil_exp_inc_h
    mil_exp_inc = (mil_exp_inc_h)
    mil_higher? = found
    find public_higher?;

Rule military_exp_not_higher If resp_rev_mkt_segments < > military Then mil_exp_inc = 0
    mil_higher? = found
    find public_higher?;

Rule military_exp_lower If resp_rev_mkt_segments_l = military Then find mil_exp_inc_l
    mil_exp_inc = (0 - mil_exp_inc_l)
    mil_lower? = found
    find public_lower?;

Rule military_exp_not_lower If resp_rev_mkt_segments_l < > military Then mil_exp_inc = 0
    mil_lower? = found
    find public_lower?;

Rule public_exp_higher If resp_rev_mkt_segments = public Then find public_exp_inc_h
    public_exp_inc = (public_exp_inc_h)
    public_higher? = found
    find s_f_s_higher?;
```

```
Rule public_exp_not_higher If resp_rev_mkt_segments < > public Then public_exp_inc = 0
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_lower If resp_rev_mkt_segments_l = public Then find public_exp_inc_l
    public_exp_inc = (0 - public_exp_inc_l)
    public_lower? = found
    find s_f_s_lower?;

Rule public_exp_not_lower If resp_rev_mkt_segments_l < > lower Then public_exp_inc = 0
    public_lower? = found
    find s_f_s_lower?;

Rule s_f_s_exp_higher If resp_rev_mkt_segments = stu_fac_staff Then find s_f_s_exp_inc_h
    s_f_s_exp_inc = (s_f_s_exp_inc_h)
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_not_higher If resp_rev_mkt_segments < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_lower If resp_rev_mkt_segments_l = stu_fac_staff Then find s_f_s_exp_inc_l
    s_f_s_exp_inc = (0 - s_f_s_exp_inc_l)
    s_f_s_lower? = found
    find interdept_lower?;

Rule s_f_s_exp_not_lower If resp_rev_mkt_segments_l < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_lower? = found
    find interdept_lower?;

Rule interdept_exp_higher If resp_rev_mkt_segments = interdepartmental Then find interdept_exp_inc_h
    interdept_exp_inc = (interdept_exp_inc_h)
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_not_higher If resp_rev_mkt_segments < > interdepartmental Then interdept_exp_inc = 0
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_lower If resp_rev_mkt_segments_l = interdepartmental Then find interdept_exp_inc_l
    interdept_exp_inc = (0 - interdept_exp_inc_l)
    interdept_lower? = found
    find music_lower?;

Rule interdept_exp_not_lower If resp_rev_mkt_segments_l < > interdepartmental Then interdept_exp_inc = 0
    interdept_lower? = found
    find music_lower?;

Rule music_exp_higher If resp_rev_mkt_segments = music_dept Then find music_exp_inc_h
    music_exp_inc = (music_exp_inc_h)
    music_higher? = found
    find state_higher?;

Rule music_exp_not_higher If resp_rev_mkt_segments < > music_dept Then music_exp_inc = 0
    music_higher? = found
    find state_higher?;

Rule music_exp_lower If resp_rev_mkt_segments_l = music_dept Then find music_exp_inc_l
    music_exp_inc = (0 - music_exp_inc_l)
    music_lower? = found
    find state_lower?;

Rule music_exp_not_lower If resp_rev_mkt_segments_l < > music_dept Then music_exp_inc = 0
    music_lower? = found
    find state_lower?;

Rule state_exp_higher If resp_rev_mkt_segments = state_related Then find state_exp_inc_h
    state_exp_inc = (state_exp_inc_h)
     n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;

Rule state_exp_not_higher If resp_rev_mkt_segments < > state_related Then state_exp_inc = 0
    n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;

Rule state_exp_lower If resp_rev_mkt_segments_l = state_related Then find state_exp_inc_l
    state_exp_inc = (0 - state_exp_inc_l)
```

```
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diff1 = (@abs(diff));

Rule state_exp_not_lower If resp_rev_mkt_segments_1 < > state_related Then state_exp_inc = 0
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diff1 = (@abs(diff));

Rule math_is_ok If diff1 = (n) Then check_math = done;

Rule math_not_ok If diff1 < > (n) Then display "The increments you have given do not add up to the total increment in the"
    display "budget. Therefore, let's start this part over."
    display "Press any key to continue. ¬ "
    display ""
    display ""
    reset rev_budget
    reset rev_diff
    reset mil_higher?
    reset public_higher?
    reset s_f_s_higher?
    reset interdept_higher?
    reset music_higher?
    reset state_higher?
    reset mil_lower?
    reset public_lower?
    reset s_f_s_lower?
    reset interdept_lower?
    reset music_lower?
    reset state_lower?
    reset mil_exp_inc_h
    reset public_exp_inc_h
    reset s_f_s_exp_inc_h
    reset interdept_exp_inc_h
    reset music_exp_inc_h
    reset state_exp_inc_h
    reset mil_exp_inc_l
    reset public_exp_inc_l
    reset s_f_s_exp_inc_l
    reset interdept_exp_inc_l
    reset music_exp_inc_l
    reset state_exp_inc_l
    reset mil_exp_inc
    reset public_exp_inc
    reset s_f_s_exp_inc
    reset interdept_exp_inc
    reset music_exp_inc
    reset state_exp_inc
    reset resp_rev_mkt_segments
    reset resp_rev-mkt_segments_1
    reset farse
    reset display_clause
    reset change_limits
    reset change_values
    check_math = done
    reset check_math
    find rev_diff;

Rule find_military_limits If which_rev_limits = military Then display "What percentage below expected should the lower limit be for
military revenue?"
    find military_ll
    display "What percentage above expected should the upper limit be for military revenue?"
    find military_ul
    mil_limits = found;

Rule dont_find_military_limits If which_rev_limits < > military Then mil_limits = found
    military_ll = (military_ll_b)
    military_ul = (military_ul_b);

Rule find_public_limits If which_rev_limits = public Then display "What percentage below expected should the lower limit be for revenue
from the public? Please do not use decimals."
    find public_ll
    display "What percentage above expected should the upper limit be for revenue from the public? Please do not use decimals."
    find public_ul
    public_limits = found;

Rule dont_find_public_limits If which_rev_limits < > public Then public_limits = found
    public_ll = (public_ll_b)
```

```
    public_ul = (public_ul_b);

Rule find_s_f_s_limits If which_rev_limits = s_f_s Then display "What percentage below expected should the lower limit be for revenue from students, faculty, and staff? Please do not use decimals."
    find s_f_s_ll
    display "What percentage above expected should the upper limit be for revenue from students, faculty, and staff? Please do not use decimals."
    find s_f_s_ul
    s_f_s_limits = found;

Rule dont_find_s_f_s_limits If which_rev_limits < > s_f_s Then s_f_s_limits = found
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b);

Rule find_interdept_limits If which_rev_limits = interdepartmental Then display "What percentage below expected should the lower limit be for interdepartmental revenue? Please do not use decimals."
    find interdept_ll
    display "What percentage above expected should the upper limit be for interdepartmental revenue? Please do not use decimals."
    find interdept_ul
    interdept_limits = found;

Rule dont_find_interdept_limits If which_rev_limits < > interdepartmental Then interdept_limits = found
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b);

Rule find_music_limits If which_rev_limits = music_dept Then display "What percentage below expected should the lower limit be for music department revenue? Please do not use decimals."
    find music_ll
    display "What percentage above expected should the upper limit be for music department revenue? Please do not use decimals."
    find music_ul
    music_limits = found;

Rule dont_find_music_limits If which_rev_limits < > music_dept Then music_limits = found
    music_ll = (music_ll_b)
    music_ul = (music_ul_b);

Rule find_state_limits If which_rev_limits = state_related Then display "What percentage below expected should the lower limit be for state related revenue? Please do not use decimals."
    find state_ll
    display "What percentage above expected should the upper limit be for state related revenue? Please do not use decimals."
    find state_ul
    state_limits = found;

Rule dont_find_state_limits If which_rev_limits < > state_related Then state_limits = found
    state_ll = (state_ll_b)
    state_ul = (state_ul_b);

Rule find_equip_limits If which_cost_limits = equipment Then display "What percentage below expected should the lower limit be for equipment purchases? Please do not use decimals."
    find equip_ll
    display "What percentage above expected should the upper limit be for equipment purchases? Please do not use decimals."
    find equip_ul
    equip_limits = found;

Rule dont_find_equip_limits If which_cost_limits < > equipment Then equip_limits = found
    equip_ll = (equip_ll_b)
    equip_ul = (equip_ul_b);

Rule find_uniform_limits If which_cost_limits = uniforms Then display "What percentage below expected should the lower limit be for uniform purchases? Please do not use decimals."
    find uniforms_ll
    display "What percentage above expected should the upper limit be for uniform purchases? Please do not use decimals."
    find uniforms_ul
    uniforms_limits = found;

Rule dont_find_uniform_limits If which_cost_limits < > uniforms Then uniforms_limits = found
    uniforms_ll = (uniforms_ll_b)
    uniforms_ul = (uniforms_ul_b);

Rule find_personal_limits If which_cost_limits = personal Then display "What percentage below expected should the lower limit be for personal expenses? Please do not use decimals."
    find total_personal_ll
    display "What percentage above expected should the upper limit be for personal expenses? Please do not use decimals."
    find total_personal_ul
    personal_limits = found
    find finish_personal_limits;

Rule dont_find_personal_limits If which_cost_limits < > personal Then personal_limits = found
    total_personal_ll = (total_personal_ll_b)
    total_personal_ul = (total_personal_ul_b)
```

```
    fringes_ll = (fringes_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ll = (salaries_ll_b)
    salaries_ul = (salaries_ul_b)
    wages_ll = (wages_ll_b)
    wages_ul = (wages_ul_b);

Rule make_all_personal_limits_same   ! simplifying assumption If todo = budget_analysis            ! within any category, the upper
                                     ! and lower limits considered to Then fringes_ll = (total_personal_ll)  ! be acceptable are the same.
    fringes_ul = (total_personal_ul)  ! It was felt that placing one
    salaries_ll = (total_personal_ll) ! set of limits on salaries and
    salaries_ul = (total_personal_ul) ! another on wages, for example,
    wages_ll = (total_personal_ll)    ! would be highly unlikely
    wages_ul = (total_personal_ul)
    finish_personal_limits = done;

Rule find_contract_limits If which_cost_limits = contractual Then display "What percentage below expected should the lower limit be for
contractual expenses? Please do not use decimals."
    find total_contract_ll
    display "What percentage above expected should the upper limit be for contractual expenses? Please do not use decimals."
    find total_contract_ul
    contract_limits = found
    find finish_contract_limits;

Rule dont_find_contract_limits If which_cost_limits < > contractual Then contract_limits = found
    total_contract_ll = (total_contract_ll_b)
    total_contract_ul = (total_contract_ul_b)
    tele_ll = (tele_ll_b)
    tele_ul = (tele_ul_b)
    R_and_M_ll = (R_and_M_ll_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ll = (travel_ll_b)
    travel_ul = (travel_ul_b)
    other_contract_ll = (other_contract_ll_b)
    other_contract_ul = (other_contract_ul_b);

Rule make_all_contract_limits_same If todo = budget_analysis Then tele_ll = (total_contract_ll)
    tele_ul = (total_contract_ul)
    R_and_M_ll = (total_contract_ll)
    R_and_M_ul = (total_contract_ul)
    travel_ll = (total_contract_ll)
    travel_ul = (total_contract_ul)
    other_contract_ll = (total_contract_ll)
    other_contract_ul = (total_contract_ul)
    finish_contract_limits = done;

Rule find_s_and_m_limits If which_cost_limits = S_and_M Then display "What percentage below expected should the lower limit be for
supplies & materials? Please do not use decimals."
    find total_s_and_m_ll
    display "What percentage above expected should the upper limit be for supplies & materials? Please do not use decimals."
    find total_s_and_m_ul
    s_and_m_limits = found
    find finish_s_and_m_limits;

Rule dont_find_s_and_m_limits If which_cost_limits < > S_and_M Then s_and_m_limits = found
    total_s_and_m_ll = (total_s_and_m_ll_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    repair_ll = (repair_ll_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    other_s_and_m_ul = (other_s_and_m_ul_b);

Rule make_all_s_and_m_limits_same If todo = budget_analysis Then repair_ll = (total_s_and_m_ll)
    repair_ul = (total_s_and_m_ul)
    other_s_and_m_ll = (total_s_and_m_ll)
    other_s_and_m_ul = (total_s_and_m_ul)
    finish_s_and_m_limits = done;

Rule find_contin_limits If which_cost_limits = continuous Then display "What percentage below expected should the lower limit be for
continuous expenses? Please do not use decimals."
    find total_contin_ll
    display "What percentage above expected should the upper limit be for continuous expenses? Please do not use decimals."
    find total_contin_ul
    contin_limits = found
    find finish_contin_limits;

Rule dont_find_contin_limits If which_cost_limits < > continuous Then contin_limits = found
    total_contin_ll = (total_contin_ll_b)
    total_contin_ul = (total_contin_ul_b)
    elect_ll = (elect_ll_b)
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    elect_ul = (elect_ul_b)
    w_and_s_ll = (w_and_s_ll_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ll = (insure_ll_b)
    insure_ul = (insure_ul_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    other_contin_ul = (other_contin_ul_b)
    agency_ul = (agency_ul_b);

Rule make_all_contin_limits_same If todo = budget_analysis Then elect_ll = (total_contin_ll)
    elect_ul = (total_contin_ul)
    w_and_s_ll = (total_contin_ll)
    w_and_s_ul = (total_contin_ul)
    insure_ll = (total_contin_ll)
    insure_ul = (total_contin_ul)
    agency_ll = (total_contin_ll)
    other_contin_ll = (total_contin_ll)
    agency_ul = (total_contin_ul)
    other_contin_ul = (total_contin_ul)
    finish_contin_limits = done;

Rule calc_expects_&_bounds_revs If todo = budget_analysis Then exp_inc[1] = (public_exp_inc)
    exp_inc[2] = (s_f_s_exp_inc)
    exp_inc[3] = (interdept_exp_inc)
    exp_inc[4] = (music_exp_inc)
    exp_inc[5] = (state_exp_inc)
    ll[1] = (public_ll)
    ul[1] = (public_ul)
    ll[2] = (s_f_s_ll)
    ul[2] = (s_f_s_ul)
    ll[3] = (interdept_ll)
    ul[3] = (interdept_ul)
    ll[4] = (music_ll)
    ul[4] = (music_ul)
    ll[5] = (state_ll)
    ul[5] = (state_ul)
    wks mil_rev_this_yr, b12,\vpp\wiis
    wks mil_rev_last_yr, n12,\vpp\wiis !     wks other_rev_this_yr, b17..b21,\vpp\wiis
    wks x1,n17,\vpp\wiis
    wks x2,n18,\vpp\wiis
    wks x3,n19,\vpp\wiis
    wks x4,n20,\vpp\wiis
    wks x5,n21,\vpp\wiis
    mil_rev_exp = (mil_rev_last_yr +((mil_rev_last_yr/budget_rev_past)*mil_exp_inc))
    lb_mil = (mil_rev_exp * (1 - (military_ll/100)))
    ub_mil = (mil_rev_exp * (1 + (military_ul/100)))
    x = 1
    whiletrue x < 6  then
      ex[1] = (x1 + ((x1/budget_rev_past)*exp_inc[1]))
      ex[2] = (x2 + ((x2/budget_rev_past)*exp_inc[1]))
      ex[3] = (x3 + ((x3/budget_rev_past)*exp_inc[1]))
      ex[4] = (x4 + ((x4/budget_rev_past)*exp_inc[1]))
      ex[5] = (x5 + ((x5/budget_rev_past)*exp_inc[1]))
      lb[x] = (ex[x] * (1 - (ll[x] / 100)))
      ub[x] = (ex[x] * (1 + (ul[x] / 100)))
      x = (x+1)

    end
    expectations = found;

Rule calc_expects_and_bounds_costs If todo = budget_analysis Then wks bud_equip_this_yr, b5,\vpp\wibud
    wks bud_equip_last_yr, c5,\vpp\wibud !     wks bud_personal_this_yr, b7..b10,\vpp\wibud
    wks bpty1,b7,\vpp\wibud
    wks bpty2,b8,\vpp\wibud
    wks bpty3,b9,\vpp\wibud
    wks bpty4,b10,\vpp\wibud


!    wks bud_personal_last_yr, c7..c10,\vpp\wibud
    bud_fringes_this_yr = (bpty1)
    bud_salaries_this_yr = (bpty2)
    bud_wages_this_yr = (bpty3)
    bud_total_personal_this_yr = (bpty4)

    wks bud_fringes_last_yr,c7,\vpp\wibud      !!!NEW
    wks bud_salaries_last_yr,c8,\vpp\wibud     !!!NEW
    wks bud_wages_last_yr,c9,\vpp\wibud        !!!NEW
    wks bud_total_personal_last_yr,c10,\vpp\wibud     !!!NEW
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!    wks bud_contract_this_yr, b12..b16,\vpp\wibud

     wks bcty1,b12,\vpp\wibud
     wks bcty2,b13,\vpp\wibud
     wks bcty3,b14,\vpp\wibud
     wks bcty4,b15,\vpp\wibud
     wks bcty5,b16,\vpp\wibud

     bud_tele_this_yr = (bcty1)
     bud_R_and_M_this_yr = (bcty2)
     bud_travel_this_yr = (bcty3)
     bud_contract_other_this_yr = (bcty4)
     bud_total_contract_this_yr = (bcty5)

!    wks bud_contract_last_yr, c12..c16,\vpp\wibud


     wks bud_tele_last_yr,c12,\vpp\wibud
     wks bud_R_and_M_last_yr,c13,\vpp\wibud
     wks bud_travel_last_yr,c14,\vpp\wibud
     wks bud_contract_other_last_yr,c15,\vpp\wibud
     wks bud_total_contract_last_yr,c16,\vpp\wibud


!    wks bud_s_and_m_this_yr, b18..b20,\vpp\wibud !    wks bud_s_and_m_last_yr, c18..c20,\vpp\wibud
     wks bsmty1,b18,\vpp\wibud
     wks bsmty2,b19,\vpp\wibud
     wks bsmty3,b20,\vpp\wibud

     bud_repair_this_yr = (bsmty1)
     bud_s_and_m_other_this_yr = (bsmty2)
     bud_total_s_and_m_this_yr = (bsmty3)
     wks bud_repair_last_yr,c18,\vpp\wibud
     wks bud_s_and_m_other_last_yr,c19,\vpp\wibud
     wks bud_total_s_and_m_last_yr,c20,\vpp\wibud !    wks bud_contin_this_yr, b22..b27,\vpp\wibud

     wks bcn1,b22,\vpp\wibud
     wks bcn2,b23,\vpp\wibud
     wks bcn3,b24,\vpp\wibud
     wks bcn4,b25,\vpp\wibud
     wks bcn5,b26,\vpp\wibud
     wks bcn6,b27,\vpp\wibud

     bud_elect_this_yr = (bcn1)
     bud_w_and_s_this_yr = (bcn2)
     bud_agency_this_yr = (bcn3)
     bud_insure_this_yr = (bcn4)
     bud_contin_other_this_yr = (bcn5)
     bud_total_contin_this_yr = (bcn6)

!    wks bud_contin_last_yr, c22..c27,\vpp\wibud


     wks bud_elect_last_yr,c22,\vpp\wibud
     wks bud_w_and_s_last_yr,c23,\vpp\wibud
     wks bud_agency_last_yr,c24,\vpp\wibud
     wks bud_insure_last_yr,c25,\vpp\wibud
     wks bud_contin_other_last_yr,c26,\vpp\wibud
     wks bud_total_contin_last_yr,c27,\vpp\wibud
     wks bud_uniforms_this_yr, b29,\vpp\wibud
     wks bud_uniforms_last_yr, c29,\vpp\wibud !      wks act_personal_this_yr, b26..b34,\vpp\wiis !      wks act_personal_last_yr,
n26..n34,\vpp\wiis

     wks apty1,b26,\vpp\wiis
     wks apty2,b27,\vpp\wiis
     wks apty3,b28,\vpp\wiis
     wks apty4,b29,\vpp\wiis
     wks apty5,b30,\vpp\wiis
     wks apty6,b31,\vpp\wiis
     wks apty7,b32,\vpp\wiis
     wks apty8,b33,\vpp\wiis
     wks apty9,b34,\vpp\wiis
     wks aply1,n26,\vpp\wiis
     wks aply2,n27,\vpp\wiis
     wks aply3,n28,\vpp\wiis
     wks aply4,n29,\vpp\wiis
     wks aply5,n30,\vpp\wiis
     wks aply6,n31,\vpp\wiis
     wks aply7,n32,\vpp\wiis
     wks aply8,n33,\vpp\wiis
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wks aply9,n34,\vpp\wiis

act_fringes_this_yr_a = (apty1 + apty2 + apty3)
act_fringes_this_yr_b = (apty4 + apty5)
act_fringes_this_yr = (act_fringes_this_yr_a + act_fringes_this_yr_b)
act_salaries_this_yr = (apty6)
act_wages_this_yr = (apty7 + apty8)
act_total_personal_this_yr = (apty9)
act_fringes_last_yr_a = (aply1 + aply2 + aply3)
act_fringes_last_yr_b = (aply4 + aply5)
act_fringes_last_yr = (act_fringes_last_yr_a + act_fringes_last_yr_b)
act_salaries_last_yr = (aply6)
act_wages_last_yr = (aply7 + aply8)
act_total_personal_last_yr = (aply9) !    wks act_contract_this_yr, b36..b45,\vpp\wiis !    wks act_contract_last_yr, n36..n45,\vpp\wiis

wks acty1,b36,\vpp\wiis
wks acty2,b37,\vpp\wiis
wks acty3,b38,\vpp\wiis
wks acty4,b39,\vpp\wiis
wks acty5,b40,\vpp\wiis
wks acty6,b41,\vpp\wiis
wks acty7,b42,\vpp\wiis
wks acty8,b43,\vpp\wiis
wks acty9,b44,\vpp\wiis
wks acty10,b45,\vpp\wiis
wks acly1,n36,\vpp\wiis
wks acly2,n37,\vpp\wiis
wks acly3,n38,\vpp\wiis
wks acly4,n39,\vpp\wiis
wks acly5,n40,\vpp\wiis
wks acly6,n41,\vpp\wiis
wks acly7,n42,\vpp\wiis
wks acly8,n43,\vpp\wiis
wks acly9,n44,\vpp\wiis
wks acly10,n45,\vpp\wiis

act_tele_this_yr = (acty1)
act_R_and_M_this_yr = (acty2)
act_travel_this_yr = (acty9)
act_contract_other_this_yr_a = (acty3 + acty4 + acty5)
act_contract_other_this_yr_b = (acty6 + acty7 + acty8)
act_contract_other_this_yr = (act_contract_other_this_yr_a + act_contract_other_this_yr_b)
act_total_contract_this_yr = (acty10)
act_tele_last_yr = (acly1)
act_R_and_M_last_yr = (acly2)
act_travel_last_yr = (acly9)
act_contract_other_last_yr_a = (acly3 + acly4 + acly5)
act_contract_other_last_yr_b = (acly6 + acly7 + acly8)
act_contract_other_last_yr = (act_contract_other_last_yr_a + act_contract_other_last_yr_b)
act_total_contract_last_yr = (acly10) !    wks act_s_and_m_this_yr, b47..b52,\vpp\wiis !    wks act_s_and_m_last_yr, n47..n52,\vpp\wiis

wks asmty1,b47,\vpp\wiis
wks asmty2,b48,\vpp\wiis
wks asmty3,b49,\vpp\wiis
wks asmty4,b50,\vpp\wiis
wks asmty5,b51,\vpp\wiis
wks asmty6,b52,\vpp\wiis
wks asmly1,n47,\vpp\wiis
wks asmly2,n48,\vpp\wiis
wks asmly3,n49,\vpp\wiis
wks asmly4,n50,\vpp\wiis
wks asmly5,n51,\vpp\wiis
wks asmly6,n52,\vpp\wiis

act_repair_this_yr = (asmty4 + asmty5)
act_s_and_m_other_this_yr = (asmty1 + asmty2 + asmty3)
act_total_s_and_m_this_yr = (asmty6)
act_repair_last_yr = (asmly4 + asmly5)
act_s_and_m_other_last_yr = (asmly1 + asmly2 + asmly3)
act_total_s_and_m_last_yr = (asmly6) !    wks act_contin_this_yr, b54..b60,\vpp\wiis !    wks act_contin_last_yr, n54..n60,\vpp\wiis

wks acontint1,b54,\vpp\wiis
wks acontint2,b55,\vpp\wiis
wks acontint3,b56,\vpp\wiis
wks acontint4,b57,\vpp\wiis
wks acontint5,b58,\vpp\wiis
wks acontint6,b59,\vpp\wiis
wks acontint7,b60,\vpp\wiis
wks acontinl1,n54,\vpp\wiis
wks acontinl2,n55,\vpp\wiis
```

```
wks acontinl3,n56,\vpp\wiis
wks acontinl4,n57,\vpp\wiis
wks acontinl5,n58,\vpp\wiis
wks acontinl6,n59,\vpp\wiis
wks acontinl7,n60,\vpp\wiis

act_elect_this_yr = (acontint1)
act_w_and_s_this_yr = (acontint2)
act_insure_this_yr = (acontint3 + acontint6)
act_agency_this_yr = (acontint4)
act_comp_perp_this_yr = (acontint5)
act_total_contin_this_yr = (acontint7)
act_elect_last_yr = (acontinl1)
act_w_and_s_last_yr = (acontinl2)
act_insure_last_yr = (acontinl3 + acontinl6)
act_agency_last_yr = (acontinl4)
act_comp_perp_last_yr = (acontinl5)
act_total_contin_last_yr = (acontinl7)
wks act_equip_this_yr, b61,\vpp\wiis
wks act_equip_last_yr, n61,\vpp\wiis
wks act_uniforms_this_yr, b13,\vpp\wiis
wks act_uniforms_last_yr, n13,\vpp\wiis
exp_equip = ((act_equip_last_yr / bud_equip_last_yr) * bud_equip_this_yr)
exp_fringes = ((act_fringes_last_yr / bud_fringes_last_yr) * bud_fringes_this_yr)
exp_salaries = ((act_salaries_last_yr / bud_salaries_last_yr) * bud_salaries_this_yr)
exp_wages = ((act_wages_last_yr / bud_wages_last_yr) * bud_wages_this_yr)
exp_total_personal = ((act_total_personal_last_yr / bud_total_personal_last_yr) * bud_total_personal_this_yr)
exp_tele = ((act_tele_last_yr / bud_tele_last_yr) * bud_tele_this_yr)
exp_R_and_M = ((act_R_and_M_last_yr / bud_R_and_M_last_yr) * bud_R_and_M_this_yr)
exp_travel = ((act_travel_last_yr / bud_travel_last_yr) * bud_travel_this_yr)
exp_contract_other = ((act_contract_other_last_yr / bud_contract_other_last_yr) * bud_contract_other_this_yr)
exp_total_contract = ((act_total_contract_last_yr / bud_total_contract_last_yr) * bud_total_contract_this_yr)
exp_repair = ((act_repair_last_yr / bud_repair_last_yr) * bud_repair_this_yr)
exp_s_and_m_other = ((act_s_and_m_other_last_yr / bud_s_and_m_other_last_yr) * bud_s_and_m_other_this_yr)
exp_total_s_and_m = ((act_total_s_and_m_last_yr / bud_total_s_and_m_last_yr) * bud_total_s_and_m_this_yr)
exp_elect = ((act_elect_last_yr / bud_elect_last_yr) * bud_elect_this_yr)
exp_w_and_s = ((act_w_and_s_last_yr / bud_w_and_s_last_yr) * bud_w_and_s_this_yr)
exp_agency = ((act_agency_last_yr / bud_agency_last_yr) * bud_agency_this_yr)
exp_other_contin = ((act_comp_perp_last_yr / bud_contin_other_last_yr) * bud_contin_other_this_yr)
exp_insure = ((act_insure_last_yr / bud_insure_last_yr) * bud_insure_this_yr)
exp_total_contin = ((act_total_contin_last_yr / bud_total_contin_last_yr) * bud_total_contin_this_yr)
exp_uniforms = ((act_uniforms_last_yr / bud_uniforms_last_yr) * bud_uniforms_this_yr)
lb_fringes = (exp_fringes * (1 - (fringes_ll/100)))
ub_fringes = (exp_fringes * (1 + (fringes_ul/100)))
lb_salaries = (exp_salaries * (1 - (salaries_ll/100)))
ub_salaries = (exp_salaries * (1 + (salaries_ul/100)))
lb_wages = (exp_wages * (1 - (wages_ll/100)))
ub_wages = (exp_wages * (1 + (wages_ul/100)))
lb_total_personal = (exp_total_personal * (1 - (total_personal_ll/100)))
ub_total_personal = (exp_total_personal * (1 + (total_personal_ul/100)))
lb_tele = (exp_tele * (1 - (tele_ll/100)))
ub_tele = (exp_tele * (1 + (tele_ul/100)))
lb_R_and_M = (exp_R_and_M * (1 - (R_and_M_ll/100)))
ub_R_and_M = (exp_R_and_M * (1 + (R_and_M_ul/100)))
lb_travel = (exp_travel * (1 - (travel_ll/100)))
ub_travel = (exp_travel * (1 + (travel_ul/100)))
lb_other_contract = (exp_contract_other * (1 - (other_contract_ll/100)))
ub_other_contract = (exp_contract_other * (1 + (other_contract_ul/100)))
lb_total_contract = (exp_total_contract * (1 - (total_contract_ll/100)))
ub_total_contract = (exp_total_contract * (1 + (total_contract_ul/100)))
lb_repair = (exp_repair * (1 - (repair_ll/100)))
ub_repair = (exp_repair * (1 + (repair_ul/100)))
lb_other_s_and_m = (exp_s_and_m_other * (1 - (other_s_and_m_ll/100)))
ub_other_s_and_m = (exp_s_and_m_other * (1 + (other_s_and_m_ul/100)))
lb_total_s_and_m = (exp_total_s_and_m * (1 - (total_s_and_m_ll/100)))
ub_total_s_and_m = (exp_total_s_and_m * (1 + (total_s_and_m_ul/100)))
lb_equip = (exp_equip * (1 - (equip_ll/100)))
ub_equip = (exp_equip * (1 + (equip_ul/100)))
lb_uniforms = (exp_uniforms * (1 - (uniforms_ll/100)))
ub_uniforms = (exp_uniforms * (1 + (uniforms_ul/100)))
lb_elect = (exp_elect * (1 - (elect_ll/100)))
ub_elect = (exp_elect * (1 + (elect_ul/100)))
lb_w_and_s = (exp_w_and_s * (1 - (w_and_s_ll/100)))
ub_w_and_s = (exp_w_and_s * (1 + (w_and_s_ul/100)))
lb_insure = (exp_insure * (1 - (insure_ll/100)))
ub_insure = (exp_insure * (1 + (insure_ul/100)))
lb_agency = (exp_agency * (1 - (agency_ll/100)))
lb_other_contin = (exp_other_contin * (1 - (other_contin_ll/100)))
ub_agency = (exp_agency * (1 + (agency_ul/100)))
ub_other_contin = (exp_other_contin * (1 + (other_contin_ul/100)))
```

```
    lb_total_contin = (exp_total_contin * (1 - (total_contin_ll/100)))
    ub_total_contin = (exp_total_contin * (1 + (total_contin_ul/100)))
    cost_expectations = found;


Rule current_public_lt_lb If x1 < (lb[1]) Then public_rev_to_display = under
    find public_display;

Rule current_public_gt_ub If x1 > (ub[1]) Then public_rev_to_display = over
    find public_display;

Rule current_public_w_in_bounds If x1 > = (lb[1]) and
  x1 < = (ub[1]) Then public_rev_to_display = within
    within_budget = public;


Rule display_public_under If public_rev_to_display = under Then percent = (((ex[1] - x1) / ex[1]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    color = 15
    public_display = done;

Rule display_public_over If public_rev_to_display = over Then percent = (((x1 - ex[1]) / ex[1]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
    color = 15
    public_display = done;

Rule current_s_f_s_lt_lb If x2 < (lb[2]) Then s_f_s_rev_to_display = under
    find s_f_s_display;

Rule current_s_f_s_gt_ub If x2 > (ub[2]) Then s_f_s_rev_to_display = over
    find s_f_s_display;

Rule current_s_f_s_w_in_bounds If x2 > = (lb[2]) and
  x2 < = (ub[2]) Then s_f_s_rev_to_display = within
    within_budget = stu_fac_staff;

Rule display_s_f_s_under If s_f_s_rev_to_display = under Then percent = (((ex[2] - x2) / ex[2]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% less than expected. ¬"
    display " "
    color = 15
    s_f_s_display = done;

Rule display_s_f_s_over If s_f_s_rev_to_display = over Then percent = (((x2 - ex[2]) / ex[2]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% more than expected. ¬"
    display " "
    color = 15
    s_f_s_display = done;

Rule current_interdept_lt_lb If x3 < (lb[3]) Then interdept_rev_to_display = under
    find interdept_display;

Rule current_interdept_gt_ub If x3 > (ub[3]) Then interdept_rev_to_display = over
    find interdept_display;

Rule current_interdept_w_in_bounds If x3 > = (lb[3]) and
  x3 < = (ub[3]) Then interdept_rev_to_display = within
    within_budget = interdepartmental;

Rule display_public_under If interdept_rev_to_display = under Then percent = (((ex[3] - x3) / ex[3]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from other departments so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    color = 15
    interdept_display = done;
```

```
Rule interdept_public_over If interdept_rev_to_display = over Then percent = (((x3 - ex[3]) / ex[3]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from other departments so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    color = 15
    interdept_display = done;

Rule music_public_lt_lb If x4 < (lb[4]) Then music_rev_to_display = under
    find music_display;

Rule current_music_gt_ub If x4 > (ub[4]) Then music_rev_to_display = over
    find music_display;

Rule current_music_w_in_bounds If x4 > = (lb[4]) and
  x4 < = (ub[4]) Then music_rev_to_display = within
    within_budget = music;

Rule display_music_under If music_rev_to_display = under Then percent = (((ex[4] - x4) / ex[4]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is (percent)% less than expected.¬"
    display " "
    color = 15
    music_display = done;

Rule display_music_over If music_rev_to_display = over Then percent = (((x4 - ex[4]) / ex[4]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    color = 15
    music_display = done;

Rule current_state_lt_lb If x5 < (lb[5]) Then state_rev_to_display = under
    find state_display;

Rule current_state_gt_ub If x5 > (ub[5]) Then state_rev_to_display = over
    find state_display;

Rule current_state_w_in_bounds If x5 > = (lb[5]) and
  x5 < = (ub[5]) Then state_rev_to_display = within
    within_budget = state;

Rule display_state_under If state_rev_to_display = under Then percent = (((ex[5] - x5) / ex[5]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from state related activities so far"
    display "this year is (percent)% less than expected.¬"
    display " "
    color = 15
    state_display = done;

Rule display_state_over If state_rev_to_display = over Then percent = (((x5 - ex[5]) / ex[5]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from state related activities so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    color = 15
    state_display = done;

Rule current_mil_lt_lb If mil_rev_this_yr < (lb_mil) Then mil_rev_to_display = under
    find mil_display;

Rule current_mil_gt_ub If mil_rev_this_yr > (ub_mil) Then mil_rev_to_display = over
    find mil_display;

Rule current_mil_w_in_bounds If mil_rev_this_yr > = (lb_mil) and
  mil_rev_this_yr < = (ub_mil) Then mil_rev_to_display = within
    within_budget = the_corps;

Rule display_mil_under If mil_rev_to_display = under Then percent = (((mil_rev_exp - mil_rev_this_yr) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 12
    display " "
```

```
    display "The revenue collected from the corps so far"
    display "this year is {percent}% less than expected.¬"
    display " "
    color = 15
    mil_display = done;

Rule display_mil_over If mil_rev_to_display = over Then percent = (((mil_rev_this_yr - mil_rev_exp) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 10
    display " "
    display "The revenue collected from the corps so far"
    display "this year is {percent}% more than expected.¬"
    display " "
    color = 15
    mil_display = done;

Rule none_w_in_budget If within_budget = unknown Then within_rev_to_display = found;

Rule display_those_w_in_budget If todo = budget_analysis Then within_rev_to_display = found
    display " "
    color = 14
    display "The following revenue categories are within budget:"
      display "{within_budget}"
    color = 15
    display "   ¬";


!statements block

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis;

ask change_limits:"Would you like to change any of these ranges for the revenue categories?"; choices change_limits: no, yes;

ask change_limits_costs:"Would you like to change any of these ranges for the expense categories?"; choices change_limits_costs: no,yes;

ask which_rev_limits: "Which revenue limits would you like to change?"; choices which_rev_limits: military, public, stu_fac_staff,
interdepartmental,music_dept, state_related;

ask which_cost_limits: "Which expense category limits would you like to change?"; choices which_cost_limits: equipment, uniforms, per-
sonal, contractual, supplies_materials, continuous;

ask military_ll: "Please do not use decimals."; ask military_ul: "Please do not use decimals.";

range military_ll: 1,100; range military_ul: 1,100;

ask s_f_s_ul: ""; ask s_f_s_ll: "";

range s_f_s_ll: 1,100; range s_f_s_ul: 1,100;

ask public_ul: ""; ask public_ll: "";

range public_ll: 1,100; range public_ul: 1,100;

ask interdept_ul: ""; ask interdept_ll: "";

range interdept_ll: 1,100; range interdept_ul: 1,100;

ask music_ul: ""; ask music_ll: "";

range music_ll: 1,100; range music_ul: 1,100;

ask state_ul: ""; ask state_ll: "";

range state_ll: 1,100; range state_ul: 1,100;

ask equip_ll: ""; ask equip_ul: "";

range equip_ll: 1,100; range equip_ul: 1,100;

ask uniforms_ll: ""; ask uniforms_ul: "";

range uniforms_ll: 1,100; range uniforms_ul: 1,100;

ask total_personal_ll: ""; ask total_personal_ul: "";

range total_personal_ll: 1,100; range total_personal_ul: 1,100;

ask total_contract_ll: ""; ask total_contract_ul: "";
```

```
range total_contract_ll: 1,100; range total_contract_ul: 1,100;

ask total_s_and_m_ll: ""; ask total_s_and_m_ul: "";

range total_s_and_m_ll: 1,100; range total_s_and_m_ul: 1,100;

ask total_contin_ll: ""; ask total_contin_ul: "";

range total_contin_ll: 1,100; range total_contin_ul: 1,100;


ask resp_rev_mkt_segments: "input adds up to ${diff}."; choices resp_rev_mkt_segments: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;

ask resp_rev_mkt_segments_l: "input adds up to ${diff}."; choices resp_rev_mkt_segments_l: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;


ask mil_exp_inc_h: "How much is military revenue expected to increase?"; range mil_exp_inc_h: 0,1000000;

ask mil_exp_inc_l: "How much is military revenue expected to decrease?"; range mil_exp_inc_l: 0,1000000;

ask public_exp_inc_h: "How much is public revenue expected to increase?"; range public_exp_inc_h: 0,1000000;

ask s_f_s_exp_inc_h: "How much is student/faculty/staff revenue expected to increase?"; range s_f_s_exp_inc_h: 0,1000000;

ask interdept_exp_inc_h: "How much is interdepartmental revenue expected to increase?"; range interdept_exp_inc_h: 0,1000000;

ask music_exp_inc_h: "How much is music department revenue expected to increase?"; range music_exp_inc_h: 0,1000000;

ask state_exp_inc_h: "How much is state related revenue expected to increase?"; range state_exp_inc_h: 0,1000000;


ask public_exp_inc_l: "How much is public revenue expected to decrease?"; range public_exp_inc_l: 0,1000000;

ask s_f_s_exp_inc_l: "How much is student/faculty/staff revenue expected to decrease?"; range s_f_s_exp_inc_l: 0,1000000;

ask interdept_exp_inc_l: "How much is interdepartmental revenue expected to decrease?"; range interdept_exp_inc_l: 0,1000000;

ask music_exp_inc_l: "How much is music department revenue expected to decrease?"; range music_exp_inc_l: 0,1000000;

ask state_exp_inc_l: "How much is state related revenue expected to decrease?"; range state_exp_inc_l: 0,1000000;


plural:within_budget, over_budget, under_budget, which_rev_limits, resp_rev_mkt_segments, resp_rev_mkt_segments_l; plural:exp_inc, ll, ul,lb,ub,ex,other_rev_last_yr,bud_personal; plural:bud_contract, bud_s_and_m, bud_contin_this_yr,act_personal, act_contract; plural:act_s_and_m, act_contin, which_cost_limits,under_lb_personal; plural:over_ub_personal, w_in_personal, over_ub_contract,under_lb_contract; plural:w_in_contract,over_ub_contin, under_lb_contin, w_in_contin; plural:w_in_s_and_m,over_ub_s_and_m, under_lb_s_and_m;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 todo = ratio_analysis
  find farse ;

!rules block

rule start_ratio_analysis If todo = ratio_analysis Then farse = found
    wks date,b1,\vpp\wiabis
    display "The most recent data is for the year ending June {date}."
    find continue_r
    display " "
    display "The processing in progress requires a bit of time.  Please be"
    display "patient.  You will be instructed when to continue."
    find update_r;

Rule continue_on_dont_update If continue_r = yes Then update_r = found !    wks ca,b13..d16,\vpp\wica
    wks ca_weight_this,b13,\vpp\wica
    wks ca_weight_last,c13,\vpp\wica
    wks ca_weight_2,d13,\vpp\wica
    wks ca_ave_this,b14,\vpp\wica
    wks ca_ave_last,c14,\vpp\wica
    wks ca_ave_2,d14,\vpp\wica
    wks corps_comp_this,b15,\vpp\wica
    wks corps_comp_last,c15,\vpp\wica
    wks corps_comp_2,d15,\vpp\wica
    wks t_num_cadets_this,b16,\vpp\wica
    wks t_num_cadets_last,c16,\vpp\wica
    wks t_num_cadets_2,d16,\vpp\wica
    reset ca !    wks bs_this,b1..b14,\vpp\wiabbs
    wks x1,b1,\vpp\wiabbs
    wks x2,b2,\vpp\wiabbs
    wks x3,b3,\vpp\wiabbs
    wks x4,b4,\vpp\wiabbs
    wks x5,b5,\vpp\wiabbs
    wks x6,b6,\vpp\wiabbs
    wks x7,b7,\vpp\wiabbs
    wks x8,b8,\vpp\wiabbs
    wks x9,b9,\vpp\wiabbs
    wks x10,b10,\vpp\wiabbs
    wks x11,b11,\vpp\wiabbs
    wks x12,b12,\vpp\wiabbs
    wks x13,b13,\vpp\wiabbs
    wks x14,b14,\vpp\wiabbs
    bs_this[1] = (x1)
    bs_this[2] = (x2)
    bs_this[3] = (x3)
    bs_this[4] = (x4)
    bs_this[5] = (x5)
    bs_this[6] = (x6)
    bs_this[7] = (x7)
    bs_this[8] = (x8)
    bs_this[9] = (x9)
    bs_this[10] = (x10)
    bs_this[11] = (x11)
    bs_this[12] = (x12)
    bs_this[13] = (x13)
    bs_this[14] = (x14) !    wks bs_last,c1..c14,\vpp\wiabbs
    wks x1,c1,\vpp\wiabbs
    wks x2,c2,\vpp\wiabbs
    wks x3,c3,\vpp\wiabbs
    wks x4,c4,\vpp\wiabbs
    wks x5,c5,\vpp\wiabbs
    wks x6,c6,\vpp\wiabbs
    wks x7,c7,\vpp\wiabbs
    wks x8,c8,\vpp\wiabbs
    wks x9,c9,\vpp\wiabbs
    wks x10,c10,\vpp\wiabbs
    wks x11,c11,\vpp\wiabbs
    wks x12,c12,\vpp\wiabbs
    wks x13,c13,\vpp\wiabbs
    wks x14,c14,\vpp\wiabbs
    bs_last[1] = (x1)
    bs_last[2] = (x2)
    bs_last[3] = (x3)
    bs_last[4] = (x4)
    bs_last[5] = (x5)
```

```
bs_last[6] = (x6)
bs_last[7] = (x7)
bs_last[8] = (x8)
bs_last[9] = (x9)
bs_last[10] = (x10)
bs_last[11] = (x11)
bs_last[12] = (x12)
bs_last[13] = (x13)
bs_last[14] = (x14) !    wks bs_2_ago,d1..d14,\vpp\wiabbs
wks x1,d1,\vpp\wiabbs
wks x2,d2,\vpp\wiabbs
wks x3,d3,\vpp\wiabbs
wks x4,d4,\vpp\wiabbs
wks x5,d5,\vpp\wiabbs
wks x6,d6,\vpp\wiabbs
wks x7,d7,\vpp\wiabbs
wks x8,d8,\vpp\wiabbs
wks x9,d9,\vpp\wiabbs
wks x10,d10,\vpp\wiabbs
wks x11,d11,\vpp\wiabbs
wks x12,d12,\vpp\wiabbs
wks x13,d13,\vpp\wiabbs
wks x14,d14,\vpp\wiabbs
bs_2_ago[1] = (x1)
bs_2_ago[2] = (x2)
bs_2_ago[3] = (x3)
bs_2_ago[4] = (x4)
bs_2_ago[5] = (x5)
bs_2_ago[6] = (x6)
bs_2_ago[7] = (x7)
bs_2_ago[8] = (x8)
bs_2_ago[9] = (x9)
bs_2_ago[10] = (x10)
bs_2_ago[11] = (x11)
bs_2_ago[12] = (x12)
bs_2_ago[13] = (x13)
bs_2_ago[14] = (x14)

wks t_assets_3,e9,\vpp\wiabbs
wks inv_3_ago,e7,\vpp\wiabbs

!   wks is_this,b1..b85,\vpp\wiabis !    wks is_last,c1..c85,\vpp\wiabis !    wks is_2_ago,d1..d85,\vpp\wiabis
current_year = (bs_this[1])
last_year = (current_year - 1)
year_2_ago = (current_year - 2)
total_inv = (bs_this[7])
last_yr_inventory = (bs_last[7])
inv_2_ago = (bs_2_ago[7])
new_due_to = (bs_this[12])
last_yr_due_to = (bs_last[12])
due_to_2_ago = (bs_2_ago[12])

wks net_income,b65,\vpp\wiabis
wks net_income_last,c65,\vpp\wiabis
wks net_income_2,d65,\vpp\wiabis
wks total_current_value,b8,\vpp\wiabis
wks last_yr_equip_value,c8,\vpp\wiabis
wks equip_2_ago,d8,\vpp\wiabis
wks gross_profit,b16,\vpp\wiabis
wks gross_profit_last,c16,\vpp\wiabis
wks gross_profit_2,d16,\vpp\wiabis
wks t_mil_rev,b9,\vpp\wiabis
wks mil_rev_last,c9,\vpp\wiabis
wks mil_rev_2,d9,\vpp\wiabis
wks x1,b15,\vpp\wiabis
wks x2,b63,\vpp\wiabis
t_expenses = (x1 + x2)
wks cost_uniforms_this,b15,\vpp\wiabis
wks cost_uniforms_last,c15,\vpp\wiabis
wks cost_uniforms_2,d15,\vpp\wiabis
wks total_oper_exp_last,c64,\vpp\wiabis
wks total_oper_exp_2,d64,\vpp\wiabis
wks t_other_rev,b24,\vpp\wiabis
wks other_rev_last,c24,\vpp\wiabis
wks other_rev_2,d24,\vpp\wiabis
wks t_personal,b36,\vpp\wiabis
wks personal_last,c36,\vpp\wiabis
wks corps_e_to_r_this,b79,\vpp\wiabis
wks public_e_to_r_this,b81,\vpp\wiabis
wks s_f_s_e_to_r_this,b82,\vpp\wiabis
```

```
    wks interdept_e_to_r_this,b83,\vpp\wiabis
    wks music_e_to_r_this,b84,\vpp\wiabis
    wks state_e_to_r_this,b85,\vpp\wiabis
    wks corps_e_to_r_last,c79,\vpp\wiabis
    wks public_e_to_r_last,c81,\vpp\wiabis
    wks s_f_s_e_to_r_last,c82,\vpp\wiabis
    wks interdept_e_to_r_last,c83,\vpp\wiabis
    wks music_e_to_r_last,c84,\vpp\wiabis
    wks state_e_to_r_last,c85,\vpp\wiabis
    wks corps_e_to_r_2,d79,\vpp\wiabis
    wks public_e_to_r_2,d81,\vpp\wiabis
    wks s_f_s_e_to_r_2,d82,\vpp\wiabis
    wks interdept_e_to_r_2,d83,\vpp\wiabis
    wks music_e_to_r_2,d84,\vpp\wiabis
    wks state_e_to_r_2,d85,\vpp\wiabis
    display "
    display "Press any key to see the current ratios. ¬"
    display " "
    find current_ratio_display
    find ROA_display
    find gross_profit_ratio_display
    chain wiratio3;


Rule continue_on_update_first If continue_r = no Then update_r = found
    display "Please be patient as the accrual statements must be calculated and this takes"
    display "a little time.  It also requires a little information which you will be asked"
    display "to supply."
    display "" !     wks mil_rev,aa7..aa12,\vpp\wiis


    wks t_mil_rev,aa12,\vpp\wiis
    wks cgs,aa13,\vpp\wiis !     wks other_rev,aa17..aa22,\vpp\wiis
    wks t_other_rev,aa22,\vpp\wiis
    wks public_rev,aa17,\vpp\wiis
    wks s_f_s_rev,aa18,\vpp\wiis
    wks interdept_rev,aa19,\vpp\wiis
    wks music_rev,aa20,\vpp\wiis
    wks state_rev,aa21,\vpp\wiis

!   wks personal,aa26..aa34,\vpp\wiis
    wks t_personal,aa34,\vpp\wiis !     wks contractual,aa36..aa45,\vpp\wiis
    wks t_contract,aa45,\vpp\wiis !     wks s_and_m,aa47..aa52,\vpp\wiis
    wks t_s_and_m,aa52,\vpp\wiis !     wks continuous,aa54..aa60,\vpp\wiis
    wks t_contin,aa60,\vpp\wiis
    wks equip,aa61,\vpp\wiis !     wks direct_costs,aa66..aa72,\vpp\wiis
    wks d_costs_corps,aa66,\vpp\wiis
    wks d_costs_public,aa68, \vpp\wiis
    wks d_costs_s_f_s,aa69,\vpp\wiis
    wks d_costs_interdept,aa70,\vpp\wiis
    wks d_costs_music,aa71,\vpp\wiis
    wks d_costs_state,aa72,\vpp\wiis
    wks indirect_costs,aa74,\vpp\wiis

!    wks bs_info,b1..b14,\vpp\wiabbs
     wks x1,b1,\vpp\wiabbs
     wks x2,b2,\vpp\wiabbs
     wks x3,b3,\vpp\wiabbs
     wks x4,b4,\vpp\wiabbs
     wks x5,b5,\vpp\wiabbs
     wks x6,b6,\vpp\wiabbs
     wks x7,b7,\vpp\wiabbs
     wks x8,b8,\vpp\wiabbs
     wks x9,b9,\vpp\wiabbs
     wks x10,b10,\vpp\wiabbs
     wks x11,b11,\vpp\wiabbs
     wks x12,b12,\vpp\wiabbs
     wks x13,b13,\vpp\wiabbs
     wks x14,b14,\vpp\wiabbs
     bs_info[1] = (x1)
     bs_info[2] = (x2)
     bs_info[3] = (x3)
     bs_info[4] = (x4)
     bs_info[5] = (x5)
     bs_info[6] = (x6)
     bs_info[7] = (x7)
     bs_info[8] = (x8)
     bs_info[9] = (x9)
     bs_info[10] = (x10)
     bs_info[11] = (x11)
```

```
 bs_info[12] = (x12)
 bs_info[13] = (x13)
 bs_info[14] = (x14)

wks t_assets_3,d9,\vpp\wiabbs
wks inv_3_ago,d7,\vpp\wiabbs
last_yr_inventory = (bs_info[7])
last_yr_equip_value = (bs_info[8])
last_yr_due_to = (bs_info[12])
last_yr_reserves = (bs_info[13])


wks dth_info,d1..d14,\vpp\wiabbs
pwks dth_info,e1..e14,\vpp\wiabbs
reset dth_info
wks cth_info,c1..c14,\vpp\wiabbs
pwks cth_info,d1..d14,\vpp\wiabbs
inv_2_ago = (cth_info[7])
due_to_2_ago = (cth_info[12])
equip_2_ago = (cth_info[8])
reset cth_info
pwks bs_info,c1..c14,\vpp\wiabbs
reset bs_info
wks dth_info,d1..d85,\vpp\wiabis
pwks dth_info,e1..e85,\vpp\wiabis
reset dth_info
wks cth_info,c1..c85,\vpp\wiabis
pwks cth_info,d1..d85,\vpp\wiabis
net_income_2 = (cth_info[65])
gross_profit_2 = (cth_info[16])
mil_rev_2 = (cth_info[9])
cost_uniforms_2 = (cth_info[15])
total_oper_exp_2 = (cth_info[64])
other_rev_2 = (cth_info[24])
corps_e_to_r_2 = (cth_info[79])
public_e_to_r_2 = (cth_info[81])
s_f_s_e_to_r_2 = (cth_info[82])
interdept_e_to_r_2 = (cth_info[83])
music_e_to_r_2 = (cth_info[84])
state_e_to_r_2 = (cth_info[85])
reset cth_info
wks bth_info,b1..b85,\vpp\wiabis
pwks bth_info,c1..c85,\vpp\wiabis
corps_e_to_r_last = (bth_info[79])
public_e_to_r_last = (bth_info[81])
s_f_s_e_to_r_last = (bth_info[82])
interdept_e_to_r_last = (bth_info[83])
music_e_to_r_last = (bth_info[84])
state_e_to_r_last = (bth_info[85])
net_income_last = (bth_info[65])
gross_profit_last = (bth_info[16])
mil_rev_last = (bth_info[9])
cost_uniforms_last = (bth_info[15])
total_oper_exp_last = (bth_info[64])
other_rev_last = (bth_info[24])
personal_last = (bth_info[36])
reset bth_info
wks cth,c1..c16,\vpp\wica
pwks cth,d1..d16,\vpp\wica
wks bth,b1..b16,\vpp\wica
pwks bth,c1..c16,\vpp\wica
corps_e_to_r_this = (d_costs_corps / t_mil_rev)
public_e_to_r_this = (d_costs_public / public_rev)
s_f_s_e_to_r_this = (d_costs_s_f_s / s_f_s_rev)
interdept_e_to_r_this = (d_costs_interdept / interdept_rev)
music_e_to_r_this = (d_costs_music / music_rev)
state_e_to_r_this = (d_costs_state / state_rev)
ca_weight_last = (bth[13])
ca_weight_2 = (cth[13])
ca_ave_last = (bth[14])
ca_ave_2 = (cth[14])
corps_comp_last = (bth[15])
corps_comp_2 = (cth[15])
t_num_cadets_last = (bth[16])
t_num_cadets_2 = (cth[16])
current_year = (date + 1)
last_year = (current_year - 1)
year_2_ago = (current_year - 2)
pwks current_year,b1,\vpp\wiabis
pwks cuent_year,b1,\vpp\wiabbs
```

```
    display "To do this analysis, the value of ending inventory is needed for June {current_year}."
    find inventory_ques
    find inventory_value
    find new_equip_value
    find ca_update
    find update_abis
    find new_reserves;

Rule inventory_value_found If inventory_ques = yes Then inventory_value = found
    find issued_inv
    find unissued_inv !    put_inventory[1] = (issued_inv) !    put_inventory[2] = (unissued_inv)
    total_inv = (issued_inv + unissued_inv)
    pwks issued_inv,b5,\vpp\wiabbs
    pwks unissued_inv,b6,\vpp\wiabbs !    pwks put_inventory, b5..b6,\vpp\wiabbs
    inv_for_is = (issued_inv + unissued_inv)
    pwks total_inv,b14,\vpp\wiabis;


Rule inventory_value_found If inventory_ques = no Then inventory_value = found
    find total_inv
    pwks total_inv,b7,\vpp\wiabbs
    pwks total_inv,b14,\vpp\wiabis;

Rule equip_purchases_no If equip = 0 Then new_equip_value = found;

Rule equip_purchases_yes If equip > 0 Then new_equip_value = found
    find the_display
    find equip_number
    z = (equip_number)
    whiletrue z > 0 then
      find equip_name
      new_equip[1] = (equip_name)
      find cost
      find purchase_month
      find purchase_year
      find useful_life
      new_equip[2] = (cost)
      new_equip[3] = (purchase_month)
      new_equip[4] = (purchase_year)
      new_equip[5] = (useful_life)
      find to_put
      z = (z - 1)
!     display "equip_number is now {z} ¬"
      reset equip_name
      reset cost
      reset purchase_month
      reset purchase_year
      reset useful_life
      reset to_put
      reset new_equip
    end !    display "about to find total_equip_value ¬"
    find total_equip_value; !    display "have found total_equip_value ¬";

Rule find_the_display If todo = ratio_analysis Then the_display = found
    display "Equipment purchases during the year have totalled ${equip)."
    display " "
    display "After each prompt, please give the applicable information for each piece of"
    display "equipment separately.";

Rule find_current_values If todo = ratio_analysis Then total_equip_value = found
    wks vbl,a4..e25,\vpp\wiequ

    y = 1
    x = (vbl[y])
    total_current_value = 0
    total_depreciation = 0

! this next loop calculates the depreciation and current value for each ! piece of equipment, and assigns those with positive values (i.e., those
! which aren't paid off) to an array to later be summed.
    whiletrue vbl[y] < > unknown then
      reset if_neg
      reset year_to_use
      y2 = (y + 1)
      y3 = (y + 2)
      y4 = (y + 3)
      y5 = (y + 4)
      dep_cost = (vbl[y2])
      month = (vbl[y3])
      yr = (vbl[y4])
      life = (vbl[y5])
```

```
    find year_to_use
    depr = (dep_cost / life)
    current_value = (dep_cost - (depr * (current_year + 1 - year_to_use)))
    find if_neg
    y = (y + 5)
    x = (vbl[y])
  end
  pwks total_current_value,b8,\vpp\wiabbs
  pwks total_depreciation,b63,\vpp\wiabis;

Rule purchase_year_of_equip If purchase_month < = 6 Then purchase_year = (current_year);

Rule purchase_year_of_equip If purchase_month > 6 Then purchase_year = (date);

Rule look_for_empty_equip_rows If todo = ratio_analysis Then wks empty?,a11..a25,\vpp\wiequi
  to_put = found
  find put_it
  reset put_it;

Rule put_equip_in_empty_row If empty?[1] = unknown Then pwks new_equip,a11..e11,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[2] = unknown Then pwks new_equip,a12..e12,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[3] = unknown Then pwks new_equip,a13..e13,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[4] = unknown Then pwks new_equip,a14..e14,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[5] = unknown Then pwks new_equip,a15..e15,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[6] = unknown Then pwks new_equip,a16..e16,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[7] = unknown Then pwks new_equip,a17..e17,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[8] = unknown Then pwks new_equip,a18..e18,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[9] = unknown Then pwks new_equip,a19..e19,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[10] = unknown Then pwks new_equip,a20..e20,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[11] = unknown Then pwks new_equip,a21..e21,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[12] = unknown Then pwks new_equip,a22..e22,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[13] = unknown Then pwks new_equip,a23..e23,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[14] = unknown Then pwks new_equip,a24..e24,\vpp\wiequi
  put_it = found;

Rule put_equip_in_empty_row If empty?[15] = unknown Then pwks new_equip,a25..e25,\vpp\wiequi
  put_it = found;

Rule year_to_use If month < = 6 Then year_to_use = (yr);

Rule year_to_use If month > 6 Then year_to_use = (yr + 1);

Rule if_neg If current_value < = 0 Then if_neg = found;

 Rule if_neg If current_value > 0 Then total_current_value = (total_current_value + current_value)
  total_depreciation = (total_depreciation + depr)
  if_neg = found;

Rule ca_update If todo = ratio_analysis Then ca_update = found
  display "Now a little information regarding the number of members in the corps and" display "commutation allowances is needed.
Please answer the questions after the prompts." display " "
  display "How many freshmen were enrolled in the corps of cadets during the year ending"
  find num_fresh
  find num_soph
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```
    find num_jun
    find num_sen
    corps_num[1] = (num_fresh)
    corps_num[2] = (num_soph)
    corps_num[3] = (num_jun)
    corps_num[4] = (num_sen)
    display "How much was the commutation allowance for freshmen during the year ending"
    find ca_fresh
    find ca_soph
    find ca_jun
    find ca_sen
    corps_ca[1] = (ca_fresh)
    corps_ca[2] = (ca_soph)
    corps_ca[3] = (ca_jun)
    corps_ca[4] = (ca_sen)
    corps_comp_this1 = ((num_fresh*1) + (num_soph*2) + (num_jun*3) + (num_sen * 4))
    t_num_cadets_this = (num_fresh + num_soph + num_jun + num_sen)
    corps_comp_this = (corps_comp_this1 / t_num_cadets_this)
    pwks current_year,b1,\vpp\wica
    pwks corps_num,b8..b11,\vpp\wica
    pwks corps_ca,b3..b6,\vpp\wica
    ca_weight_this1 = ((num_fresh * ca_fresh) + (num_soph * ca_soph) + (num_jun * ca_jun) + (num_sen * ca_sen))
    ca_weight_this = (ca_weight_this1 / (num_fresh + num_soph + num_jun + num_sen))
    ca_ave_this = ((ca_fresh + ca_soph + ca_jun + ca_sen) / 4);

Rule update_abis If todo = ratio_analysis Then update_abis = found

    pwks t_mil_rev,b9,\vpp\wiabis
    pwks last_yr_inventory,b12,\vpp\wiabis
    pwks cgs,b13,\vpp\wiabis
    pwks inv_for_is,b14,\vpp\wiabis
    pwks t_other_rev,b24,\vpp\wiabis
    pwks t_personal,b36,\vpp\wiabis
    pwks t_contract,b47,\vpp\wiabis
    pwks t_s_and_m,b54,\vpp\wiabis
    pwks t_contin,b62,\vpp\wiabis !     pwks direct_costs,b68..b74,\vpp\wiabis
    pwks d_costs_corps,b68,\vpp\wiis
    pwks d_costs_public,b70, \vpp\wiis
    pwks d_costs_s_f_s,b71,\vpp\wiis
    pwks d_costs_interdept,b72,\vpp\wiis
    pwks d_costs_music,b73,\vpp\wiis
    pwks d_costs_state,b74,\vpp\wiis
    pwks indirect_costs,b76,\vpp\wiabis;

Rule find_reserves If todo = ratio_analysis Then net_income_1 = (t_mil_rev - last_yr_inventory - cgs + total_inv + t_other_rev)
    net_income = (net_income_1 - t_personal - t_contract - t_s_and_m - t_contin - total_depreciation)
    gross_profit = (t_mil_rev - last_yr_inventory - cgs + total_inv)
    t_expenses1 = (last_yr_inventory + cgs - total_inv + t_personal + t_contract)
    t_expenses = (t_expenses1 + t_s_and_m + t_contin + total_depreciation)
    cost_uniforms_this = (last_yr_inventory + cgs - total_inv)
    wks equip,aa61,\vpp\wiis
    new_reserves = (last_yr_reserves + net_income)
    new_due_to = (total_inv + total_current_value - new_reserves)
    pwks new_reserves,b13,\vpp\wiabbs
    find current_ratio_display
    find ROA_display
    find gross_profit_ratio_display
    chain wiratio3;

Rule calculate_current_ratios If todo = ratio_analysis Then current_ratio = (total_inv / new_due_to)
    current_ratio_last = (last_yr_inventory / last_yr_due_to)
    current_ratio_2 = (inv_2_ago / due_to_2_ago);

Rule calculate_ROAs If todo = ratio_analysis Then ROA = (net_income / ((total_inv + total_current_value + last_yr_inventory +
last_yr_equip_value)/2))
    ROA_last = (net_income_last / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago)/2))
    ROA_2 = (net_income_2 / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_gross_profit_ratios If todo = ratio_analysis Then gross_profit_ratio = (gross_profit / t_mil_rev)
    gross_profit_ratio_last = (gross_profit_last / mil_rev_last)
    gross_profit_ratio_2 = (gross_profit_2 / mil_rev_2);

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios If todo = ratio_analysis Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
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    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2))
    t_asset_turn_display = found;

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2))
    inv_turn_display = found;

Rule display_for_current_ratio If current_ratio < > unknown Then cls
    color = 11
    locate 2,30
    display "CURRENT RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,45
    format current_ratio, 5.3
    display "{current_ratio}"
    locate 8,35
    format current_ratio_last, 5.3
    display "{current_ratio_last}"
    locate 8,25
    format current_ratio_2, 5.3
    display "{current_ratio_2}"
    current_ratio_display = found
    find current_ratio_analysis;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio is a measure of the organization's ability to" display "meet its short_term financial obligations as they fall due. A ratio " display "of 1.25 or better is considered 'acceptable' for the Tailor Shop. " locate 15,6 display "As can be seen above, the current situation is not good. The" display "ratio is below its acceptable level for the most recent year, and also," display "is has been declining for the past several years. This means that" display "other auxiliary enterprises are financing an increasing proportion of" display "the Tailor Shop's operating expenses. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to be satisfactory. However," display "it is declining over time which indicates that the other auxiliary " display "enterprises are financing an increasing proportion of the Tailor " display "Shop's operating expenses. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > = 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the current situation looks very good. Not only" display "does the current ratio exceed the acceptable level, but is is also " display "increasing over time. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present situation appears promising. " display "Although the current ratio has not yet reached its acceptable level," display "it is moving in the right direction. Therefore, there is no need" display "for concern. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "The figures above show cause for concern. Not only is the current" display "ratio below its acceptable level, but it has also decreased over the" display "past year. This decrease however, does not exhibit a trend over time. ¬"
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
```

```
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to be satisfactory. There has" display "been a decline in the ratio over the past year, however, there appears" display "to be no trend in this direction. ¬ "
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio falls below the " display "predefined acceptable level, which is generally considered to be" display "unsatisfactory. However, it has improved over the past year. " display "Therefore, the situation should be closely monitored to make " display "certain that it continues to move in the right direction. ¬ "
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial obligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate 15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to be satisfactory. " display "Furthermore, it has increased over the past year leaving little " display "cause for concern. ¬ "
    current_ratio_analysis = found;

Rule ROA_display IF ROA < > unknown Then ROA_display = found
    cls
    color = 11
    locate 2,27
    display "RETURN ON ASSETS"
    locate 5,6 display "The Return on Assets ratio (ROA) is designed to measure how much" display "income is produced for each dollar of total assets held. In a profit" display "oriented organization, a high ROA is desirable. Since the primary" display "responsibility of the Tailor Shop is to provide a service, rather than" display "produce a profit, it does not necessarily strive for a high ROA. Rather," display "it should target a specific ROA. If net income is to be used only to" display "replace old equipment, than an ROA of around .004 is desirable. On the" display "other hand, if net income is also used to repay the amount borrowed from" display "other auxiliaries (say over a 10 year period), then an ROA of around .08" display "is desirable. In any case, the ROA should not be negative as a negative" display "ROA indicates a net loss on the operations."
    locate 18,20 display "Press any key to see the ROA analysis ¬ "
    find rest_of_display_ROA;

Rule display_for_ROA If ROA < > unknown Then rest_of_display_ROA = found
    cls
    color = 11
    locate 2,29
    display "RETURN ON ASSETS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format ROA, 5.3
    display "{ROA}"
    locate 8,34
    format ROA_last, 5.3
    display "{ROA_last}"
    locate 8,24
    format ROA_2, 5.3
    display "{ROA_2}"
    find ROA_analysis;

Rule analyze_ROA_0_a If ROA > = (ROA_last * 1.02) and
  ROA < = (ROA_last * .98) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The ROA" display "is negative and doesn't apear to be improving. Thus, the Tailor Shop is" display "operating in the red and has to depend on other auxiliary enterprises to" display "help pay its operating expenses. ¬ ";

Rule analyze_ROA_0_b If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.004 and
  ROA > = 0 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The small" display "size of the ROA indicates that although income is positive, it is not large" display "enough to cover expected demand for equipment replacements. Furthermore," display "the situation does not appear to be improving. ¬ ";
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```
Rule analyze_ROA_0_c If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.09 and
  ROA > = .004 Then ROA_analysis = found
   locate 11,6
   color = 10 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level. This indicates
that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display "being de-
creased. ¬";

Rule analyze_ROA_0_d If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA > = .09 Then ROA_analysis = found
   locate 11,6
   color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only
high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display
"the amount owed to other auxiliary enterprises. It should be noted however," display "that it is possible that the the Tailor Shop will be
accused of gouging " display "its customers since the ROA is so high. ¬";

Rule analyze_ROA_1_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by (mil_dec)% over the past
year. Meanwhile, costs incurred for" display "salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by (personal_inc)% over the past year. ¬";

Rule analyze_ROA_1_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by (mil_dec)% over the past
year. ¬";

Rule analyze_ROA_1_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Costs" display
"incurred for salaries and fringe benefits (which generally make up around" display "60 % of total costs) have increased by
(personal_inc)% over the past year. ¬";

Rule analyze_ROA_2_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display
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"(mil_dec)% over the past year. Meanwhile, costs incurred for salaries and" display "fringe benefits (which generally make up around 60% of total costs) have" display "increased by (personal_inc)% over the past year. ¬ ";

```
Rule analyze_ROA_2_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display
"(mil_dec)% over the past year. ¬ ";

Rule analyze_ROA_2_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the ROA positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by (personal_inc)% over the past year. ¬ ";

Rule analyze_ROA_3_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically" display "constitutes 75% of total re-
venue) has decreased by (mil_dec)% over the past" display "year. Meanwhile, costs incurred for salaries and fringe benefits (which" dis-
play "generally make up around 60% of total costs) have increased by (personal_inc)%" display " over the past year. ¬ ";

Rule analyze_ROA_3_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically " display "constitures 75% of total re-
venue) has decreased by (mil_dec)% over ths past year. ¬ ";

Rule analyze_ROA_3_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
```

```
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. Costs incurred for salaries and fringe benefits " display "(which generally make up
around 60% of total costs) have increased by (personal_inc)%" display "over the past year. ¬ ";

Rule analyze_ROA_4 If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only
high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display
"the amount owed to other auxiliary enterprises. There are a couple of things" display "to note here however. First, the ROA is so high
that the Tailor Shop might" display "be accused of gouging its customers. And second, the ROA is decreasing" display "over time . This
may signal that income is decreasing, or it may signal" display "a concerted effort on the part of management to bring down prices to an"
display "'acceptable' level. ¬ ";

Rule analyze_ROA_5 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that ex-
penses exceed income. This means that the" display "Tailor Shop has to depend on the other auxiliaries to cover its operating" display
"expenses. On a positive note, the ROA is increasing over time, indicating " display "that improvements are being made. ¬ ";

Rule analyze_ROA_6 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = 0 and
  ROA <.004 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it is improving over time. At this point, it" display "is not earning enough to cover all of expected demand for equipment" display "re-
placement. However, if the current trend continues, they should be " display "able to do so in the future. ¬ ";

Rule analyze_ROA_7 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .004 and
  ROA <.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving
over time, but it falls in a very good region." display "An ROA in this region indicates that net income is sufficient to cover" display "ex-
pected demand for equipment replacement, and also to pay back some of the" display "debt owed to the other auxiliary enterprises. ¬ ";

Rule analyze_ROA_8 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving
over time, but it indicates that a substantial " display "dent can be made in its debt to other auxiliary enterprices. On the" display "negative
side, an ROA of this magnitude indicates that revenues greatly" display "exceed expenses which could be considered price gouging. ¬ ";

Rule analyze_ROA_9_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
has decreased over the past year. A glance at the" display "income statements will give a good indication of why this is happening." display
"Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by (mil_dec)%. Meanwhile,
costs incurred for salaries" display "and fringe benefits (which generally make up around 60% of total costs) have" display "increased by
(personal_inc)%. ¬ ";

Rule analyze_ROA_9_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
```

```
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by (mil_dec)%. ¬";

Rule analyze_ROA_9_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of total costs) have increased by
(personal_inc)% over the past" display "year. ¬";

Rule analyze_ROA_10_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%. Meanwhile, costs incurred for salaries and" display "fringe benefits (whidh generally make up around 60% of total costs)
have" display "increased by (personal_inc)% over the past year. ¬";

Rule analyze_ROA_10_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%. ¬";

Rule analyze_ROA_10_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Costs " display "incurred for salaries and fringe benefits (which generally make up around 60%" display "ot total costs) have
increased by (personal_inc)% over the past year. ¬";

Rule analyze_ROA_11_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
```

```
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically constitues 75% of total
revenue) has decreased by (mil_dec)% over" display "the past year. Meanwhile, costs incurred for salaries and fringe benefits" display
"(which generally make up around 60% of total costs) have increased by (personal_inc)%" display "over the past year.¬ ";

Rule analyze_ROA_11_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically consititues 75% of
total revenue) has decreased by (mil_dec)% over" display "the past year.¬ ";

Rule analyze_ROA_11_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. Costs incurred for salaries and fringe" display "benefits (which generally
make up around 60% of total costs), have increased" display "by (personal_inc)% over the past year.¬ ";

Rule analyze_ROA_12 If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The ROA is very high, which in-
dicates that a substantial dent can be made" display "in its debt to other auxiliary enterprises. Notice that the ROA has" display "decreased
over the past year. This may indicate a decline in income, or" display "it may indicate a concerted effort on the part of management to
bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into.¬ ";

Rule analyze_ROA_13 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that net
income is also negative. This means that" display "the Tailor Shop is depending on the other auxiliaries to cover some of" display "its op-
erating expenses. On a positive note, the ROA has improved over the" display "past year indicating that improvements are being made.¬ ";

Rule analyze_ROA_14 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0 and
  ROA <.004 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it has improved over the past year. At this" display "point, it is not earning enough to cover all of expected demand for equipment" display
"replacement. However, if the current trend continues, they should be able to" display "do so in the future.¬ ";

Rule analyze_ROA_15 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .004 and
  ROA <.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The ROA falls within a very good
region indicating that net income is" display "sufficient to cover expected demand and also pay back some of the debt owed" display "to
other auxiliary enterprises. It should be noted however, that the ROA" display "has fallen over the past year. This indicates decreasing
earnings, and should" display "be checked into.¬ ";

Rule analyze_ROA_16 If ROA > (ROA_last) and
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  ROA_last < (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the ROA improved
over the past year, but it also indicates that" display "a substantial dent can be made in their debt to other auxiliary enterprices." display
"On the negative side, an ROA of this magnitude indicates that revenues" display "greatly exceed expenses which could be considered price
gouging. ¬ ";

Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule gross_profit_display IF gross_profit_ratio < > unknown Then cls
    color = 11
    locate 4,17
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 7,6 display "The Gross Profit Ratio was designed to measure the percentage of" display "each sales dollar remaining after the
cost of goods sold (cost of uniforms" display "issued) has been covered. In other words, this ratio indicates how much of" display "each
sales dollar is available to cover operating expenses. If operating" display "expenses are not being met, prices can be raised, or expenses
lowered, and" display "an increased gross profit ratio will result. For the Tailor Shop, this is" display "a good figure to watch to determine
what is happening with commutation" display "allowances, inventory, and 'bags' issued to cadets. ¬ " cls locate 3,1 display "In the Tailor
Shop's situation, a change in the gross profit could" display "indicate;" locate 6,6 display "- a change in commutation allowances," locate
7,6 display "- a change in the 'mix' of cadets (i.e., freshmen vs." locate 8,8 display "sophomores vs. juniors vs. seniors)," locate 9,6 display
"- a change in the cost of uniforms," locate 10,6 display "- a change in the number of uniform items per 'bag' or" locate 11,8 display "in
their quality, or" locate 12,6 display "- an undervaluation or overvaluation in inventory." display " " display "With the above in mind, our
'expert' will perform its analysis. However," display "determining changes in the cost of individual uniform items or in their" display
"quality is beyond the scope of this system. Therefore, if one of these" display "has changed significantly, it should be taken into consid-
eration while " display "viewing the following analysis."
    locate 20,8 display "Press any key to see the Gross Profit Ratio analysis ¬"
    gross_profit_ratio_display = found
    find rest_of_display_gross_profit;

Rule display_for_GPR If gross_profit_ratio < > unknown Then rest_of_display_gross_profit = found
    cls
    color = 11
    locate 2,18
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format gross_profit_ratio, 5.3
    display "{gross_profit_ratio}"
    locate 8,34
    format gross_profit_ratio_last, 5.3
    display "{gross_profit_ratio_last}"
    locate 8,24
    format gross_profit_ratio_2, 5.3
    display "{gross_profit_ratio_2} ¬"
    gpr_2_% = (.05 * gross_profit_ratio_2)
    gpr_last_% = (.05 * gross_profit_ratio_last)
    inc_weight_this = ((ca_weight_this - ca_weight_last) / ca_weight_last)
    inc_weight_last = ((ca_weight_last - ca_weight_2) / ca_weight_2)
    inc_ave_this = ((ca_ave_this - ca_ave_last) / ca_ave_last)
    inc_ave_last = ((ca_ave_last - ca_ave_2) / ca_ave_2)
    dec_weight_this = ((ca_weight_last - ca_weight_this) / ca_weight_last)
    dec_weight_last = ((ca_weight_2 - ca_weight_last) / ca_weight_2)
    dec_ave_this = ((ca_ave_last - ca_ave_this) / ca_ave_last)
    dec_ave_last = ((ca_ave_2 - ca_ave_last) / ca_ave_2)
    inc_corps_comp_this = ((corps_comp_this - corps_comp_last) / corps_comp_last)
    inc_corps_comp_last = ((corps_comp_last - corps_comp_2) / corps_comp_2)
    inc_t_num_cadets_this = ((t_num_cadets_this - t_num_cadets_last) / t_num_cadets_last)
    inc_t_num_cadets_last = ((t_num_cadets_last - t_num_cadets_2) / t_num_cadets_2)
    dec_corps_comp_this = ((corps_comp_last - corps_comp_this) / corps_comp_last)
    dec_corps_comp_last = ((corps_comp_2 - corps_comp_last) / corps_comp_2)
    dec_t_num_cadets_this = ((t_num_cadets_last - t_num_cadets_this) / t_num_cadets_last)
    dec_t_num_cadets_last = ((t_num_cadets_2 - t_num_cadets_last) / t_num_cadets_2)
    uniform_cost_per_cadet_this = (cost_uniforms_this / t_num_cadets_this)
    uniform_cost_per_cadet_last = (cost_uniforms_last / t_num_cadets_last)

!display "      inc_weight_this = {inc_weight_this}" !display "      inc_weight_last = {inc_weight_last}" !display "      inc_ave_this =
{inc_ave_this}" !display "      inc_ave_last = {inc_ave_last}" !display "      dec_weight_this = {dec_weight_this}" !display "      dec_weight_last
=      {dec_weight_last}" !display "      dec_ave_this =      {dec_ave_this}" !display "      dec_ave_last =      {dec_ave_last} ¬" !display "
inc_corps_comp_this =      {inc_corps_comp_this}" !display "      inc_corps_comp_last =      {inc_corps_comp_last}" !display "
inc_t_num_cadets_this =      {inc_t_num_cadets_this}" !display "      inc_t_num_cadets_last =      {inc_t_num_cadets_last}" !display "
dec_corps_comp_this =      {dec_corps_comp_this}" !display "      dec_corps_comp_last =      {dec_corps_comp_last}" !display "
dec_t_num_cadets_this =      {dec_t_num_cadets_this}" !display "      dec_t_num_cadets_last =      {dec_t_num_cadets_last}" !display "
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uniform_cost_per_cadet_this = (uniform_cost_per_cadet_this)" !display " uniform_cost_per_cadet_last =
(uniform_cost_per_cadet_last) ¬"

    find gross_profit_ratio_analysis;


Rule gross_profit_analysis_1 If gross_profit_ratio_last < (gross_profit_ratio_2 + gpr_2_%) and
  gross_profit_ratio_last > = (gross_profit_ratio_2 - gpr_2_%) and
  gross_profit_ratio < (gross_profit_ratio_last + gpr_last_%) and
  gross_profit_ratio > = (gross_profit_ratio_last - gpr_last_%) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6 display "As can be seen above, the gross profit ratio is not changing" display "significantly. Unless management is intentionally trying to change it," display "this situation appears optimal."
    locate 16,26 display "Press any key to continue ¬";

Rule gross_profit_analysis_2_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue ¬";

Rule gross_profit_analysis_2_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05

Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue ¬";

Rule gross_profit_analysis_2_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue ¬";

Rule gross_profit_analysis_2_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more favorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue ¬";

Rule gross_profit_analysis_2_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
    locate 16,26 display "Press any key to continue ¬";
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Rule gross_profit_analysis_2_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downard trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "de-
creased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of
underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 *. 95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less fa-
vorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
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    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
    locate 16,26 display "Press any key to continue→";

Rule gross_profit_analysis_3_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue→";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display
"beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "in-
creased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of
upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued."
    locate 19,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
```

```
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by {inc_ave_%}%."
    locate 16,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue→";

Rule gross_profit_analysis_4_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue→";

Rule gross_profit_analysis_5_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display
"decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue→";

Rule gross_profit_analysis_5_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display
"have decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the pro-
portion of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue→";

Rule gross_profit_analysis_5_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances
have decreased over the past year by {dec_ave_%}%." display "Furthermore, there has been a misvaluation in inventory (either" display
"ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue→";

Rule gross_profit_analysis_5_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less
favorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in in-
ventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue→";

Rule gross_profit_analysis_5_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
```

```
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determination of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display "beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_6_a If gross_profit_ratio < (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio > (gross_profit_ratio_last * .95) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has remained fairly" display "constant over the past year. Thus, no trend is apparent."
    locate 20,26 display "Press any key to continue¬";



! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv: "Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for February, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num,bs_this,bs_last,bs_2_ago,bs_info; bkcolor = 1;
```

```
execute; runtime;

actions

todo = ratio_analysis color = 15 display "The system has just entered a new knowledge base and files must be" display "loaded. This re-
quires a few minutes. You will be instructed when" display "to continue." display " " find get_data display "Press any key to examine the
expense to revenue ratios.¬" display " " find exp_to_rev_display find exp_to_rev_mkt_seg_display find t_asset_turn_display find
inv_turn_display chain wits ;


Rule get_necessary_data If get_data = unknown Then get_data = found !    wks ca,b13..d16,\vpp\wica

    wks ca_weight_this,b13,\vpp\wica
    wks ca_weight_last,c13,\vpp\wica
    wks ca_weight_2,d13,.vpp\wica
    wks ca_ave_this,b14,\vpp\wica
    wks ca_ave_last,c14,\vpp\wica
    wks ca_ave_2,d14,\vpp\wica
    wks corps_comp_this,b15,\vpp\wica
    wks corps_comp_last,c15,\vpp\wica
    wks corps_comp_2,d15,\vpp\wica
    wks t_num_cadets_this,b16,\vpp\wica
    wks t_num_cadets_last,c16,\vpp\wica
    wks t_num_cadets_2,d16,\vpp\wica

!   wks bs_this,b1..b14,\vpp\wiabbs
    wks bs_this[1],b1,\vpp\wiabbs
    wks bs_this[2],b2,\vpp\wiabbs
    wks bs_this[3],b3,\vpp\wiabbs
    wks bs_this[4],b4,\vpp\wiabbs
    wks bs_this[5],b5,\vpp\wiabbs
    wks bs_this[6],b6,\vpp\wiabbs
    wks bs_this[7],b7,\vpp\wiabbs
    wks bs_this[8],b8,\vpp\wiabbs
    wks bs_this[9],b9,\vpp\wiabbs
    wks bs_this[10],b10,\vpp\wiabbs
    wks bs_this[11],b11,\vpp\wiabbs
    wks bs_this[12],b12,\vpp\wiabbs
    wks bs_this[13],b13,\vpp\wiabbs
    wks bs_this[14],b14,\vpp\wiabbs

!   wks bs_last,c1..c14,\vpp\wiabbs
    wks bs_last[1],c1,\vpp\wiabbs
    wks bs_last[2],c2,\vpp\wiabbs
    wks bs_last[3],c3,\vpp\wiabbs
    wks bs_last[4],c4,\vpp\wiabbs
    wks bs_last[5],c5,\vpp\wiabbs
    wks bs_last[6],c6,\vpp\wiabbs
    wks bs_last[7],c7,\vpp\wiabbs
    wks bs_last[8],c8,\vpp\wiabbs
    wks bs_last[9],c9,\vpp\wiabbs
    wks bs_last[10],c10,\vpp\wiabbs
    wks bs_last[11],c11,\vpp\wiabbs
    wks bs_last[12],c12,\vpp\wiabbs
    wks bs_last[13],c13,\vpp\wiabbs
    wks bs_last[14],c14,\vpp\wiabbs

!   wks bs_2_ago,d1..d14,\vpp\wiabbs
    wks bs_2_ago[1],d1,\vpp\wiabbs
    wks bs_2_ago[2],d2,\vpp\wiabbs
    wks bs_2_ago[3],d3,\vpp\wiabbs
    wks bs_2_ago[4],d4,\vpp\wiabbs
    wks bs_2_ago[5],d5,\vpp\wiabbs
    wks bs_2_ago[6],d6,\vpp\wiabbs
    wks bs_2_ago[7],d7,\vpp\wiabbs
    wks bs_2_ago[8],d8,\vpp\wiabbs
    wks bs_2_ago[9],d9,\vpp\wiabbs
    wks bs_2_ago[10],d10,\vpp\wiabbs
    wks bs_2_ago[11],d11,\vpp\wiabbs
    wks bs_2_ago[12],d12,\vpp\wiabbs
    wks bs_2_ago[13],d13,\vpp\wiabbs
    wks bs_2_ago[14],d14,\vpp\wiabbs

    wks t_assets_3,e9,\vpp\wiabbs
    wks inv_3_ago,e7,\vpp\wiabbs

    current_year = (bs_this[1])
```

```
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])


!   wks is_this,b1..b85,\vpp\wiabis !    wks is_last,c1..c85,\vpp\wiabis !    wks is_2_ago,d1..d85,\vpp\wiabis


    wks net_income,b65,\vpp\wiabis
    wks net_income_last,c65,\vpp\wiabis
    wks net_income_2,d65,\vpp\wiabis
    wks gross_profit,b16,\vpp\wiabis
    wks gross_profit_last,c16,\vpp\wiabis
    wks gross_profit_2,d16,\vpp\wiabis
    wks t_mil_rev,b9,\vpp\wiabis
    wks mil_rev_last,c9,\vpp\wiabis
    wks mil_rev_2,d9,\vpp\wiabis
    wks x1,b15,\vpp\wiabis
    wks x2,b64,\vpp\wiabis
    t_expenses = (x1 + x2)
    wks cost_uniforms_this,b15,\vpp\wiabis
    wks cost_uniforms_last,c15,\vpp\wiabis
    wks cost_uniforms_2,d15,\vpp\wiabis
    wks total_oper_exp_last,c64,\vpp\wiabis
    wks total_oper_exp_2,d64,\vpp\wiabis
    wks t_other_rev,b24,\vpp\wiabis
    wks other_rev_last,c24,\vpp\wiabis
    wks other_rev_2,d24,\vpp\wiabis
    wks t_personal,b36,\vpp\wiabis
    wks personal_last,c36,\vpp\wiabis
    wks corps_e_to_r_this,b79,\vpp\wiabis
    wks public_e_to_r_this,b81,\vpp\wiabis
    wks s_f_s_e_to_r_this,b82,\vpp\wiabis
    wks interdept_e_to_r_this,b83,\vpp\wiabis
    wks music_e_to_r_this,b84,\vpp\wiabis
    wks state_e_to_r_this,b85,\vpp\wiabis
    wks corps_e_to_r_last,c79,\vpp\wiabis
    wks public_e_to_r_last,c81,\vpp\wiabis
    wks s_f_s_e_to_r_last,c82,\vpp\wiabis
    wks interdept_e_to_r_last,c83,\vpp\wiabis
    wks music_e_to_r_last,c84,\vpp\wiabis
    wks state_e_to_r_last,c85,\vpp\wiabis

!   wks is_2_ago_a,d79..d85,\vpp\wiabis

    wks corps_e_to_r_2,d79,\vpp\wiabis
    wks public_e_to_r_2,d81,\vpp\wiabis
    wks s_f_s_e_to_r_2,d82,\vpp\wiabis
    wks interdept_e_to_r_2,d83,\vpp\wiabis
    wks music_e_to_r_2,d84,\vpp\wiabis
    wks state_e_to_r_2,d85,\vpp\wiabis;

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios

If todo = ratio_analysis

Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2));

Rule exp_to_rev_display IF exp_to_rev_ratio < > unknown Then exp_to_rev_display = found
```

```
    cls
    color = 11
    locate 2,27
    display "EXPENSE TO REVENUE RATIO"
    locate 4,6 display "The expense to revenue ratio was designed to measure how much of each" display "revenue dollar is consumed by
expenses. The primary responsibility of" display "the Tailor Shop is to provide a service, rather than to produce a" display "profit. How-
ever, given the level of service provided and the prices" display "charged, it should strive for a low expense to revenue ratio. If net" display
"income is to be used only to replace old equipment, then an expense to " display "revenue ratio of around .995 is desirable. On the other
hand, if net" display "income is also to be used to repay the amount borrowed from other" display "auxiliaries (say over a 10 year period),
then a ratio of around .93 is" display "desirable. In any case, the expense to revenue ratio should be less than" display "1, since a ratio
greater than 1 indicates that expenses exceed revenues."
    locate 19,13 display "Press any key to see the Expense to Revenue analysis¬"
    find rest_of_display_e_to_r;

Rule display_for_exp_to_rev If exp_to_rev_ratio < > unknown Then rest_of_display_e_to_r = found
    cls
    color = 11
    locate 2,25
    display "EXPENSE TO REVENUE RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format exp_to_rev_ratio, 5.3
    display "{exp_to_rev_ratio}"
    locate 8,34
    format exp_to_rev_ratio_last, 5.3
    display "{exp_to_rev_ratio_last}"
    locate 8,24
    format exp_to_rev_ratio_2, 5.3
    display "{exp_to_rev_ratio_2}"
    find e_to_r_analysis;

Rule analyze_exp_to_rev_0_a If exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The expense" display "to revenue ratio is greater than 1
and does not apear to be improving. Thus," display "the Tailor Shop is operating in the red and counting on other auxiliary" display "en-
terprises to help pay its operating expenses.¬";

Rule analyze_exp_to_rev_0_b If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The size" display "size of the expense to revenue ratio
indicates that although income is" display "positive, it is not large enough to cover expected demand for equipment" display "replacements.
@Aermore, the situation does not appear to be improving.¬";

Rule analyze_exp_to_rev_0_c If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_last * .999) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable
level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from" display "other auxiliaries
are being decreased.¬";

Rule analyze_exp_to_rev_0_d If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last_last * .999) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "It should be noted however, that it is possible that the the
Tailor Shop will" display "be accused of gouging its customers since the ratio is so low.¬";

Rule analyze_exp_to_rev_ratio_1_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
```

```
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year." display "Meanwhile, costs incurred for salaries and fringe benefits (which generally" display "make up
around 60% of total costs) have increased by (personal_inc)% over" display "the past year. ¬";

Rule analyze_exp_to_rev_ratio_1_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year. ¬";

Rule analyze_exp_to_rev_ratio_1_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Costs incurred for salaries and fringe benefits (which" display "generally make up around 60 % of total costs) have in-
creased by (personal_inc)%" display "over the past year. ¬";

Rule analyze_exp_to_rev_ratio_2_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by (mil_dec)% over the past year. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around
60% of total" display "costs) have increased by (personal_inc)% over the past year. ¬";

Rule analyze_exp_to_rev_ratio_2_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by (mil_dec)% over the past year. ¬";

Rule analyze_exp_to_rev_ratio_2_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
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    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statementw will give a good indication of why
this is happening. Meanwhile," display "costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of
total costs) have increased by (personal_inc)% over the past" display "year. ¬";

Rule analyze_exp_to_rev_ratio_3_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is increasing over time. A
glance at the income" display "statements will show why this is happening. The revenue from the corps" display "(which typically consti-
tutes 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. Meanwhile, costs incurred for salaries and fringe"
display "benefits (which generally make up around 60% of total costs) have increased" display "by (personal_inc)% over the past year. ¬";

Rule analyze_exp_to_rev_ratio_3_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is decreasing over time. A
glance at the income " display "statements will show why this is happening. The revenue from the corps" display "(which typically
constitutes 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. ¬";

Rule analyze_exp_to_rev_ratio_3_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio is decreasing over time. A
glance at the income" display "statements will show why this is happening. Costs incurred for salaries and" display "fringe benefits (which
generally make up around 60% of total costs) have" display "increased by (personal_inc)% over the past year. ¬";

Rule analyze_exp_to_rev_ratio_4 If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 0.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "There are a couple of things to note here however. First, the
expense to" display "revenue ratio is so low that the Tailor Shop might be accused of gouging" display "its customers. And second, the ratio
is increaseing over time . This may" display "signal that income is decreasing, or it may signal a concerted effort on" display "the part of
management to bring down prices to an 'acceptable' level. ¬";

Rule analyze_exp_to_rev_ratio_5 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1
which indicates that expenses exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries
to cover its operating expenses. On a positive note, the ratio" display "is decreasing over time, indicating that improvements are being
made. ¬";
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Rule analyze_exp_to_rev_ratio_6 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the expense to revenue
ratio is barely less than 1, it is" display "improving over time. At this point, it is not earning enough to cover" display "all of expected de-
mand for equipment replacement. However, if the current" display "trend continues, they should be able to do so in the future. ¬ ";

Rule analyze_exp_to_rev_ratio_7 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio >.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it falls" display "in a very good region. A ratio in this region indicates that net income is" display "sufficient
to cover expected demand for equipment replacement, and also to" display "pay back some of the debt owed to the other auxiliary enter-
prises. ¬ ";

Rule analyze_exp_to_rev_ratio_8 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it" display "indicates that a substantial dent can be made in its debt to other auxiliary" display "enterprises.
On the negative side, a ratio so small indicates that revenues" display "greatly exceed expenses which could be considered price
gouging. ¬ ";

Rule analyze_exp_to_rev_ratio_9_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but has increased over the" display "past year. A glance at the income statements will give a good indication of" dis-
play "why this is happening. Revenue from the corps (which typically constitutes" display "more than 75% of total revenue) has decreased
by (mil_dec)%. Meanwhile, costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of
total costs) have increased by (personal_inc)%. ¬ ";

Rule analyze_exp_to_rev_ratio_9_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Revenue from the corps (which typically" display "constitutes more than 75% of total revenue) has decreased
by (mil_dec)%. ¬ ";

Rule analyze_exp_to_rev_ratio_9_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Costs incurred for salaries and fringe benefits" display "(which generally make up around 60% of total costs)
have increased by (personal_inc)%" display "over the past year. ¬ ";

Rule analyze_exp_to_rev_ratio_10_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
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  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
is less than 1, it has increased over the past year." display "Furthermore, its size indicates that the present rate of income is not" display
"enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indication
of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has
decreased by {mil_dec}%. Meanwhile, costs incurred for salaries" display "and fringe benefits (whidh generally make up around 60% of
total costs) have" display "increased by {personal_inc}% over the past year.¬";

Rule analyze_exp_to_rev_ratio_10_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is" display
"not enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indi-
cation of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue)
has decreased by {mil_dec}%.¬";

Rule analyze_exp_to_rev_ratio_10_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is not" dis-
play "enough to cover expected demand for equipment replacements. A glance at the" display "income statements will give a good indi-
cation of why this is happening. Costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display
"ot total costs) have increased by {personal_inc}% over the past year.¬";

Rule analyze_exp_to_rev_ratio_11_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically
constitues 75% of total revenue) has decreased by {mil_dec}%" display "over the past year. Meanwhile, costs incurred for salaries and
fringe" display "benefits (which generally make up around 60% of total costs) have increased by" display " {personal_inc}% over the past
year.¬";

Rule analyze_exp_to_rev_ratio_11_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio has decreased over the past
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year.  A glance at the" display "income statements will show why this is happening.  The revenue from the" display "corps (which typically
consititues 75% of total revenue) has decreased by" display " (mil_dec)% over the past year.¬";

Rule analyze_exp_to_rev_ratio_11_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad.  The expense" display "to revenue ratio is at
an acceptable level.  This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased.  A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening.  Costs incurred for" display "salaries and fringe benefits
(which generally make up around 60% of total" display "costs), have increased by (personal_inc)% over the past year.¬";

Rule analyze_exp_to_rev_ratio_12 If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good.  " display "The expense to revenue ratio is
quite low, indicating that a substantial " display "dent can be made in its debt to other auxiliary enterprises.  Notice that the" display "ratio
has ineased over the past year.  This may indicate a decline in income," display "or it may indicate a concerted effort on the part of man-
agement to bring" display "prices more in line with costs.  If the former case is true, it should be" display "looked into.¬";

Rule analyze_exp_to_rev_ratio_13 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good.  The expense" display "to revenue ratio is greater than 1
which indicates that costs exceed" display "revenues.  This means that the Tailor Shop is depending on the other" display "auxiliaries to
cover some of its operating expenses.  On a positive note," display "the ratio has decreased over the past year indicating that improvements"
display "are being made.¬";

Rule analyze_exp_to_rev_ratio_14 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is not too bad.  " display "Although the expense to revenue
ratio is barely less than 1, it has improved" display "over the past year.  At this point, the Tailor Shop is not earning enough to" display
"cover all of expected demand for equipment replacement.  However, if the" display "current trend continues, they should be able to do so
in the future.¬";

Rule analyze_exp_to_rev_ratio_15 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio >.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad.  " display "The expense to revenue ratio falls
within a very good region indicating" display "that net income is sufficient to cover expected demand and also pay back" display "some of
the debt owed to other auxiliary enterprises.  It should be noted" display "however, that the ratio has increased over the past year.  This
indicates" display "decreasing earnings, and should be checked into.¬";

Rule analyze_exp_to_rev_ratio_16 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good.  " display "Not only has the expense to re-
venue ratio improved over the past year, but" display "it also indicates that a substantial dent can be made in their debt to other" display
"auxiliary enterprises.  On the negative side, a ratio this small indicates" display "that revenues greatly exceed expenses which could be
considered price gouging.¬";

Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule exp_to_rev_mkt_seg_display IF corps_e_to_r_this < > unknown Then exp_to_rev_mkt_seg_display = found
    cls
    color = 11
    locate 3,27
    display "EXPENSE TO REVENUE RATIO"
    locate 5,30
    display "BY MARKET SEGMENT"
    locate 8,6 display "Expense to revenue ratios are also calculated for each market segment" display "of the Tailor Shop.  These are very
useful as they show which market" display "segments are able to cover their individual expenses.  It should be noted" display "however, that
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overhead expenses are not included in any of these figures." display "Thus, if all segments showed a ratio of 1.0, the Tailor Shop would
not be" display "able to cover all of its expenses, due to overhead expenses not included" display "in the computations. Overhead expenses
for the Tailor Shop generally" display "constitute between 20% and 30% of total expenses, which is currently" display "between $30,000
and $60,000." locate 19,15 display "Press any key to see the Expense to Revenue ratios¬"
    find rest_of_display_mkt_seg;

Rule display_for-mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_seg = found
    cls
    locate 2,25
    color = 11
    display "EXPENSE TO REVENUE RATIOS"
    locate 4,29
    display "BY MARKET SEGMENT"
    locate 7,12
    display "MARKET SEGMENT"
    locate 7,38
    display "(year_2_ago)"
    locate 7,48
    display "(last_year)"
    locate 7,58
    display "(current_year)"
    locate 9,12
    display "Corps"
    locate 10,12
    display "Public"
    locate 11,12
    display "Student/Faculty/Staff"
    locate 12,12
    display "Interdepartmental"
    locate 13,12
    display "Music Department"
    locate 14,12
    display "State Related"
    locate 17,20
    color = 12
    display "market segment not covering its expenses"
    locate 18,22
    color = 14
    display "market segment covering its expenses"
    locate 19,28
    color = 11
    display "* upward trend - not good"
    find rest_of_display_mkt_segs;

Rule display_for_mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_segs = found
    find corps_e_r_display_this
    find public_e_r_display_this
    find s_f_s_e_r_display_this
    find interdept_e_r_display_this
    find music_e_r_display_this
    find state_e_r_display_this
    find corps_e_r_display_last
    find public_e_r_display_last
    find s_f_s_e_r_display_last
    find interdept_e_r_display_last
    find music_e_r_display_last
    find state_e_r_display_last
    find corps_e_r_display_2
    find public_e_r_display_2
    find s_f_s_e_r_display_2
    find interdept_e_r_display_2
    find music_e_r_display_2
    find state_e_r_display_2
    find corps_star_display
    find public_star_display
    find s_f_s_star_display
    find interdept_star_display
    find music_star_display
    find state_star_display;

Rule corps_display_this If corps_e_to_r_this < = 1.0 Then color = 14
    locate 9,58
    format corps_e_to_r_this, 4.2
    display "(corps_e_to_r_this)"
    corps_e_r_display_this = found else color = 12
    locate 9,58
    format corps_e_to_r_this,4.2
    display "(corps_e_to_r_this)";

Rule public_display_this If public_e_to_r_this < = 1.0 Then color = 14
```

```
    locate 10,58
    format public_e_to_r_this, 4.2
    display "(public_e_to_r_this)"
    public_e_r_display_this = found else color = 12
    locate 10,58
    format public_e_to_r_this,4.2
    display "(public_e_to_r_this)";

Rule s_f_s_display_this If s_f_s_e_to_r_this < = 1.0 Then color = 14
    locate 11,58
    format s_f_s_e_to_r_this, 4.2
    display "(s_f_s_e_to_r_this)"
    s_f_s_e_r_display_this = found else color = 12
    locate 11,58
    format s_f_s_e_to_r_this,4.2
    display "(s_f_s_e_to_r_this)";

Rule interdept_display_this If interdept_e_to_r_this < = 1.0 Then color = 14
    locate 12,58
    format interdept_e_to_r_this, 4.2
    display "(interdept_e_to_r_this)"
    interdept_e_r_display_this = found else color = 12
    locate 12,58
    format interdept_e_to_r_this,4.2
    display "(interdept_e_to_r_this)";

Rule music_display_this If music_e_to_r_this < = 1.0 Then color = 14
    locate 13,58
    format music_e_to_r_this, 4.2
    display "(music_e_to_r_this)"
    music_e_r_display_this = found else color = 12
    locate 13,58
    format music_e_to_r_this,4.2
    display "(music_e_to_r_this)";

Rule state_display_this If state_e_to_r_this < = 1.0 Then color = 14
    locate 14,58
    format state_e_to_r_this, 4.2
    display "(state_e_to_r_this)"
    state_e_r_display_this = found else color = 12
    locate 14,58
    format state_e_to_r_this,4.2
    display "(state_e_to_r_this)";

Rule corps_display_last If corps_e_to_r_last < = 1.0 Then color = 14
    locate 9,48
    format corps_e_to_r_last, 4.2
    display "(corps_e_to_r_last)"
    corps_e_r_display_last = found else color = 12
    locate 9,48
    format corps_e_to_r_last,4.2
    display "(corps_e_to_r_last)";

Rule public_display_last If public_e_to_r_last < = 1.0 Then color = 14
    locate 10,48
    format public_e_to_r_last, 4.2
    display "(public_e_to_r_last)"
    public_e_r_display_last = found else color = 12
    locate 10,48
    format public_e_to_r_last,4.2
    display "(public_e_to_r_last)";

Rule s_f_s_display_last If s_f_s_e_to_r_last < = 1.0 Then color = 14
    locate 11,48
    format s_f_s_e_to_r_last, 4.2
    display "(s_f_s_e_to_r_last)"
    s_f_s_e_r_display_last = found else color = 12
    locate 11,48
    format s_f_s_e_to_r_last,4.2
    display "(s_f_s_e_to_r_this)";

Rule interdept_display_last If interdept_e_to_r_last < = 1.0 Then color = 14
    locate 12,48
    format interdept_e_to_r_last, 4.2
    display "(interdept_e_to_r_last)"
    interdept_e_r_display_last = found else color = 12
    locate 12,48
    format interdept_e_to_r_last,4.2
    display "(interdept_e_to_r_last)";
```

```
Rule music_display_last If music_e_to_r_last < = 1.0 Then color = 14
    locate 13,48
    format music_e_to_r_last, 4.2
    display "{music_e_to_r_last}"
    music_e_r_display_last = found else color = 12
    locate 13,48
    format music_e_to_r_last,4.2
    display "{music_e_to_r_last}";

Rule state_display_last If state_e_to_r_last < = 1.0 Then color = 14
    locate 14,48
    format state_e_to_r_last, 4.2
    display "{state_e_to_r_last}"
    state_e_r_display_last = found else color = 12
    locate 14,48
    format state_e_to_r_last,4.2
    display "{state_e_to_r_last}";

Rule corps_display_2 If corps_e_to_r_2 < = 1.0 Then color = 14
    locate 9,38
    format corps_e_to_r_2, 4.2
    display "{corps_e_to_r_2}"
    corps_e_r_display_2 = found else color = 12
    locate 9,38
    format corps_e_to_r_2,4.2
    display "{corps_e_to_r_2}";

Rule public_display_2 If public_e_to_r_2 < = 1.0 Then color = 14
    locate 10,38
    format public_e_to_r_2, 4.2
    display "{public_e_to_r_2}"
    public_e_r_display_2 = found else color = 12
    locate 10,38
    format public_e_to_r_2,4.2
    display "{public_e_to_r_2}";

Rule s_f_s_display_2 If s_f_s_e_to_r_2 < = 1.0 Then color = 14
    locate 11,38
    format s_f_s_e_to_r_2, 4.2
    display "{s_f_s_e_to_r_2}"
    s_f_s_e_r_display_2 = found else color = 12
    locate 11,38
    format s_f_s_e_to_r_2,4.2
    display "{s_f_s_e_to_r_2}";

Rule interdept_display_2 If interdept_e_to_r_2 < = 1.0 Then color = 14
    locate 12,38
    format interdept_e_to_r_2, 4.2
    display "{interdept_e_to_r_2}"
    interdept_e_r_display_2 = found else color = 12
    locate 12,38
    format interdept_e_to_r_2,4.2
    display "{interdept_e_to_r_2}";

Rule music_display_2 If music_e_to_r_2 < = 1.0 Then color = 14
    locate 13,38
    format music_e_to_r_2, 4.2
    display "{music_e_to_r_2}"
    music_e_r_display_2 = found else color = 12
    locate 13,38
    format music_e_to_r_2,4.2
    display "{music_e_to_r_2}";

Rule state_display_2 If state_e_to_r_2 < = 1.0 Then color = 14
    locate 14,38
    format state_e_to_r_2, 4.2
    display "{state_e_to_r_2}"
    state_e_r_display_2 = found else color = 12
    locate 14,38
    format state_e_to_r_2,4.2
    display "{state_e_to_r_2}";

Rule star_corps_display If corps_e_to_r_this > = (corps_e_to_r_last) and
  corps_e_to_r_last > = (corps_e_to_r_2) Then corps_star_display = found
    color = 11
    locate 9,64
    display "*";

Rule star_public_display If public_e_to_r_this > = (public_e_to_r_last) and
  public_e_to_r_last > = (public_e_to_r_2) Then public_star_display = found
```

```
    color = 11
    locate 10,64
    display "*";

Rule star_s_f_s_display If s_f_s_e_to_r_this > = (s_f_s_e_to_r_last) and
  s_f_s_e_to_r_last > = (s_f_s_e_to_r_2) Then s_f_s_star_display = found
    color = 11
    locate 11,64
    display "*";

Rule star_interdept_display If interdept_e_to_r_this > = (interdept_e_to_r_last) and
  interdept_e_to_r_last > = (interdept_e_to_r_2) Then interdept_star_display = found
    color = 11
    locate 12,64
    display "*";

Rule star_music_display If music_e_to_r_this > = (music_e_to_r_last) and
  music_e_to_r_last > = (music_e_to_r_2) Then music_star_display = found
    color = 11
    locate 13,64
    display "*";

Rule star_state_display If state_e_to_r_this > = (state_e_to_r_last) and
  state_e_to_r_last > = (state_e_to_r_2) Then state_star_display = found
    color = 11
    locate 14,64
    display "* ¬" else locate 19,77
    display "  ¬";

Rule display_for_t_asset_turn If t_asset_turn_ratio < > unknown Then cls
    color = 11
    locate 1,24
    display "TOTAL ASSET TURNOVER RATIOS"
    locate 4,45
    display "{current_year}"
    locate 4,35
    display "{last_year}"
    locate 4,25
    display "{year_2_ago}"
    locate 7,44
    format t_asset_turn_ratio, 5.3
    display "{t_asset_turn_ratio}"
    locate 7,34
    format t_asset_turn_ratio_last, 5.3
    display "{t_asset_turn_ratio_last}"
    locate 7,24
    format t_asset_turn_ratio_2, 5.3
    display "{t_asset_turn_ratio_2}"
    t_asset_turn_display = found
    find t_asset_turn_analysis;

Rule analyze_t_asset_turn_1 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it is improving over time. ¬"

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_2 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it has improved over the past
year. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_3 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = .9 and
  t_asset_turn_ratio < 1.0 Then locate 10,6
    color = 10
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    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and is improving over time. ¬"

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_4 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = .9 and
  t_asset_turn_ratio < 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and has improved over the past year. ¬"

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_5 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < = .9 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
it does appear to be improving over time. ¬"

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_6 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < = .9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
it has improved over the past year and may" display "continue to do so in the future. ¬"

    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_7 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it appears to be decreasing
over time. Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_8 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it has decreased over the past
year. Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_9 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < 1.0 and
  t_asset_turn_ratio > .90 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it appears to be
decreasing over time. Management" display "might want to determine whether this is just random fluctuation or an actual" display
"trend. ¬"
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    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_10 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < 1.0 and
  t_asset_turn_ratio > = 0.9 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it has decreased
over the past year. Management" display "might want to determine whether this is just random fluctuation or the" display "beginning of a
downward trend. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_11 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < 0.9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high
enough for the level of assets" display "being held. Furthermore, there appears to be a downward trend over time." display "This is defi-
nitely something that management should check into. ¬"
    t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_12 If t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < 0.9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high
enough for the level of assets" display "being held. Furthermore, is has decreased over the past year. Management" display "should de-
termine whether or not this is merely random fluctuation or the" display "beginning of a downward trend. ¬"
    t_asset_turn_analysis = found;

Rule displayinv_turn_ratio_beg If inv_turn_ratio < > unknown Then cls
    locate 1,25
    color = 11
    display "INVENTORY TURNOVER RATIOS"
    locate 4,6 display "The inventory turnover ratio is designed to measure how fast an " display "organization turns over its inventory.
Ideally, this number is quite high," display "since it is best to turn over goods as quickly as possible. Doing so" display "decreases the
possiblity of lowering the value of the goods due to" display "obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory"
display "however, cannot be turned over more than once a year, because uniforms" display "issued to cadets are considered part of total
inventory. In the case of" display "the Tailor Shop, this ratio is calculated by dividing income produced" display "from the corps by the
average dollar value of inventory (which consists" display "almost solely of cadet uniforms). If this ratio is very low, say less" display "than
.50, it indicates that the Tailor Shop is holding a large amount of" display "unissued inventory in the shop. Given these circumstances, any
ratio" display "which is greater than 0.75 is considered to be 'acceptable.' " locate 19,13 display "Press any key to see the inventory turnover
analysis ¬"
    inv_turn_display = found
    find actual_inv_turn_display;

Rule display_for_inv_turn If inv_turn_ratio < > unknown Then cls
    color = 11
    locate 3,25
    display "INVENTORY TURNOVER RATIOS"
    locate 6,45
    display "{current_year}"
    locate 6,35
    display "{last_year}"
    locate 6,25
    display "{year_2_ago}"
    locate 9,44
    format inv_turn_ratio, 5.3
    display "{inv_turn_ratio}"
    locate 9,34
    format inv_turn_ratio_last, 5.3
    display "{inv_turn_ratio_last}"
    locate 9,24
    format inv_turn_ratio_2, 5.3
    display "{inv_turn_ratio_2}"
    actual_inv_turn_display = found
    find inv_turn_analysis;

Rule analyze_inv_turn_1 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
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  inv_turn_ratio > = 0.8 Then locate 9,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good. Not" display "only does it fall within a good
range, but it is increasing over time. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_2 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good. Not" display "only does it fall within a good
range, but it has increased over the past" display "year. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_3 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable. Not" display "only does it appear reasonable, but
it is increasing over time. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_4 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable. Not" display "only does it appear reasonable, but
it has increased over the past year. ¬"

    inv_turn_analysis = found;

Rule analyze_inv_turn_5 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like. However,
it does appear to be improving over time. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_6 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like. However,
it has improved over the past year and may" display "continue to do so in the future. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_7 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good." display "However, it appears to be decreasing
over time. Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_8 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good." display "However, it has decreased over the past
year. Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_9 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > .750 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level. However, it appears to be
decreasing over time. Management might" display "want to determine whether this is just random fluctuation or an actual" display
"trend. ¬"
    inv_turn_analysis = found;

Rule analyze_inv_turn_10 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > = 0.75 Then locate 11,6
    color = 14
   locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level. However, it has decreased
over the past year. Management might want" display "to determine whether this is just random fluctuation or the beginning of a" display
"downward trend. ¬"
    inv_turn_analysis = found;
```

```
Rule analyze_inv_turn_11 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low. This" display "indicates that revenues are not high
enough for the level of assets being" display "held. Furthermore, there appears to be a downward trend over time. This" display "is defi-
nitely something that management should check into. ¬ "
    inv_turn_analysis = found;

Rule analyze_inv_turn_12 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low. This" display "indicates that revenues are not high
enough for the level of assets being" display "held. Furthermore, is has decreased over the past year. Management should" display "de-
termine whether or not this is merely random fluctuation or the beginning" display "of a downward trend. ¬ "
    inv_turn_analysis = found;


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the (equip_name) cost?";

ask purchase_month: "Please enter the number for the month in which the (equip_name) was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the (equip_name) expected to last?";

ask num_fresh: "June (current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June (current_year)?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num,bs_this,bs_last,bs_2_ago; bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 todo = trend_statements find trend_display find get_data locate 19,25 display "Press any key to continue¬" !find
which_stmt cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end ;

!Rules Block

Rule trend_display If todo = trend_statements Then color = 11
    trend_display = found
    locate 2,30 display "TREND STATEMENTS" locate 5,6 display "Trend statements are the financial statements of several years," dis-
play "expressed as percentages of one of those years. For purposes of this" display "analysis, the base year chosen is the first year in the
series. For each" display "year, the dollar value of each item is divided by the dollar value of the" display "corresponding item in the base
year. This results in a value which is in" display "terms of the percentage of the base year. From these statements, trends" display "over
time can be seen. For the statements which follow, any trend of more" display "than 5% increase per year in expenses or 5% decrease per
year in revenues" display "is displayed in red. Likewise, any trend of more than 5% increase per " display "year in revenue or 5% decrease
per year in cost is displayed in yellow." display "The system is currently retrieving the necessary data. You will be" display "instructed
when to continue.";


Rule get_necessary_data If get_data = unknown Then get_data = found !    wks bs_this,b1..b14,\vpp\wiabbs
    wks bs_this[1],b1,\vpp\wiabbs
    wks bs_this[2],b2,\vpp\wiabbs
    wks bs_this[3],b3,\vpp\wiabbs
    wks bs_this[4],b4,\vpp\wiabbs
    wks bs_this[5],b5,\vpp\wiabbs
    wks bs_this[6],b6,\vpp\wiabbs
    wks bs_this[7],b7,\vpp\wiabbs
    wks bs_this[8],b8,\vpp\wiabbs
    wks bs_this[9],b9,\vpp\wiabbs
    wks bs_this[10],b10,\vpp\wiabbs
    wks bs_this[11],b11,\vpp\wiabbs
    wks bs_this[12],b12,\vpp\wiabbs
    wks bs_this[13],b13,\vpp\wiabbs
    wks bs_this[14],b14,\vpp\wiabbs

!   wks bs_last,c1..c14,\vpp\wiabbs
    wks bs_last[1],c1,\vpp\wiabbs
    wks bs_last[2],c2,\vpp\wiabbs
    wks bs_last[3],c3,\vpp\wiabbs
    wks bs_last[4],c4,\vpp\wiabbs
    wks bs_last[5],c5,\vpp\wiabbs
    wks bs_last[6],c6,\vpp\wiabbs
    wks bs_last[7],c7,\vpp\wiabbs
    wks bs_last[8],c8,\vpp\wiabbs
    wks bs_last[9],c9,\vpp\wiabbs
    wks bs_last[10],c10,\vpp\wiabbs
    wks bs_last[11],c11,\vpp\wiabbs
    wks bs_last[12],c12,\vpp\wiabbs
    wks bs_last[13],c13,\vpp\wiabbs
    wks bs_last[14],c14,\vpp\wiabbs

!   wks bs_2_ago,d1..d14,\vpp\wiabbs
    wks bs_2_ago[1],d1,\vpp\wiabbs
    wks bs_2_ago[2],d2,\vpp\wiabbs
    wks bs_2_ago[3],d3,\vpp\wiabbs
    wks bs_2_ago[4],d4,\vpp\wiabbs
    wks bs_2_ago[5],d5,\vpp\wiabbs
    wks bs_2_ago[6],d6,\vpp\wiabbs
    wks bs_2_ago[7],d7,\vpp\wiabbs
    wks bs_2_ago[8],d8,\vpp\wiabbs
    wks bs_2_ago[9],d9,\vpp\wiabbs
    wks bs_2_ago[10],d10,\vpp\wiabbs
    wks bs_2_ago[11],d11,\vpp\wiabbs
    wks bs_2_ago[12],d12,\vpp\wiabbs
    wks bs_2_ago[13],d13,\vpp\wiabbs
    wks bs_2_ago[14],d14,\vpp\wiabbs

!   wks cbis_oper_exp,b56..d56,\vpp\wicbis

    wks cash_oper_exp_this,b56,\vpp\wicbis
    wks cash_oper_exp_last,c56,\vpp\wicbis
```

```
    wks cash_oper_exp_2,d56,\vpp\wicbis

!   wks cbis_net_income,b57..d57,\vpp\wicbis

    wks cash_net_income_this,b57,\vpp\wicbis
    wks cash_net_income_last,c57,\vpp\wicbis
    wks cash_net_income_2,d57,\vpp\wicbis



!   wks uniforms,b10..d10,\vpp\wicbis

    wks act_unif_this,b10,\vpp\wicbis
    wks act_unif_last,c10,\vpp\wicbis
    wks act_unif_2,d10,\vpp\wicbis

!   wks act_equip,b55..d55,\vpp\wicbis

    wks act_equip_this,b55,\vpp\wicbis
    wks act_equip_last,c55,\vpp\wicbis
    wks act_equip_2,d55,\vpp\wicbis

    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    reserves_this = (bs_this[13])
    reserves_last = (bs_last[13])
    reserves_2 = (bs_2_ago[13])
    t_assets_this = (bs_this[9])
    t_assets_last = (bs_last[9])
    t_assets_2 = (bs_2_ago[9])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])



!!!!!!!!! !   wks is_this,b1..b76,\vpp\wiabis !   wks is_last,c1..c76,\vpp\wiabis !   wks is_2_ago,d1..d76,\vpp\wiabis !!!!!!!!!!



    wks net_income,b65,\vpp\wiabis
    wks net_income_last,c65,\vpp\wiabis
    wks net_income_2,d65,\vpp\wiabis
    wks t_mil_rev,b9,\vpp\wiabis
    wks mil_rev_last,c9,\vpp\wiabis
    wks mil_rev_2,d9,\vpp\wiabis
    wks cost_uniforms_this,b15,\vpp\wiabis
    wks cost_uniforms_last,c15,\vpp\wiabis
    wks cost_uniforms_2,d15,\vpp\wiabis
    wks total_oper_exp_last,c64,\vpp\wiabis
    wks total_oper_exp_2,d64,\vpp\wiabis
    wks total_oper_exp_this,b64,.vpp\wiabis
    wks t_other_rev,b24,.vpp\wiabis
    wks other_rev_last,c24,\vpp\wiabis
    wks other_rev_2,d24,\vpp\wiabis
    wks t_personal,b36,\vpp\wiabis
    wks personal_last,c36,\vpp\wiabis
    wks personal_2,d36,\vpp\wiabis
    wks contract_this,b47,\vpp\wiabis
    wks contract_last,c47,\vpp\wiabis
    wks contract_2,d47,\vpp\wiabis
    wks s_&_m_this,b54,\vpp\wiabis
    wks s_&_m_last,c54,\vpp\wiabis
    wks s_&_m_2,d54,\vpp\wiabis
    wks contin_this,b62,\vpp\wiabis
    wks contin_last,c62,\vpp\wiabis
    wks contin_2,d62,\vpp\wiabis
    wks deprec_this,b63,\vpp\wiabis
    wks deprec_last,c63,\vpp\wiabis
    wks deprec_2,d63,\vpp\wiabis
    wks public_rev_this,b19,\vpp\wiabis
    wks s_f_s_rev_this,b20,\vpp\wiabis
```

```
    wks interdept_rev_this,b21,\vpp\wiabis
    wks music_rev_this,b22,\vpp\wiabis
    wks state_rev_this,b23,\vpp\wiabis
    wks public_rev_last,c19,\vpp\wiabis
    wks s_f_s_rev_last,c20,\vpp\wiabis
    wks interdept_rev_last,c21,\vpp\wiabis
    wks music_rev_last,c22,\vpp\wiabis
    wks state_rev_last,c23,\vpp\wiabis
    wks public_rev_2,d19,\vpp\wiabis
    wks s_f_s_rev_2,d20,\vpp\wiabis
    wks interdept_rev_2,d21,\vpp\wiabis
    wks music_rev_2,d22,\vpp\wiabis
    wks state_rev_2,d23,\vpp\wiabis
    wks corps_cost_this,b68,\vpp\wiabis
    wks public_cost_this,b70,\vpp\wiabis
    wks s_f_s_cost_this,b71,\vpp\wiabis
    wks interdept_cost_this,b72,\vpp\wiabis
    wks music_cost_this,b73,\vpp\wiabis
    wks state_cost_this,b74,\vpp\wiabis
    wks corps_cost_last,c68,\vpp\wiabis
    wks public_cost_last,c70,\vpp\wiabis
    wks s_f_s_cost_last,c71,\vpp\wiabis
    wks interdept_cost_last,c72,\vpp\wiabis
    wks music_cost_last,c73,\vpp\wiabis
    wks state_cost_last,c74,\vpp\wiabis
    wks corps_cost_2,d68,\vpp\wiabis
    wks public_cost_2,d70,\vpp\wiabis
    wks s_f_s_cost_2,d71,\vpp\wiabis
    wks interdept_cost_2,d72,\vpp\wiabis
    wks music_cost_2,d73,\vpp\wiabis
    wks state_cost_2,d74,\vpp\wiabis

    t_expenses = (cost_uniforms_this + total_oper_exp_this)
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)

    t_rev_this = (t_mil_rev + t_other_rev)
    t_rev_last = (mil_rev_last + other_rev_last)
    t_rev_2 = (mil_rev_2 + other_rev_2)
    t_cash_exp_this = (cash_oper_exp_this + act_unif_this)
    t_cash_exp_last = (cash_oper_exp_last + act_unif_last)
    t_cash_exp_2 = (cash_oper_exp_2 + act_unif_2) ;


Rule display_for_which_stmt If todo = trend_statements Then cls
    color = 11
    locate 3,15
    display "Select the number corresponding to the trend"
    locate 4,15
    display "statements which would like to see."
    locate 7,20
    display "1  accrual based income statements"
    locate 9,20
    display "2  cash based income statements"
    locate 11,20
    display "3  balance sheets"
    locate 13,20
    display "4  market segment revenues and expenses"
    locate 15,20
    display "5  exit to main menu"
    find stmt_number
    which_stmt = found
    find what_next;

Rule do_abis If stmt_number = 1 then which_stmt = abis
    what_next = abis
    cls
    color = 11
    locate 0,8 display "TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" locate 2,60 display "{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty,Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Cost of Uniforms Issued" locate 13,6 display "Personal" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Depreciation" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
```

```
    find abis_state
    find abis_t_rev
    find abis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find abis_deprec
    find abis_t_exp
    find abis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset abis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset abis_deprec
    reset abis_t_exp
    reset abis_ni;

Rule do_cbis If stmt_number = 2 then which_stmt = cbis
    what_next = cbis
    cls
    color = 11
    locate 0,10 display "TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenue" locate 4,6 display "Corps"
locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music De-
partment" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Uni-
forms Purchases" locate 13,6 display "Personal" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6
display "Continuous" locate 17,6 display "Equipment" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Oper-
ations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find cbis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find cbis_equip
    find cbis_t_exp
    find cbis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset cbis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset cbis_equip
    reset cbis_t_exp
    reset cbis_ni;

Rule do_bs If stmt_number = 3 Then which_stmt = bs
    what_next = bs
    cls
    color = 11
    locate 2,23 display "TREND STATEMENTS FOR BALANCE SHEETS" locate 4,65 display "{current_year}" locate 4,55 display
"{last_year}" locate 4,45 display "{year_2_ago}" locate 6,3 display "Current Assets" locate 7,6 display "Inventory" locate 8,3 display "Long
Term Assets" locate 9,6 display "Equipment" locate 10,9 display "Total Assets" locate 12,3 display "Liabilities & Capital" locate 13,6 dis-
play "Cash Basis Loan from " locate 14,8 display "other Auxiliaries" locate 15,6 display "Equity -- Reserves" locate 16,9 display "Total
Liabilities & Capital"
    find bs_inventory
    find bs_equipment
    find bs_total_assets
```

```
    find bs_due_from
    find bs_reserves
    reset bs_inventory
    reset bs_equipment
    reset bs_total_assets
    reset bs_due_from
    reset bs_reserves;

Rule do_mkt_seg If stmt_number = 4 then which_stmt = mkt_seg
    what_next = mkt_seg
    cls
    color = 11
    locate 0,12 display "TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenues" locate 5,6 display
"Corps" locate 6,6 display "Public" locate 7,6 display "Students/Faculty/Staff" locate 8,6 display "Interdepartmental" locate 9,6 display
"Music Department" locate 10,6 display "State Related " locate 12,3 display "Expenses" locate 14,6 display "Corps" locate 15,6 display
"Public" locate 16,6 display "Students/Faculty/Staff" locate 17,6 display "Interdepartmental" locate 18,6 display "Music Department" locate
19,6 display "State Related"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find seg_corps_cost
    find seg_public_cost
    find seg_s_f_s_cost
    find seg_interdept_cost
    find seg_music_cost
    find seg_state_cost
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset seg_corps_cost
    reset seg_public_cost
    reset seg_s_f_s_cost
    reset seg_interdept_cost
    reset seg_music_cost
    reset seg_state_cost
    find rev_minus_exp_display;

Rule do_mkt_seg If stmt_number = 4 then rev_minus_exp_display = found
    cls
    color = 11
    locate 3,30 display "TREND STATEMENTS FOR" locate 4,21 display "MARKET SEGMENT REVENUES MINUS EXPENSES"
locate 7,56 display "{current_year}" locate 7,46 display "{last_year}" locate 7,36 display "{year_2_ago}" locate 9,6 display "Corps" locate
10,6 display "Public" locate 11,6 display "Students/Faculty/Staff" locate 12,6 display "Interdepartmental" locate 13,6 display "Music De-
partment" locate 14,6 display "State Related "
    find corps_diff
    find public_diff
    find s_f_s_diff
    find interdept_diff
    find music_diff
    find state_diff
    reset corps_diff
    reset pub_diff
    reset s_f_s_diff
    reset interdept_diff
    reset music_diff
    reset state_diff
    find display_for_neg;

Rule exit_this_kbs If stmt_number = 5 Then which_stmt = doesnt_matter
    what_next = return
    color = 15
    chain wits;

Rule display_abis_corps If todo = trend_statements Then  abis_corps = found
    trend_mil_rev_last = (mil_rev_last / mil_rev_2)
    trend_mil_rev_this = (t_mil_rev / mil_rev_2)
    x = (trend_mil_rev_last)
    y = (trend_mil_rev_this)
    find rev_color
    locate 4,60
    format trend_mil_rev_this, 5.2
    display "{trend_mil_rev_this}"
    locate 4,50
```

```
    format trend_mil_rev_last, 5.2
    display "{trend_mil_rev_last}"
    locate 4,40
    display "1.00"
    reset rev_color;

Rule display_abis_public If todo = trend_statements Then abis_pub = found
    trend_pub_rev_last = (public_rev_last / public_rev_2)
    trend_pub_rev_this = (public_rev_this / public_rev_2)
    x = (trend_pub_rev_last)
    y = (trend_pub_rev_this)
    find rev_color
    locate 5,60
    format trend_pub_rev_this, 5.2
    display "{trend_pub_rev_this}"
    locate 5,50
    format trend_pub_rev_last, 5.2
    display "{trend_pub_rev_last}"
    locate 5,40
    display "1.00"
    reset rev_color;

Rule display_abis_s_f_s If todo = trend_statements Then abis_s_f_s = found
    trend_s_f_s_rev_last = (s_f_s_rev_last / s_f_s_rev_2)
    trend_s_f_s_rev_this = (s_f_s_rev_this / s_f_s_rev_2)
    x = (trend_s_f_s_rev_last)
    y = (trend_s_f_s_rev_this)
    find rev_color
    locate 6,60
    format trend_s_f_s_rev_this, 5.2
    display "{trend_s_f_s_rev_this}"
    locate 6,50
    format trend_s_f_s_rev_last, 5.2
    display "{trend_s_f_s_rev_last}"
    locate 6,40
    display "1.00"
    reset rev_color;

Rule display_abis_interdept If todo = trend_statements Then abis_interdept = found
    trend_interdept_rev_last = (interdept_rev_last / interdept_rev_2)
    trend_interdept_rev_this = (interdept_rev_this / interdept_rev_2)
    x = (trend_interdept_rev_last)
    y = (trend_interdept_rev_this)
    find rev_color
    locate 7,60
    format trend_interdept_rev_this, 5.2
    display "{trend_interdept_rev_this}"
    locate 7,50
    format trend_interdept_rev_last, 5.2
    display "{trend_interdept_rev_last}"
    locate 7,40
    display "1.00"
    reset rev_color;

Rule display_abis_music If todo = trend_statements Then abis_music = found
    trend_music_rev_last = (music_rev_last / music_rev_2)
    trend_music_rev_this = (music_rev_this / music_rev_2)
    x = (trend_music_rev_last)
    y = (trend_music_rev_this)
    find rev_color
    locate 8,60
    format trend_music_rev_this, 5.2
    display "{trend_music_rev_this}"
    locate 8,50
    format trend_music_rev_last, 5.2
    display "{trend_music_rev_last}"
    locate 8,40
    display "1.00"
    reset rev_color;

Rule display_abis_state If todo = trend_statements Then abis_state = found
    trend_state_rev_last = (state_rev_last / state_rev_2)
    trend_state_rev_this = (state_rev_this / state_rev_2)
    x = (trend_state_rev_last)
    y = (trend_state_rev_this)
    find rev_color
    locate 9,60
    format trend_state_rev_this, 5.2
    display "{trend_state_rev_this}"
    locate 9,50
```

```
    format trend_state_rev_last, 5.2
    display "(trend_state_rev_last)"
    locate 9,40
    display "1.00"
    reset rev_color;

Rule display_abis_t_rev If todo = trend_statements Then abis_t_rev = found
    trend_t_rev_last = (t_rev_last / t_rev_2)
    trend_t_rev_this = (t_rev_this / t_rev_2)
    x = (trend_t_rev_last)
    y = (trend_t_rev_this)
    find rev_color
    locate 10,60
    format trend_t_rev_this, 5.2
    display "(trend_t_rev_this)"
    locate 10,50
    format trend_t_rev_last, 5.2
    display "(trend_t_rev_last)"
    locate 10,40
    display "1.00"
    reset rev_color;

Rule display_abis_cost_uniforms_issued If todo = trend_statements Then abis_uniforms = found
    trend_uniforms_last = (cost_uniforms_last / cost_uniforms_2)
    trend_uniforms_this = (cost_uniforms_this / cost_uniforms_2)
    x = (trend_uniforms_last)
    y = (trend_uniforms_this)
    find cost_color
    locate 12,60
    format trend_uniforms_this, 5.2
    display "(trend_uniforms_this)"
    locate 12,50
    format trend_uniforms_last, 5.2
    display "(trend_uniforms_last)"
    locate 12,40
    display "1.00"
    reset cost_color;

Rule display_cbis_cost_uniforms_issued If stmt_number = 2 Then cbis_uniforms = found
    trend_uniforms_last_c = (act_unif_last / act_unif_2)
    trend_uniforms_this_c = (act_unif_this / act_unif_2)
    x = (trend_uniforms_last_c)
    y = (trend_uniforms_this_c)
    find cost_color
    locate 12,60
    format trend_uniforms_this_c, 5.2
    display "(trend_uniforms_this_c)"
    locate 12,50
    format trend_uniforms_last_c, 5.2
    display "(trend_uniforms_last_c)"
    locate 12,40
    display "1.00"
    reset cost_color;

Rule display_abis_personal If todo = trend_statements Then abis_personal = found
    trend_personal_last = (personal_last / personal_2)
    trend_personal_this = (t_personal / personal_2)
    x = (trend_personal_last)
    y = (trend_personal_this)
    find cost_color
    locate 13,60
    format trend_personal_this, 5.2
    display "(trend_personal_this)"
    locate 13,50
    format trend_personal_last, 5.2
    display "(trend_personal_last)"
    locate 13,40
    display "1.00"
    reset cost_color;

Rule display_abis_contractual If todo = trend_statements Then abis_contract = found
    trend_contract_last = (contract_last / contract_2)
    trend_contract_this = (contract_this / contract_2)
    x = (trend_contract_last)
    y = (trend_contract_this)
    find cost_color
    locate 14,60
    format trend_contract_this, 5.2
    display "(trend_contract_this)"
    locate 14,50
```

```
    format trend_contract_last, 5.2
    display "(trend_contract_last)"
    locate 14,40
    display "1.00"
    reset cost_color;

Rule display_abis_s_&_m If todo = trend_statements Then abis_s_&_m = found
    trend_s_&_m_last = (s_&_m_last / s_&_m_2)
    trend_s_&_m_this = (s_&_m_this / s_&_m_2)
    x = (trend_s_&_m_last)
    y = (trend_s_&_m_this)
    find cost_color
    locate 15,60
    format trend_s_&_m_this, 5.2
    display "(trend_s_&_m_this)"
    locate 15,50
    format trend_s_&_m_last, 5.2
    display "(trend_s_&_m_last)"
    locate 15,40
    display "1.00"
    reset cost_color;

Rule display_abis_continuous If todo = trend_statements Then abis_contin = found
    trend_contin_last = (contin_last / contin_2)
    trend_contin_this = (contin_this / contin_2)
    x = (trend_contin_last)
    y = (trend_contin_this)
    find cost_color
    locate 16,60
    format trend_contin_this, 5.2
    display "(trend_contin_this)"
    locate 16,50
    format trend_contin_last, 5.2
    display "(trend_contin_last)"
    locate 16,40
    display "1.00"
    reset cost_color;

Rule display_abis_depreciation If todo = trend_statements Then abis_deprec = found
    trend_deprec_last = (deprec_last / deprec_2)
    trend_deprec_this = (deprec_this / deprec_2)
    x = (trend_deprec_last)
    y = (trend_deprec_this)
    find cost_color
    locate 17,60
    format trend_deprec_this, 5.2
    display "(trend_deprec_this)"
    locate 17,50
    format trend_deprec_last, 5.2
    display "(trend_deprec_last)"
    locate 17,40
    display "1.00"
    reset cost_color;

Rule display_cbis_equipment If todo = trend_statements Then cbis_equip = found
    trend_equip_last = (act_equip_last / act_equip_2)
    trend_equip_this = (act_equip_this / act_equip_2)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find cost_color
    locate 17,60
    format trend_equip_this, 5.2
    display "(trend_equip_this)"
    locate 17,50
    format trend_equip_last, 5.2
    display "(trend_equip_last)"
    locate 17,40
    display "1.00"
    reset cost_color;

Rule display_abis_t_expenses If todo = trend_statements Then abis_t_exp = found
    trend_t_expenses_last = (t_expenses_last / t_expenses_2)
    trend_t_expenses_this = (t_expenses / t_expenses_2)
    x = (trend_t_expenses_last)
    y = (trend_t_expenses_this)
    find cost_color
    locate 18,60
    format trend_t_expenses_this, 5.2
    display "(trend_t_expenses_this)"
    locate 18,50
```

```
    format trend_t_expenses_last, 5.2
    display "{trend_t_expenses_last}"
    locate 18,40
    display "1.00"
    reset cost_color;

Rule display_cbis_t_expenses If todo = trend_statements Then  cbis_t_exp = found
    trend_t_expenses_last_c = (t_cash_exp_last / t_cash_exp_2)
    trend_t_expenses_this_c = (t_cash_exp_this / t_cash_exp_2)
    x = (trend_t_expenses_last_c)
    y = (trend_t_expenses_this_c)
    find cost_color
    locate 18,60
    format trend_t_expenses_this_c, 5.2
    display "{trend_t_expenses_this_c}"
    locate 18,50
    format trend_t_expenses_last_c, 5.2
    display "{trend_t_expenses_last_c}"
    locate 18,40
    display "1.00"
    reset cost_color;

Rule display_abis_net_income If todo = trend_statements Then  abis_ni = found
    trend_net_income_last = (net_income_last / net_income_2)
    trend_net_income_this = (net_income / net_income_2)
    x = (trend_net_income_last)
    y = (trend_net_income_this)
    find rev_color
    locate 19,60
    format trend_net_income_this, 5.2
    display "{trend_net_income_this}"
    locate 19,50
    format trend_net_income_last, 5.2
    display "{trend_net_income_last}"
    find is_it_neg
!   find neg_base
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00-"
    reset rev_color
    reset is_it_neg;

Rule display_that_ni_base_yr_neg

If net_income_2 < 0

Then neg_base = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";


Rule display_that_ni_base_yr_neg

If cash_net_income_2 < 0

Then neg_base_c = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
```

```
    display "negative";

Rule display_cbis_net_income If todo = trend_statements Then  cbis_ni = found
     trend_net_income_last_c = (cash_net_income_last / cash_net_income_2)
     trend_net_income_this_c = (cash_net_income_this / cash_net_income_2)
     x = (trend_net_income_last_c)
     y = (trend_net_income_this_c)
     find rev_color
     locate 19,60
     format trend_net_income_this_c, 5.2
     display "(trend_net_income_this_c)"
     locate 19,50
     format trend_net_income_last_c, 5.2
     display "(trend_net_income_last_c)"
     find is_it_neg_c
!    find neg_base_c
     locate 19,40
     reset rev_color
     find rev_color
     display "1.00¬"
     reset rev_color
     reset is_it_neg_c;

Rule is_net_income_negative If net_income < = 0 and
   net_income_last < = 0 and
   net_income_2 < = 0 and
   x > 1.05  and
   y > 1.1025 Then locate 8,68
     color = 15
     display "**  note "
     locate 9,68
     display "that it is"
     locate 10,68
     display "increasing"
     locate 11,68
     display "in the "
     locate 12,68
     display "negative"
     locate 13,68
     display "direction"
     locate 19,66
     display "**"
     color = 12                          !!2
      locate 19,60                       !!!this was all added
      format trend_net_income_this, 5.2
      display "(trend_net_income_this)"
      locate 19,50
      format trend_net_income_last, 5.2
      display "(trend_net_income_last)"
      locate 19,40
      display "1.00¬"                    !!
    is_it_neg = no;

Rule is_net_income_negative If cash_net_income_this < = 0 and
   cash_net_income_last < = 0 and
   cash_net_income_2 < = 0 and
   x > 1.05  and
   y > 1.1025 Then locate 8,68
     color = 15
     display "**  note "
     locate 9,68
     display "that it is"
     locate 10,68
     display "increasing"
     locate 11,68
     display "in the "
     locate 12,68
     display "negative"
     locate 13,68
     display "direction"
     locate 19,66
     display "**"
     color = 12
      locate 19,60
      format trend_net_income_this_c, 5.2
      display "(trend_net_income_this_c)"
      locate 19,50
      format trend_net_income_last_c, 5.2
      display "(trend_net_income_last_c)"
      locate 19,40
```

```
    display "1.00¬"
    is_it_neg_c = no;


Rule display_bs_inventory If todo = trend_statements Then bs_inventory = found
    trend_inv_rev_last = (last_yr_inventory / inv_2_ago)
    trend_inv_rev_this = (total_inv / inv_2_ago)
    x = (trend_inv_rev_last)
    y = (trend_inv_rev_this)
    find rev_color
    locate 7,65
    format trend_inv_rev_this, 5.2
    display "{trend_inv_rev_this}"
    locate 7,55
    format trend_inv_rev_last, 5.2
    display "{trend_inv_rev_last}"
    locate 7,45
    display "1.00"
    reset rev_color;

Rule display_bs_equipment If todo = trend_statements Then bs_equipment = found
    trend_equip_last = (last_yr_equip_value / equip_2_ago)
    trend_equip_this = (total_current_value / equip_2_ago)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find rev_color
    locate 9,65
    format trend_equip_this, 5.2
    display "{trend_equip_this}"
    locate 9,55
    format trend_equip_last, 5.2
    display "{trend_equip_last}"
    locate 9,45
    display "1.00"
    reset rev_color;

Rule display_bs_due_to_other_ae If todo = trend_statements Then bs_due_from = found
    trend_due_rev_last = (last_yr_due_to / due_to_2_ago)
    trend_due_rev_this = (new_due_to / due_to_2_ago)
    x = (trend_due_rev_last)
    y = (trend_due_rev_this)
    find cost_color
    locate 14,65
    format trend_due_rev_this, 5.2
    display "{trend_due_rev_this}"
    locate 14,55
    format trend_due_rev_last, 5.2
    display "{trend_due_rev_last}"
    locate 14,45
    display "1.00"
    reset cost_color;

Rule display_bs_reserves If todo = trend_statements Then bs_reserves = found
    trend_reserves_last = (reserves_last / reserves_2)
    trend_reserves_this = (reserves_this / reserves_2)
    x = (trend_reserves_last)
    y = (trend_reserves_this)
    find rev_color
    locate 15,65
    format trend_reserves_this, 5.2
    display "{trend_reserves_this}"
    locate 15,55
    format trend_reserves_last, 5.2
    display "{trend_reserves_last}"
    locate 15,45
    display "1.00¬"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    color = 11
    locate 10,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    locate 10,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
```

```
    locate 10,45
    display "1.00"
    locate 16,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    locate 16,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
    locate 16,45
    display "1.00";

Rule display_seg_corps_cost If todo = trend_statements Then seg_corps_cost = found
    trend_seg_corps_cost_last = (corps_cost_last / corps_cost_2)
    trend_seg_corps_cost_this = (corps_cost_this / corps_cost_2)
    x = (trend_seg_corps_cost_last)
    y = (trend_seg_corps_cost_this)
    find cost_color
    locate 14,60
    format trend_seg_corps_cost_this, 5.2
    display "{trend_seg_corps_cost_this}"
    locate 14,50
    format trend_seg_corps_cost_last, 5.2
    display "{trend_seg_corps_cost_last}"
    locate 14,40
    display "1.00"
    reset cost_color;

Rule display_seg_public_cost If todo = trend_statements Then seg_public_cost = found
    trend_seg_public_cost_last = (public_cost_last / public_cost_2)
    trend_seg_public_cost_this = (public_cost_this / public_cost_2)
    x = (trend_seg_public_cost_last)
    y = (trend_seg_public_cost_this)
    find cost_color
    locate 15,60
    format trend_seg_public_cost_this, 5.2
    display "{trend_seg_public_cost_this}"
    locate 15,50
    format trend_seg_public_cost_last, 5.2
    display "{trend_seg_public_cost_last}"
    locate 15,40
    display "1.00"
    reset cost_color;

Rule display_seg_s_f_s_cost If todo = trend_statements Then seg_s_f_s_cost = found
    trend_seg_s_f_s_cost_last = (s_f_s_cost_last / s_f_s_cost_2)
    trend_seg_s_f_s_cost_this = (s_f_s_cost_this / s_f_s_cost_2)
    x = (trend_seg_s_f_s_cost_last)
    y = (trend_seg_s_f_s_cost_this)
    find cost_color
    locate 16,60
    format trend_seg_s_f_s_cost_this, 5.2
    display "{trend_seg_s_f_s_cost_this}"
    locate 16,50
    format trend_seg_s_f_s_cost_last, 5.2
    display "{trend_seg_s_f_s_cost_last}"
    locate 16,40
    display "1.00"
    reset cost_color;

Rule display_seg_interdept_cost If todo = trend_statements Then seg_interdept_cost = found
    trend_seg_interdept_cost_last = (interdept_cost_last / interdept_cost_2)
    trend_seg_interdept_cost_this = (interdept_cost_this / interdept_cost_2)
    x = (trend_seg_interdept_cost_last)
    y = (trend_seg_interdept_cost_this)
    find cost_color
    locate 17,60
    format trend_seg_interdept_cost_this, 5.2
    display "{trend_seg_interdept_cost_this}"
    locate 17,50
    format trend_seg_interdept_cost_last, 5.2
    display "{trend_seg_interdept_cost_last}"
    locate 17,40
    display "1.00"
    reset cost_color;

Rule display_seg_music_cost If todo = trend_statements Then seg_music_cost = found
    trend_seg_music_cost_last = (music_cost_last / music_cost_2)
    trend_seg_music_cost_this = (music_cost_this / music_cost_2)
    x = (trend_seg_music_cost_last)
    y = (trend_seg_music_cost_this)
```

```
    find cost_color
    locate 18,60
    format trend_seg_music_cost_this, 5.2
    display "{trend_seg_music_cost_this}"
    locate 18,50
    format trend_seg_music_cost_last, 5.2
    display "{trend_seg_music_cost_last}"
    locate 18,40
    display "1.00"
    reset cost_color;

Rule display_seg_state_cost If todo = trend_statements Then seg_state_cost = found
    trend_seg_state_cost_last = (state_cost_last / state_cost_2)
    trend_seg_state_cost_this = (state_cost_this / state_cost_2)
    x = (trend_seg_state_cost_last)
    y = (trend_seg_state_cost_this)
    find cost_color
    locate 19,60
    format trend_seg_state_cost_this, 5.2
    display "{trend_seg_state_cost_this}"
    locate 19,50
    format trend_seg_state_cost_last, 5.2
    display "{trend_seg_state_cost_last}"
    locate 19,40
    display "1.00¬"
    reset cost_color;

Rule display_corps_diff If todo = trend_statements Then corps_diff = found
    corps_diff_this = (t_mil_rev - corps_cost_this)
    corps_diff_last = (mil_rev_last - corps_cost_last)
    corps_diff_2 = (mil_rev_2 - corps_cost_2)
    trend_corps_diff_last = (corps_diff_last / corps_diff_2)
    trend_corps_diff_this = (corps_diff_this / corps_diff_2)
    x = (trend_corps_diff_last)
    y = (trend_corps_diff_this)
    find rev_color
    find neg?
    locate 9,56
    format trend_corps_diff_this, 5.2
    display "{trend_corps_diff_this}"
    locate 9,46
    format trend_corps_diff_last, 5.2
    display "{trend_corps_diff_last}"
    locate 9,36
    display "1.00"
    reset rev_color
    a = (corps_diff_this)
    b = (corps_diff_last)
    c = (corps_diff_2)
    locate 9,62
    display "{neg?}"
    reset neg?;

Rule display_public_diff If todo = trend_statements Then public_diff = found
    public_diff_this = (public_rev_this - public_cost_this)
    public_diff_last = (public_rev_last - public_cost_last)
    public_diff_2 = (public_rev_2 - public_cost_2)
    trend_public_diff_last = (public_diff_last / public_diff_2)
    trend_public_diff_this = (public_diff_this / public_diff_2)
    x = (trend_public_diff_last)
    y = (trend_public_diff_this)
    find rev_color
    find neg?
    locate 10,56
    format trend_public_diff_this, 5.2
    display "{trend_public_diff_this}"
    locate 10,46
    format trend_public_diff_last, 5.2
    display "{trend_public_diff_last}"
    locate 10,36
    display "1.00"
    reset rev_color
    a = (public_diff_this)
    b = (public_diff_last)
    c = (public_diff_2)
    locate 10,62
    display "{neg?}"
    reset neg?;

Rule display_s_f_s_diff If todo = trend_statements Then s_f_s_diff = found
```

```
    s_f_s_diff_this = (s_f_s_rev_this - s_f_s_cost_this)
    s_f_s_diff_last = (s_f_s_rev_last - s_f_s_cost_last)
    s_f_s_diff_2 = (s_f_s_rev_2 - s_f_s_cost_2)
    trend_s_f_s_diff_last = (s_f_s_diff_last / s_f_s_diff_2)
    trend_s_f_s_diff_this = (s_f_s_diff_this / s_f_s_diff_2)
    x = (trend_s_f_s_diff_last)
    y = (trend_s_f_s_diff_this)
    find rev_color
    find neg?
    locate 11,56
    format trend_s_f_s_diff_this, 5.2
    display "(trend_s_f_s_diff_this)"
    locate 11,46
    format trend_s_f_s_diff_last, 5.2
    display "(trend_s_f_s_diff_last)"
    locate 11,36
    display "1.00"
    reset rev_color
    a = (s_f_s_diff_this)
    b = (s_f_s_diff_last)
    c = (s_f_s_diff_2)
    locate 11,62
    display "(neg?)"
    reset neg?;

Rule display_interdept_diff If todo = trend_statements Then interdept_diff = found
    interdept_diff_this = (interdept_rev_this - interdept_cost_this)
    interdept_diff_last = (interdept_rev_last - interdept_cost_last)
    interdept_diff_2 = (interdept_rev_2 - interdept_cost_2)
    trend_interdept_diff_last = (interdept_diff_last / interdept_diff_2)
    trend_interdept_diff_this = (interdept_diff_this / interdept_diff_2)
    x = (trend_interdept_diff_last)
    y = (trend_interdept_diff_this)
    find rev_color
    find neg?
    locate 12,56
    format trend_interdept_diff_this, 5.2
    display "(trend_interdept_diff_this)"
    locate 12,46
    format trend_interdept_diff_last, 5.2
    display "(trend_interdept_diff_last)"
    locate 12,36
    display "1.00"
    reset rev_color
    a = (interdept_diff_this)
    b = (interdept_diff_last)
    c = (interdept_diff_2)
    locate 12,62
    display "(neg?)"
    reset neg?;

Rule display_music_diff If todo = trend_statements Then music_diff = found
    music_diff_this = (music_rev_this - music_cost_this)
    music_diff_last = (music_rev_last - music_cost_last)
    music_diff_2 = (music_rev_2 - music_cost_2)
    trend_music_diff_last = (music_diff_last / music_diff_2)
    trend_music_diff_this = (music_diff_this / music_diff_2)
    x = (trend_music_diff_last)
    y = (trend_music_diff_this)
    find rev_color
    find neg?
    locate 13,56
    format trend_music_diff_this, 5.2
    display "(trend_music_diff_this)"
    locate 13,46
    format trend_music_diff_last, 5.2
    display "(trend_music_diff_last)"
    locate 13,36
    display "1.00"
    reset rev_color
    a = (music_diff_this)
    b = (music_diff_last)
    c = (music_diff_2)
    locate 13,62
    display "(neg?)"
    reset neg?;

Rule display_state_diff If todo = trend_statements Then state_diff = found
    state_diff_this = (state_rev_this - state_cost_this)
    state_diff_last = (state_rev_last - state_cost_last)
```

```
    state_diff_2 = (state_rev_2 - state_cost_2)
    trend_state_diff_last = (state_diff_last / state_diff_2)
    trend_state_diff_this = (state_diff_this / state_diff_2)
    x = (trend_state_diff_last)
    y = (trend_state_diff_this)
    find rev_color
    find neg?
    locate 14,56
    format trend_state_diff_this, 5.2
    display "{trend_state_diff_this}"
    locate 14,46
    format trend_state_diff_last, 5.2
    display "{trend_state_diff_last}"
    locate 14,36
    display "1.00"
    reset rev_color
    a = (state_diff_this)
    b = (state_diff_last)
    c = (state_diff_2)
    locate 14,62
    display "{neg?}"
    reset neg?;

Rule is_it_negative If a < = 0 and
  b < = 0 and
  c < = 0 and
  x > 1.05 and
  y > 1.1025 Then neg? = "*"
    color = 12;

Rule put_"*"_explanation_on_display If todo = trend_statements Then display_for_neg = found
    locate 8,68
    color = 14
    display "*" note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction¬";

Rule color_exp_inc_rev If x > = 1.05 and
  y > = 1.1025 Then rev_color = found
    color = 14;

Rule color_exp_dec_rev If x < = .95 and
  y < = .9025 Then rev_color = found
    color = 12 else color = 11;

Rule color_exp_inc_cost If x > = 1.05 and
  y > = 1.1025 Then cost_color = found
    color = 12;

Rule color_exp_dec_cost If x < = .95 and
  y < = .9025 Then cost_color = found
    color = 14 else color = 11;

! Statement Block

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5;

plural:bs_this,bs_last,bs_2_ago;

bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 todo = what_if_analysis display "The system has just chained to a new knowledge base and files must" display "be
loaded. This takes just a moment. You will be instructed when to" display "continue." display " " loadfacts widata display "Press any key
to examine the choices of what if questions. ¬" cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end;

!Rules Block

Rule display_for_which_stmt If todo = what_if_analysis Then cls
    color = 11
    locate 1,29
    display "What_If Questions"
    locate 4,5
    display "1  What if the composition of the corps were to change?"
    locate 5,5
    display "2  What if the size of the corps were to change?"
    locate 6,5
    display "3  What if commutation allowances were to change?"
    locate 7,5
    display "4  What if the price of a 'bag' of uniform items were to change?"
    locate 8,5
    display "5  What if non-corps prices were to change?"
    locate 9,5
    display "6  What if costs were to change?"
    locate 10,5
    display "7  What if the budget were to change?"
    locate 11,5
    display "8  What if one or more entire market segments were dropped?"
    locate 13,5
    display "9  Perform the analysis"
    locate 14,4
    display "10  Return to main menu"
    pdisplay " "
    pdisplay " "
    pdisplay "                              What_If Questions"
    pdisplay " "
    pdisplay " "
    pdisplay "    1  What if the composition of the corps were to change?"
    pdisplay "    2  What if the size of the corps were to change?"
    pdisplay "    3  What if commutation allowances were to change?"
    pdisplay "    4  What if the price of a 'bag' of uniform items were to change?"
    pdisplay "    5  What if non-corps prices were to change?"
    pdisplay "    6  What if costs were to change?"
    pdisplay "    7  What if the budget were to change?"
    pdisplay "    8  What if one or more entire market segments were dropped?"
    pdisplay " "
    pdisplay "    9  Perform the analysis"
    pdisplay "   10  Return to main menu"
    pdisplay " "
    pdisplay "1                  2                  3"
    pdisplay "4                  5                  6"
    pdisplay "7                  8                  9"
    pdisplay "10"
    pdisplay " "
    find stmt_number
    which_stmt = found
    find what_next;

Rule make_changes_for_corps_comp If stmt_number = 1 Then what_next = corps_composition
    find change_wica_1
    find change_wiis_1
    find change_wiabis_1
    find change_wicbis_1;

Rule make_changes_for_corps_size_change If stmt_number = 2 Then what_next = corps_composition
    find change_wica_2
    find change_wiis_2
    find change_wiabis_2
    find change_wicbis_2;

Rule make_changes_for_ca_changes If stmt_number = 3 Then what_next = ca_change
```

```
    find change_wica_3
    find change_wiis_3
    find change_wiabis_3
    find change_wicbis_3;

Rule make_changes_for_bag_price_changes If stmt_number = 4 Then what_next = bag_price_change
    find change_wiis_4
    find change_wiabis_4
    find change_wicbis_4;

Rule make_changes_for_non_corps_price_change If stmt_number = 5 Then what_next = non_corps_price_change
    savefacts pwidata
    chain doprice;

Rule make_changes_for_cost_changes If stmt_number = 6 Then what_next = cost_change
    find change_wiis_6
    find change_wiabis_6
    find change_wicbis_6;

Rule make_changes_for_budget_changes If stmt_number = 7 Then what_next = budget_change
    savefacts pwidata
    chain dobud;

Rule make_changes_for_seg_drops If stmt_number = 8 Then what_next = drop_segs
    cls
    pdisplay ' '
    pdisplay "Which market segments should be dropped?"
    pdisplay ' '
    pdisplay "Public          Student_fac_staff      Interdepartmental"
    pdisplay "Music_Dept      State_related"
    find seg_drops
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      wages_wiis[x] = (wages_gen[x] + wages_stud[x])
      x = (x + 1)
    end
    find p_drop_abis
    find s_drop_abis
    find i_drop_abis
    find st_drop_abis
    find m_drop_abis
    t_drop_abis = (p_drop_abis + s_drop_abis + i_drop_abis + st_drop_abis + m_drop_abis)
    find change_stmts;

Rule p_drop If seg_drops < > public Then p_drop_abis = 0;

Rule s_drop If seg_drops < > student_fac_staff Then s_drop_abis = 0;

Rule i_drop If seg_drops < > interdepartmental Then i_drop_abis = 0;

Rule st_drop If seg_drops < > state_related Then st_drop_abis = 0;

Rule m_drop If seg_drops < > music_dept Then m_drop_abis = 0;


Rule p_drop

If t_wages > = (public_cost_this) and
  seg_drops = public

Then p_drop_abis = (public_cost_this)
    p_drop_cbis = (public_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      p_drop_is[x] = (public_cost_wiis[x])
      public_rev_wiis[x] = 0
      public_cost_wiis[x] = 0
      x = (x + 1)
    end
    public_rev_this = 0
    public_wicbis = 0
    public_cost_this = 0

else p_drop_abis = (t_wages)
    p_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
```

```
      p_drop_is[x] = (wages_wiis[x])
      public_rev_wiis[x] = 0
      public_cost_wiis[x] = 0
      x = (x + 1)
    end
    public_rev_this = 0
    public_wicbis = 0
    public_cost_this = 0 ;

Rule s_drop

If t_wages > = (s_f_s_cost_this) and
  seg_drops = student_fac_staff

Then s_drop_abis = (s_f_s_cost_this)
    s_drop_cbis = (s_f_s_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      s_drop_is[x] = (s_f_s_cost_wiis[x])
      s_f_s_cost_wiis[x] = 0
      s_f_s_rev_wiis[x] = 0
      x = (x + 1)
    end
    s_f_s_cost_this = 0
    s_f_s_rev_this = 0
    s_f_s_wicbis = 0

else s_drop_abis = (t_wages)
    s_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      s_drop_is[x] = (wages_wiis[x])
      s_f_s_cost_wiis[x] = 0
      s_f_s_rev_wiis[x] = 0
      x = (x + 1)
    end
    s_f_s_cost_this = 0
    s_f_s_rev_this = 0
    s_f_s_wicbis = 0 ;

Rule i_drop

If t_wages > = (interdept_cost_this) and
  seg_drops = interdepartmental

Then i_drop_abis = (interdept_cost_this)
    i_drop_cbis = (interdept_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      i_drop_is[x] = (interdept_cost_wiis[x])
      interdept_rev_wiis[x] = 0
      interdept_cost_wiis[x] = 0
      x = (x + 1)
    end
    interdept_cost_this = 0
    interdept_rev_this = 0
    interdept_wicbis = 0

else i_drop_abis = (t_wages)
    i_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      i_drop_is[x] = (wages_wiis[x])
      interdept_rev_wiis[x] = 0
      interdept_cost_wiis[x] = 0
      x = (x + 1)
    end
    interdept_cost_this = 0
    interdept_rev_this = 0
    interdept_wicbis = 0

; Rule st_drop

If t_wages > = (state_cost_this) and
  seg_drops = state_related
```

```
Then st_drop_abis = (state_cost_this)
    st_drop_cbis = (state_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      st_drop_is[x] = (state_cost_wiis[x])
      state_rev_wiis[x] = 0
      state_cost_wiis[x] = 0
      x = (x + 1)
    end
    state_rev_this = 0
    state_cost_this = 0
    state_wicbis = 0

else st_drop_abis = (t_wages)
    st_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      st_drop_is[x] = (wages_wiis[x])
      state_rev_wiis[x] = 0
      state_cost_wiis[x] = 0
      x = (x + 1)
    end
    state_rev_this = 0
    state_cost_this = 0
    state_wicbis = 0 ;

Rule m_drop

If t_wages > = (music_cost_this) and
  seg_drops = music_dept

Then m_drop_abis = (music_cost_this)
    m_drop_cbis = (music_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      m_drop_is[x] = (music_cost_wiis[x])
      music_rev_wiis[x] = 0
      music_cost_wiis[x] = 0
      x = (x + 1)
    end
    music_rev_this = 0
    music_cost_this = 0
    music_wicbis = 0

else m_drop_abis = (t_wages)
    m_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      m_drop_is[x] = (wages_wiis[x])
      music_rev_wiis[x] = 0
      music_cost_wiis[x] = 0
      x = (x + 1)
    end
    music_rev_this = 0
    music_cost_this = 0
    music_wicbis = 0 ;

Rule get_stats_to_change_wica_1 If stmt_number = 1 Then change_wica_1 = found
    pdisplay " "
    cls
    display "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_freshmen
    find actual_freshmen_change
    pdisplay " "
    display "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_sophomore
    find actual_sophomore_change
    pdisplay " "
```

```
    display "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_junior
    find actual_junior_change
    pdisplay " "
    display "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_senior
    find actual_senior_change
    display " "
    display " "
    display " "
    display "Please Wait"
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "Please Wait"
    total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    freshmen_number = (freshmen_number + actual_freshmen_change)
    sophomore_number = (sophomore_number + actual_sophomore_change)
    junior_number = (junior_number + actual_junior_change)
    senior_number = (senior_number + actual_senior_change)
    inc_due_to_freshmen_change = (freshmen_ca * actual_freshmen_change)
    inc_due_to_sophomore_change = (sophomore_ca * actual_sophomore_change)
    inc_due_to_junior_change = (junior_ca * actual_junior_change)
    inc_due_to_senior_change = (senior_ca * actual_senior_change)
    total_corps_number_change1 = (actual_freshmen_change + actual_sophomore_change + actual_junior_change)
    total_corps_number_change = (total_corps_number_change1 + actual_senior_change)
    change_due_to_corps_comp1 = (inc_due_to_freshmen_change + inc_due_to_sophomore_change + inc_due_to_junior_change)
    change_due_to_corps_comp = (change_due_to_corps_comp1 + inc_due_to_senior_change)
    uniform_cost_per_cadet = (cost_uniforms_this / total_corps_number)
    reset change_freshmen
    reset change_sophomore
    reset change_junior
    reset change_senior
    reset actual_freshmen_change
    reset actual_sophomore_change
    reset actual_junior_change
    reset actual_senior_change;

Rule get_stats_to_change_wica_2 If stmt_number = 2 Then change_wica_2 = found
    cls
    pdisplay " "
    display "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_freshmen
    find actual_freshmen_change
    pdisplay " "
    display "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_sophomore
    find actual_sophomore_change
    pdisplay " "
    display "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_junior
    find actual_junior_change
    pdisplay " "
    display "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_senior
    find actual_senior_change
```

```
    display " "
    display " "
    display " "
    display "Please Wait"
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "Please Wait"
    total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    freshmen_number = (freshmen_number + actual_freshmen_change)
    sophomore_number = (sophomore_number + actual_sophomore_change)
    junior_number = (junior_number + actual_junior_change)
    senior_number = (senior_number + actual_senior_change)
    inc_due_to_freshmen_change = (freshmen_ca * actual_freshmen_change)
    inc_due_to_sophomore_change = (sophomore_ca * actual_sophomore_change)
    inc_due_to_junior_change = (junior_ca * actual_junior_change)
    inc_due_to_senior_change = (senior_ca * actual_senior_change)
    total_corps_number_change1 = (actual_freshmen_change + actual_sophomore_change + actual_junior_change)
    total_corps_number_change = (total_corps_number_change1 + actual_senior_change)
    new_total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    change_due_to_corps_comp1 = (inc_due_to_freshmen_change + inc_due_to_sophomore_change + inc_due_to_junior_change)
    change_due_to_corps_comp = (change_due_to_corps_comp1 + inc_due_to_senior_change)
    uniform_cost_per_cadet = (cost_uniforms_this / total_corps_number)
    reset change_freshmen
    reset change_sophomore
    reset change_junior
    reset change_senior
    reset actual_freshmen_change
    reset actual_sophomore_change
    reset actual_junior_change
    reset actual_senior_change;

Rule get_stats_to_change_wica_3 If stmt_number = 3 Then change_wica_3 = found
    cls
    pdisplay " "
    display "The average commutation allowance for freshmen at this time is ${freshmen_ca}.  Would"
    pdisplay "The average commutation allowance for freshmen at this time is ${freshmen_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_freshmen_ca
    find actual_freshmen_change_ca
    pdisplay " "
    display "The average commutation allowance for sophomores at this time is ${sophomore_ca}.  Would"
    pdisplay "The average commutation allowance for sophomores at this time is ${sophomore_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_sophomore_ca
    find actual_sophomore_change_ca
    pdisplay " "
    display "The average commutation allowance for juniors at this time is ${junior_ca}.  Would"
    pdisplay "The average commutation allowance for juniors at this time is ${junior_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_junior_ca
    find actual_junior_change_ca
    pdisplay " "
    display "The average commutation allowance for seniors at this time is ${senior_ca}.  Would"
    pdisplay "The average commutation allowance for seniors at this time is ${senior_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_senior_ca
    find actual_senior_change_ca
    display " "
    display " "
    display " "
    display "Please Wait"
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "Please Wait"
    x = ((freshmen_number * actual_freshmen_change_ca) + (sophomore_number * actual_sophomore_change_ca))
    change_due_to_ca_changes = (x + (junior_number * actual_junior_change_ca) + (senior_number * actual_senior_change_ca));

Rule change_freshmen_same If change_freshmen = same Then actual_freshmen_change = 0;

Rule change_freshmen_increase If change_freshmen = increase Then find change_freshmen_number
```

```
    pdisplay " "
    pdisplay "By how many?"
    actual_freshmen_change = (change_freshmen_number);

Rule change_freshmen_decrease If change_freshmen = decrease Then find change_freshmen_number
    pdisplay " "
    pdisplay "By how many?"
    actual_freshmen_change = (0 - change_freshmen_number);

Rule change_sophomore_same If change_sophomore = same Then actual_sophomore_change = 0;

Rule change_sophomore_increase If change_sophomore = increase Then find change_sophomore_number
    pdisplay " "
    pdisplay "By how many?"
    actual_sophomore_change = (change_sophomore_number);

Rule change_sophomore_decrease If change_sophomore = decrease Then find change_sophomore_number
    pdisplay " "
    pdisplay "By how many?"
    actual_sophomore_change = (0 - change_sophomore_number);

Rule change_junior_same If change_junior = same Then actual_junior_change = 0;

Rule change_junior_increase If change_junior = increase Then find change_junior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_junior_change = (change_junior_number);

Rule change_junior_decrease If change_junior = decrease Then find change_junior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_junior_change = (0 - change_junior_number);

Rule change_senior_same If change_senior = same Then actual_senior_change = 0;

Rule change_senior_increase If change_senior = increase Then find change_senior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_senior_change = (change_senior_number);

Rule change_senior_decrease If change_senior = decrease Then find change_senior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_senior_change = (0 - change_senior_number);

Rule change_freshmen_same_ca If change_freshmen_ca = same Then actual_freshmen_change_ca = 0;

Rule change_freshmen_increase_ca If change_freshmen_ca = increase Then find change_freshmen_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_freshmen_change_ca = (change_freshmen_number_ca);

Rule change_freshmen_decrease_ca If change_freshmen_ca = decrease Then find change_freshmen_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_freshmen_change_ca = (0 - change_freshmen_number_ca);

Rule change_sophomore_same_ca If change_sophomore_ca = same Then actual_sophomore_change_ca = 0;

Rule change_sophomore_increase_ca If change_sophomore_ca = increase Then find change_sophomore_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_sophomore_change_ca = (change_sophomore_number_ca);

Rule change_sophomore_decrease_ca If change_sophomore_ca = decrease Then find change_sophomore_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_sophomore_change_ca = (0 - change_sophomore_number_ca);

Rule change_junior_same_ca If change_junior_ca = same Then actual_junior_change_ca = 0;

Rule change_junior_increase_ca If change_junior_ca = increase Then find change_junior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_junior_change_ca = (change_junior_number_ca);

Rule change_junior_decrease_ca If change_junior_ca = decrease Then find change_junior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_junior_change_ca = (0 - change_junior_number_ca);
```

```
Rule change_senior_same_ca If change_senior_ca = same Then actual_senior_change_ca = 0;

Rule change_senior_increase_ca If change_senior_ca = increase Then find change_senior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_senior_change_ca = (change_senior_number_ca);

Rule change_senior_decrease_ca If change_senior_ca = decrease Then find change_senior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_senior_change_ca = (0 - change_senior_number_ca);

Rule get_stats_to_change_wiis_1 If stmt_number = 1 Then change_wiis_1 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x]+(corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      x = ( x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x]+(corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] - wages_gen[x] - wages_stud[x])
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl - wages_gen[x] - wages_stud[x])
      x = ( x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x]+(corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] - (1/2 * wages_gen[x]) - (1/2 * wages_stud[x]))
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl - (1/2 * wages_gen[x]) - (1/2 * wages_stud[x]))
      x = ( x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
```

```
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
    uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
    corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_exp_uniforms_%[y]*total_corps_number_change*uniform_cost_per_cadet))
    x = ( x + 1)
    y = (y + 1)
  end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wiis_2 = found
  x = 1
  whiletrue x < = 12 then
    corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
    corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
    uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
    personal_wiis[x] = (personal_wiis[x] * 10 / 9)
    vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
    corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl + (1/9 * personal_wiis[x]))
    x = ( x + 1)
    y = (y + 1)
  end;

Rule get_stats_to_change_wiis_3 If stmt_number = 3 Then change_wiis_3 = found
  x = 1
  whiletrue x < = 12 then
    corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_ca_changes))
    x = ( x + 1)
    y = (y + 1)
  end;

Rule get_stats_to_change_wiis_4 If stmt_number = 4 Then change_wiis_4 = found
  cls
  pdisplay " "
  display "Would you like to increase or decrease the cost of putting together a 'bag'"
  pdisplay "Would you like to increase or decrease the cost of putting together a 'bag'"
  pdisplay "of uniforms items?"
  pdisplay " "
  pdisplay "increase                    decrease"
  find bag_price_direction
  pdisplay " "
  pdisplay "By how much per cadet?"
  find amount_bag_change
  new_total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
  find total_bag_price_change
  x = 1
  whiletrue x < = 12 then
    corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_bag_price_change))
    corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_exp_uniforms_%[y] * total_bag_price_change))
    x = ( x + 1)
    y = (y + 1)
  end;

Rule increase_$_bag If bag_price_direction = increase Then total_bag_price_change = (new_total_corps_number * amount_bag_change);
```

```
Rule decrease_$_bag If bag_price_direction = decrease Then total_bag_price_change = (0 - (new_total_corps_number *
amount_bag_change));

Rule get_stats_to_change_wiis_6 If stmt_number = 6 Then change_wiis_6 = found
    cls
    display "For which expense categories would you like to change the amounts?"
    pdisplay "For which expense categories would you like to change the amounts?"
    find which_expenses
    pdisplay "Choose as many as you like. "
    pdisplay " "
    pdisplay "personnel          contractual          supplies & materials"
    pdisplay "continuous         equipment"
    find personal_increment
    find contract_increment
    find s_&_m_increment
    find contin_increment
    find equip_increment
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] * personal_increment)
      contract_wiis[x] = (contract_wiis[x] * contract_increment)
      s_&_m_wiis[x] = (s_&_m_wiis[x] * s_&_m_increment)
      contin_wiis[x] = (contin_wiis[x] * contin_increment)
      equip_wiis[x] = (equip_wiis[x] * equip_increment)
      x = (x + 1)
    end
    find personal_directs    ! leads to a series of rules which
    find contract_directs    ! determine how each of the changes
    find s_&_m_directs       ! in these costs will affect the direct costs
    find contin_directs
    find equip_directs;

Rule get_stats_to_change_wiabis_1 If stmt_number = 1 Then change_wiabis_1 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet));

Rule personal_increment_0 If which_expenses < > personnel Then personal_increment = 1.0;

Rule personal_increment_positive_% If which_expenses = personnel and
  personal_direction = increase and
  personal_terms = percentage Then find personal_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    personal_increment = (1 + (personal_% / 100));

Rule personal_increment_positive_abs If which_expenses = personnel and
  personal_direction = increase and
  personal_terms = dollar Then find personal_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change personnel expenses?"
    personal_% = (personal_$ / cbis_personal_x)
    personal_increment = (1 + personal_%);

Rule personal_increment_negative_% If which_expenses = personnel and
  personal_direction = decrease and
  personal_terms = percentage Then find personal_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
```

```
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    personal_increment = (1 - (personal_% / 100));

Rule personal_increment_negative_abs If which_expenses = personnel and
  personal_direction = decrease and
  personal_terms = dollar Then find personal_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change personnel expenses?"
    personal_% = (personal_$ / cbis_personal_x)
    personal_increment = (1 - personal_%);

Rule contract_increment_0 If which_expenses < > contractual Then contract_increment = 1.0;

Rule contract_increment_positive_% If which_expenses = contractual and
  contract_direction = increase and
  contract_terms = percentage Then find contract_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contract_increment = (1 + (contract_% / 100));

Rule contract_increment_positive_abs If which_expenses = contractual and
  contract_direction = increase and
  contract_terms = dollar Then find contract_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change contractual expenses?"
    contract_% = (contract_$ / cbis_contract_x)
    contract_increment = (1 + contract_% );

Rule contract_increment_negative_% If which_expenses = contractual and
  contract_direction = decrease and
  contract_terms = percentage Then find contract_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contract_increment = (1 - (contract_% / 100));

Rule contract_increment_negative_abs If which_expenses = contractual and
  contract_direction = decrease and
  contract_terms = dollar Then find contract_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
```

```
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change contractual expenses?"
    contract_% = (contract_$ / cbis_contract_x)
    contract_increment = (1 - contract_% );

Rule s_&_m_increment_0 If which_expenses < > supplies_&_materials Then s_&_m_increment = 1.0;

Rule s_&_m_increment_positive_% If which_expenses = supplies_&_materials and
  s_&_m_direction = increase and
  s_&_m_terms = percentage Then find s_&_m_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    s_&_m_increment = (1 + (s_&_m_% / 100));

Rule s_&_m_increment_positive_abs If which_expenses = supplies_&_materials and
  s_&_m_direction = increase and
  s_&_m_terms = dollar Then find s_&_m_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change supplies & materials?"
    s_&_m_% = (s_&_m_$ / cbis_s_&_m_x)
    s_&_m_increment = (1 + s_&_m_% );

Rule s_&_m_increment_negative_% If which_expenses = supplies_&_materials and
  s_&_m_direction = decrease and
  s_&_m_terms = percentage Then find s_&_m_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    s_&_m_increment = (1 - (s_&_m_% / 100));

Rule s_&_m_increment_negative_abs If which_expenses = supplies_&_materials and
  s_&_m_direction = decrease and
  s_&_m_terms = dollar Then find s_&_m_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change supplies & materials?"
    s_&_m_% = (s_&_m_$ / cbis_s_&_m_x)
    s_&_m_increment = (1 - s_&_m_% );

Rule contin_increment_0 If which_expenses < > continuous Then contin_increment = 1.0;

Rule contin_increment_positive_% If which_expenses = continuous and
  contin_direction = increase and
  contin_terms = percentage Then find contin_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
```

```
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contin_increment = (1 + (contin_% / 100));

Rule contin_increment_positive_abs If which_expenses = continuous and
  contin_direction = increase and
  contin_terms = dollar Then find contin_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change continuous expenses?"
    contin_% = (contin_$ / cbis_contin_x)
    contin_increment = (1 + contin_% );

Rule contin_increment_negative_% If which_expenses = continuous and
  contin_direction = decrease and
  contin_terms = percentage Then find contin_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contin_increment = (1 - (contin_% / 100));

Rule contin_increment_negative_abs If which_expenses = continuous and
  contin_direction = decrease and
  contin_terms = dollar Then find contin_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change continuous expenses?"
    contin_% = (contin_$ / cbis_contin_x)
    contin_increment = (1 - contin_% );

Rule equip_increment_0 If which_expenses < > equipment Then equip_increment = 1.0;

Rule equip_increment_positive_% If which_expenses = equipment and
  equip_direction = increase and
  equip_terms = percentage Then find equip_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    equip_increment = (1 + (equip_% / 100));

Rule equip_increment_positive_abs If which_expenses = equipment and
  equip_direction = increase and
  equip_terms = dollar Then find equip_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
```

```
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change equipment purchases?"
    equip_% = (equip_$ / act_equip_x)
    equip_increment = (1 + equip_% );

Rule equip_increment_negative_% If which_expenses = equipment and
  equip_direction = decrease and
  equip_terms = percentage Then find equip_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    equip_increment = (1 - (equip_% / 100));

Rule equip_increment_negative_abs If which_expenses = equipment and
  equip_direction = decrease and
  equip_terms = dollar Then find equip_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change equipment purchases?"
    equip_% = (equip_$ / act_equip_x)
    equip_increment = (1 - equip_% );

Rule personal_directs If personal_increment > 1.0 Then personal_directs = found
    z = (count_it)
    y = (((personal_increment - 1) * cbis_personal) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule personal_directs If personal_increment < 1.0 Then personal_directs = found
    z = (count_it)
    y = (((1 - personal_increment) * cbis_personal) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule contract_directs If contract_increment > 1.0 Then contract_directs = found
    z = (count_it)
```

```
    y = (((contract_increment - 1) * cbis_contract) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule contract_directs If contract_increment < 1.0 Then contract_directs = found
    z = (count_it)
    y = (((1 - contract_increment) * cbis_contract) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule s_&_m_directs If s_&_m_increment > 1.0 Then s_&_m_directs = found
    z = (count_it)
    y = (((s_&_m_increment - 1) * cbis_s_&_m) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule s_&_m_directs If s_&_m_increment < 1.0 Then s_&_m_directs = found
    z = (count_it)
    y = (((1 - s_&_m_increment) * cbis_s_&_m) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule contin_directs If contin_increment > 1.0 Then contin_directs = found
    z = (count_it)
```

```
    y = (((contin_increment - 1) * cbis_contin) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule contin_directs If contin_increment < 1.0 Then contin_directs = found
    z = (count_it)
    y = (((1 - contin_increment) * cbis_contin) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule equip_directs If equip_increment > 1.0 Then equip_directs = found
    z = (count_it)
    y = (((equip_increment - 1) * act_equip) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule equip_directs If equip_increment < 1.0 Then equip_directs = found
    z = (count_it)
    y = (((1 - equip_increment) * act_equip) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wiabis_2 = found
```

```
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal - wages_gen_wiabis - wages_stud_wiabis)
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl - wages_gen_wiabis - wages_stud_wiabis)
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 + wages_gen_wiabis + wages_stud_wiabis);

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal - (1/2 * wages_gen_wiabis) - (1/2 *wages_stud_wiabis))
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl - (1/2 * wages_gen_wiabis) - (1/2 *wages_stud_wiabis))
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 + (1/2 * wages_gen_wiabis) + (1/2 * wages_stud_wiabis));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    corps_cost_this = (corps_cost_this + (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal * 10/9)
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl + (1/9 * t_personal))
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 - (1/9 * t_personal));

Rule get_stats_to_change_wiabis_3 If stmt_number = 3 Then change_wiabis_3 = found
    t_mil_rev = (t_mil_rev + change_due_to_ca_changes);

Rule get_stats_to_change_wiabis_4 If stmt_number = 4 Then change_wiabis_4 = found
    cost_uniforms_this = (cost_uniforms_this + total_bag_price_change)
    corps_cost_this = (corps_cost_this + total_bag_price_change);


Rule get_stats_to_change_wiabis_6 If stmt_number = 6 Then change_wiabis_6 = found
    t_personal = (t_personal * personal_increment)
    contract_this = (contract_this * contract_increment)
    s_&_m_this = (s_&_m_this * s_&_m_increment)
    contin_this = (contin_this * contin_increment)
    deprec_this = (deprec_this * equip_increment);

Rule get_stats_to_change_wicbis_1 If stmt_number = 1 Then change_wicbis_1 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal - wages_gen_wiabis - wages_stud_wiabis)
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + wages_gen_wiabis + wages_stud_wiabis);

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal - (1/2 * wages_gen_wiabis) - (1/2 * wages_stud_wiabis))
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + (1/2 * wages_gen_wiabis) + (1/2 * wages_stud_wiabis));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wicbis_2 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet));
```

```
Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal * 10/9)
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + (1/9 * cbis_personal));

Rule get_stats_to_change_wicbis_3 If stmt_number = 3 Then change_wicbis_3 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_ca_changes);

Rule get_stats_to_change_wicbis_4 If stmt_number = 4 Then change_wicbis_4 = found
    uniforms = (uniforms + total_bag_price_change);

Rule get_stats_to_change_wicbis_6 If stmt_number = 6 Then change_wicbis_6 = found
    cbis_personal = (cbis_personal * personal_increment)
    cbis_contract = (cbis_contract * contract_increment)
    cbis_s_&_m = (cbis_s_&_m * s_&_m_increment)
    cbis_contin = (cbis_contin * contin_increment)
    act_equip = (act_equip * equip_increment);


Rule change_wiis_wiabis_wicbis_8

If t_drop_abis < = (t_wages)

Then change_stmts = found
    t_personal = (t_personal - t_drop_abis)
    cbis_personal = (cbis_personal - t_drop_abis)
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] - p_drop_is[x] - s_drop_is[x] - i_drop_is[x] - st_drop_is[x] - m_drop_is[x])
      x = (x + 1)
    end else
    t_personal = (t_personal - t_wages)
    cbis_personal = (cbis_personal - t_wages)
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] - wages_wiis[x])
      x = (x + 1)
    end;

Rule put_files_away_&_start_analysis

If stmt_number = 9

Then what_next = analysis
    savefacts widata
    chain pwidoit;

Rule forget_wi_analysis

If stmt_number = 10

Then what_next = leave
    chain pts;


! Statement Block

ask stmt_number: " ": choices stmt_number: 1,2,3,4,5,6,7,8,9,10; ask change_freshmen: "leave this number the same?"; ask change_sophomore: "leave this number the same?"; ask change_junior: "leave this number the same?"; ask change_senior: "leave this number the same?"; choices change_freshmen,change_sophomore,change_junior,change_senior: increase, decrease, same;

ask change_freshmen_number: "By how many?"; ask change_sophomore_number: "By how many?"; ask change_junior_number: "By how many?"; ask change_senior_number: "By how many?";

ask change_freshmen_ca: "you like to increase, decrease or leave this amount the same?"; ask change_sophomore_ca: "you like to increase, decrease or leave this amount the same?"; ask change_junior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_senior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_freshmen_number_ca: "By how much?"; ask change_sophomore_number_ca: "By how much?"; ask change_junior_number_ca: "By how much?"; ask change_senior_number_ca: "By how much?"; choices change_freshmen_ca,change_sophomore_ca,change_junior_ca,change_senior_ca: increase, decrease,same;

ask bag_price_direction: "of uniform items?"; choices bag_price_direction: increase, decrease; ask amount_bag_change: "By how much per cadet?";
```

ask personal_%: "By what percentage? Do not enter as a decimal."; ask contract_%: "By what percentage? Do not enter as a decimal."; ask s_&_m_%: "By what percentage? Do not enter as a decimal."; ask contin_%: "By what percentage? Do not enter as a decimal."; ask equip_%: "By what percentage? Do not enter as a decimal."; ask personal_$: "On an annual basis, how much would you like to change personnel expenses?"; ask contract_$: "On an annual basis, how much would you like to change contractual expenses?"; ask s_&_m_$: "On an annual basis, how much would you like to change supplies & materials?"; ask contin_$: "On an annual basis, how much would you like to change continuous expenses?"; ask equip_$: "On an annual basis, how much would you like to change equipment purchases?";

ask which_expenses: "Choose as many as you like."; choices which_expenses: personnel, contractual, supplies_&_materials, continuous, equipment;

ask personal_direction: "Would you like to increase or decrease personnel expenses?"; ask contract_direction: "Would you like to increase or decrease contractual expenses?"; ask s_&_m_direction: "Would you like to increase or decrease supplies & materials?"; ask contin_direction: "Would you like to increase or decrease continuous expenses?"; ask equip_direction: "Would you like to increase or decrease equipment purchases?"; choices personal_direction,contract_direction,s_&_m_direction,contin_direction,equip_direction: increase, decrease;

ask personal_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contract_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask s_&_m_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contin_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask equip_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices personal_terms,contract_terms,s_&_m_terms,contin_terms,equip_terms: percentage, dollar;

ask seg_drops: "Which market segments should be dropped?"; choices seg_drops: Public, Student_fac_staff, Interdepartmental, Music_Dept, State_related;

plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis, s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;

```
execute; endoff; runtime;

actions color = 15 stmt_number = 5 display "The system has just chained a new knowledge base and files must be" display "loaded, which takes time. In a few minutes you will be asked" display "which prices you desire to change, and you may then continue from there." display " " loadfacts pwidata find change_wiis_5 find change_wiabis_5 find change_wicbis_5 reset stmt_number savefacts pwidata chain pwhatifa ;


Rule get_stats_to_change_wiis_5 If stmt_number = 5 Then change_wiis_5 = found
    cls
    display "For which market segments would you like to change the prices? Choose"
    pdisplay "For which market segments would you like to change the prices? Choose"
    pdisplay "as many as you like."
    pdisplay " "
    pdisplay "Public          Student_Fac_Staff          Interdepartmental"
    pdisplay "Music_Dept      State_Related"
    find which_segments
    find public_increment
    find s_f_s_increment
    find interdept_increment
    find music_increment
    find state_increment
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
     public_rev_wiis[x] = (public_rev_wiis[x] * public_increment)
     s_f_s_rev_wiis[x] = (s_f_s_rev_wiis[x] * s_f_s_increment)
     interdept_rev_wiis[x] = (interdept_rev_wiis[x] * interdept_increment)
     music_rev_wiis[x] = (music_rev_wiis[x] * music_increment)
     state_rev_wiis[x] = (state_rev_wiis[x] * state_increment)
     x = (x + 1)
    end;


Rule public_increment_0 If which_segments < > public Then public_increment = 1.0;

Rule public_increment_positive If which_segments = public and
  public_direction = increase Then find public_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to the public?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    public_increment = (1 + (public_% / 100));

Rule public_increment_negative If which_segments = public and
  public_direction = decrease Then find public_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to the public?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    public_increment = (1 - (public_% / 100));

Rule s_f_s_increment_0 If which_segments < > student_fac_staff Then s_f_s_increment = 1.0;

Rule s_f_s_increment_positive If which_segments = student_fac_staff and
  s_f_s_direction = increase Then find s_f_s_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to students,"
    pdisplay "faculty, and staff?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    s_f_s_increment = (1 + (s_f_s_% / 100));

Rule s_f_s_increment_negative If which_segments = student_fac_staff and
  s_f_s_direction = decrease Then find s_f_s_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to students, "
    pdisplay "faculty, and staff?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
```

```
    pdisplay "By what percentage?  Do not enter as a decimal."
    s_f_s_increment = (1 - (s_f_s_% / 100));

Rule interdept_increment_0 If which_segments < > interdepartmental Then interdept_increment = 1.0;

Rule interdept_increment_positive If which_segments = interdepartmental and
  interdept_direction = increase Then find interdept_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to other"
    pdisplay "departments?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    interdept_increment = (1 + (interdept_% / 100));

Rule interdept_increment_negative If which_segments = interdepartmental and
  interdept_direction = decrease Then find interdept_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to other"
    pdisplay "departments?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    interdept_increment = (1 - (interdept_% / 100));

Rule music_increment_0 If which_segments < > Music_Dept Then music_increment = 1.0;

Rule music_increment_positive If which_segments = Music_Dept and
  music_direction = increase Then find music_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to the music"
    pdisplay "department?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    music_increment = (1 + (music_% / 100));

Rule music_increment_negative If which_segments = Music_Dept and
  music_direction = decrease Then find music_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to the music"
    pdisplay "department?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    music_increment = (1 - (music_% / 100));

Rule state_increment_0 If which_segments < > State_Related Then state_increment = 1.0;

Rule state_increment_positive If which_segments = State_Related and
  state_direction = increase Then find state_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to state"
    pdisplay "related activities?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    state_increment = (1 + (state_% / 100));

Rule state_increment_negative If which_segments = State_Related and
  state_direction = decrease Then find state_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease prices charged to state"
    pdisplay "related activities?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    state_increment = (1 - (state_% / 100));


Rule get_stats_to_change_wiabis_5 If stmt_number = 5 Then change_wiabis_5 = found
    public_rev_this = (public_rev_this * public_increment)
    s_f_s_rev_this = (s_f_s_rev_this * s_f_s_increment)
    interdept_rev_this = (interdept_rev_this * interdept_increment)
```

```
    music_rev_this = (music_rev_this * music_increment)
    state_rev_this = (state_rev_this * state_increment);


Rule get_stats_to_change_wicbis_5 If stmt_number = 5 Then change_wicbis_5 = found
    public_wicbis = (public_wicbis * public_increment)
    s_f_s_wicbis = (s_f_s_wicbis * s_f_s_increment)
    interdept_wicbis = (interdept_wicbis * interdept_increment)
    music_wicbis = (music_wicbis * music_increment)
    state_wicbis = (state_wicbis * state_increment);


! Statement Block

ask which_segments: "as many as you like."; choices which_segments, seg_drops: Public, Student_Fac_Staff, Interdepartmental,
Music_Dept, State_Related;

ask public_direction: "Would you like to increase or decrease prices charged to the public?"; ask s_f_s_direction:"Would you like to increase
or decrease prices charged to students, faculty, and staff?"; ask interdept_direction: "Would you like to increase or decrease prices charged
to other departments?"; ask music_direction: "Would you like to increase or decrease prices charged to the music department?"; ask
state_direction: "Would you like to increase or decrease prices charged to state related activities?"; choices
public_direction,s_f_s_direction,interdept_direction,music_direction,state_direction: increase, decrease;

ask public_%: "By what percentage? Do not enter as a decimal."; ask s_f_s_%: "By what percentage? Do not enter as a decimal."; ask
interdept_%: "By what percentage? Do not enter as a decimal."; ask music_%: "By what percentage? Do not enter as a decimal."; ask
state_%: "By what percentage? Do not enter as a decimal.";

plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis,
s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 display "The system has just chained a new knowledge base and files must be" display "loaded, which takes time. In a
few minutes you will be asked which budget" display "items you would like to change, ane then you can continue from there." display ""
loadfacts pwidata todo = what_if_analysis stmt_number = 7 what_next = budget_change find change_wibud_7 reset stmt_number
savefacts pwidata chain pwhatifa ;


Rule get_stats_to_change_wibud_7 If stmt_number = 7 Then change_wibud_7 = found
    cls
    display "Which budget items would you like to change?"
    pdisplay "Which budget items would you like to change?"
    pdisplay "Choose as many as you like."
    pdisplay " "
    pdisplay " revenue              equipment              uniforms"
    pdisplay " salaries             wages                  fringe benefits"
    pdisplay " telecommunications   repair & maintenance   travel"
    pdisplay " other contractual    repair supplies        other supplies"
    pdisplay " electricity          water & sewer          agency charges"
    pdisplay " insurance            other contunuous"
    find which_bud_items
    find rev_bud_increment
    find equip_bud_increment
    find uniforms_bud_increment
    find salaries_bud_increment
    find wages_bud_increment
    find fringes_bud_increment
    find tele_bud_increment
    find r_&_m_bud_increment
    find travel_bud_increment
    find other_contract_bud_increment
    find repair_s_&_m_bud_increment
    find other_s_&_m_bud_increment
    find elect_bud_increment
    find w_&_s_bud_increment
    find agency_charges_bud_increment
    find insure_bud_increment
    find other_contin_bud_increment
    rev_bud = (rev_bud * rev_bud_increment)
    equip_bud = (equip_bud_increment * equip_bud)
    fringes_bud = (fringes_bud_increment * fringes_bud)
    salaries_bud = (salaries_bud_increment * salaries_bud)
    wages_bud = (wages_bud_increment * wages_bud)
    uniforms_bud = (uniforms_bud_increment * uniforms_bud)
    tele_bud = (tele_bud_increment * tele_bud)
    r_&_m_bud = (r_&_m_bud_increment * r_&_m_bud)
    travel_bud = (travel_bud_increment * travel_bud)
    other_contract_bud = (other_contract_bud_increment * other_contract_bud)
    repair_s_&_m_bud = (repair_s_&_m_bud_increment * repair_s_&_m_bud)
    other_s_&_m_bud = (other_s_&_m_bud_increment * other_s_&_m_bud)
    elect_bud = (elect_bud_increment * elect_bud)
    w_&_s_bud = (w_&_s_bud_increment * w_&_s_bud)
    agency_charges_bud = (agency_charges_bud_increment * agency_charges_bud)
    insure_bud = (insure_bud_increment * insure_bud)
    other_contin_bud = (other_contin_bud_increment * other_contin_bud);

Rule rev_bud_increment_increase_% If which_bud_items = revenue and
  rev_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for revenue?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    rev_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule rev_bud_increment_increase_abs If which_bud_items = revenue and
  rev_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for revenue?"
    pdisplay " "
```

```
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    rev_bud_increment = (1 + (bud_$ / rev_bud))
    reset bud_$;

Rule rev_bud_increment_decrease_% If which_bud_items = revenue and
  rev_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for revenue?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    rev_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule rev_bud_increment_decrease_abs If which_bud_items = revenue and
  rev_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for revenue?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    rev_bud_increment = (1 - (bud_$ / rev_bud))
    reset bud_$ else rev_bud_increment = 1.0;

Rule equip_bud_increment_increase_% If which_bud_items = equipment and
  equip_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for equipment?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    equip_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule equip_bud_increment_increase_abs If which_bud_items = equipment and
  equip_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for equipment?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    equip_bud_increment = (1 + (bud_$ / equip_bud))
    reset bud_$;

Rule equip_bud_increment_decrease_% If which_bud_items = equipment and
  equip_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for equipment?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
```

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    find bud_%
    equip_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule equip_bud_increment_decrease_abs If which_bud_items = equipment and
  equip_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for equipment?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    equip_bud_increment = (1 - (bud_$ / equip_bud))
    reset bud_$ else equip_bud_increment = 1.0;

Rule uniforms_bud_increment_increase_% If which_bud_items = uniforms and
  uniforms_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for uniforms?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    uniforms_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule uniforms_bud_increment_increase_abs If which_bud_items = uniforms and
  uniforms_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for uniforms?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    uniforms_bud_increment = (1 + (bud_$ / uniforms_bud))
    reset bud_$;

Rule uniforms_bud_increment_decrease_% If which_bud_items = uniforms and
  uniforms_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for uniforms?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    uniforms_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule uniforms_bud_increment_decrease_abs If which_bud_items = uniforms and
  uniforms_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for uniforms?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    uniforms_bud_increment = (1 - (bud_$ / uniforms_bud))
    reset bud_$ else uniforms_bud_increment = 1.0;

Rule salaries_bud_increment_increase_% If which_bud_items = salaries and
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  salaries_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for salaries?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    salaries_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule salaries_bud_increment_increase_abs If which_bud_items = salaries and
  salaries_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for salaries?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    salaries_bud_increment = (1 + (bud_$ / salaries_bud))
    reset bud_$;

Rule salaries_bud_increment_decrease_% If which_bud_items = salaries and
  salaries_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for salaries?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    salaries_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule salaries_bud_increment_decrease_abs If which_bud_items = salaries and
  salaries_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for salaries?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    salaries_bud_increment = (1 - (bud_$ / salaries_bud))
    reset bud_$ else salaries_bud_increment = 1.0;

Rule wages_bud_increment_increase_% If which_bud_items = wages and
  wages_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for wages?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    wages_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule wages_bud_increment_increase_abs If which_bud_items = wages and
  wages_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for wages?"
    pdisplay " "
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    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    wages_bud_increment = (1 + (bud_$ / wages_bud))
    reset bud_$;

Rule wages_bud_increment_decrease_% If which_bud_items = wages and
   wages_bud_direction = decrease and
   bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for wages?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    wages_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule wages_bud_increment_decrease_abs If which_bud_items = wages and
   wages_bud_direction = decrease and
   bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for wages?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    wages_bud_increment = (1 - (bud_$ / wages_bud))
    reset bud_$ else wages_bud_increment = 1.0;

Rule fringes_bud_increment_increase_% If which_bud_items = fringe_benefits and
   fringes_bud_direction = increase and
   bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for fringe benefits?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    fringes_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule fringes_bud_increment_increase_abs If which_bud_items = fringe_benefits and
   fringes_bud_direction = increase and
   bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for fringe benefits?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    fringes_bud_increment = (1 + (bud_$ / fringes_bud))
    reset bud_$;

Rule fringes_bud_increment_decrease_% If which_bud_items = fringe_benefits and
   fringes_bud_direction = decrease and
   bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for fringe benefits?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
```

```
    find bud_%
    fringes_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule fringes_bud_increment_decrease_abs If which_bud_items = fringe_benefits and
  fringes_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for fringe benefits?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    fringes_bud_increment = (1 - (bud_$ / fringes_bud))
    reset bud_$ else fringes_bud_increment = 1.0;

Rule tele_bud_increment_increase_% If which_bud_items = telecommunications and
  tele_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for telecommunications?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    tele_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule tele_bud_increment_increase_abs If which_bud_items = telecommunications and
  tele_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for telecommunications?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    tele_bud_increment = (1 + (bud_$ / tele_bud))
    reset bud_$;

Rule tele_bud_increment_decrease_% If which_bud_items = telecommunications and
  tele_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for telecommunications?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    tele_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule tele_bud_increment_decrease_abs If which_bud_items = telecommunications and
  tele_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for telecommunications?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    tele_bud_increment = (1 - (bud_$ / tele_bud))
    reset bud_$ else tele_bud_increment = 1.0;

Rule r_&_m_bud_increment_increase_% If which_bud_items = repair_&_maintenance and
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  r_&_m_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repairs & maintenance?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    r_&_m_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule r_&_m_bud_increment_increase_abs If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repairs & maintenance?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    r_&_m_bud_increment = (1 + (bud_$ / r_&_m_bud))
    reset bud_$;

Rule r_&_m_bud_increment_decrease_% If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repairs & maintenance?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    r_&_m_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule r_&_m_bud_increment_decrease_abs If which_bud_items = repair_&_maintenance and
  r_&_m_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repairs & maintenance?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    r_&_m_bud_increment = (1 - (bud_$ / r_&_m_bud))
    reset bud_$ else r_&_m_bud_increment = 1.0;

Rule travel_bud_increment_increase_% If which_bud_items = travel and
  travel_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for travel?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    travel_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule travel_bud_increment_increase_abs If which_bud_items = travel and
  travel_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for travel?"
    pdisplay " "
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    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    travel_bud_increment = (1 + (bud_$ / travel_bud))
    reset bud_$;

Rule travel_bud_increment_decrease_% If which_bud_items = travel and
  travel_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for travel?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    travel_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule travel_bud_increment_decrease_abs If which_bud_items = travel and
  travel_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for travel?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    travel_bud_increment = (1 - (bud_$ / travel_bud))
    reset bud_$ else travel_bud_increment = 1.0;

Rule other_contract_bud_inc_increase_% If which_bud_items = other_contractual and
  other_contract_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "contractual expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    other_contract_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule other_contract_bud_inc_increase_abs If which_bud_items = other_contractual and
  other_contract_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "contractual expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    other_contract_bud_increment = (1 + (bud_$ / other_contract_bud))
    reset bud_$;

Rule other_contract_bud_inc_decrease_% If which_bud_items = other_contractual and
  other_contract_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "contractual expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
```

```
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    other_contract_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule other_contract_bud_inc_decrease_abs If which_bud_items = other_contractual and
   other_contract_bud_direction = decrease and
   bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "contractual expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    other_contract_bud_increment = (1 - (bud_$ / other_contract_bud))
    reset bud_$ else other_contract_bud_increment = 1.0;

Rule repair_s_&_m_bud_increment_increase_% If which_bud_items = repair_supplies and
   repair_s_&_m_bud_direction = increase and
   bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repair supplies?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    repair_s_&_m_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule repair_s_&_m_bud_inc_increase_abs If which_bud_items = repair_supplies and
   repair_s_&_m_bud_direction = increase and
   bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repair supplies?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    repair_s_&_m_bud_increment = (1 + (bud_$ / repair_s_&_m_bud))
    reset bud_$;

Rule repair_s_&_m_bud_inc_decrease_% If which_bud_items = repair_supplies and
   repair_s_&_m_bud_direction = decrease and
   bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repair supplies?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    repair_s_&_m_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule repair_s_&_m_bud_inc_decrease_abs If which_bud_items = repair_supplies and
   repair_s_&_m_bud_direction = decrease and
   bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for repair supplies?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
```

```
    repair_s_&_m_bud_increment = (1 - (bud_$ / repair_s_&_m_bud))
    reset bud_$ else repair_s_&_m_bud_increment = 1.0;

Rule other_s_&_m_bud_inc_increase_% If which_bud_items = other_supplies and
   other_s_&_m_bud_direction = increase and
   bud_terms = percentage Then reset bud_terms
     pdisplay " "
     pdisplay "Would you like to increase or decrease the budget for other supplies"
     pdisplay "and maintenance?"
     pdisplay " "
     pdisplay "increase              decrease"
     pdisplay " "
     pdisplay "Would you prefer to answer in percentage or in dollar terms?"
     pdisplay " "
     pdisplay "percentage              dollar"
     find bud_%
     other_s_&_m_bud_increment = (1 + (bud_% / 100))
     reset bud_%;

Rule other_s_&_m_bud_inc_increase_abs If which_bud_items = other_supplies and
   other_s_&_m_bud_direction = increase and
   bud_terms = dollar Then reset bud_terms
     pdisplay " "
     pdisplay "Would you like to increase or decrease the budget for other supplies"
     pdisplay "and maintenance?"
     pdisplay " "
     pdisplay "increase              decrease"
     pdisplay " "
     pdisplay "Would you prefer to answer in percentage or in dollar terms?"
     pdisplay " "
     pdisplay "percentage              dollar"
     find bud_$
     other_s_&_m_bud_increment = (1 + (bud_$ / other_s_&_m_bud))
     reset bud_$;

Rule other_s_&_m_bud_inc_decrease_% If which_bud_items = other_supplies and
   other_s_&_m_bud_direction = decrease and
   bud_terms = percentage Then reset bud_terms
     pdisplay " "
     pdisplay "Would you like to increase or decrease the budget for other supplies"
     pdisplay "and maintenance?"
     pdisplay " "
     pdisplay "increase              decrease"
     pdisplay " "
     pdisplay "Would you prefer to answer in percentage or in dollar terms?"
     pdisplay " "
     pdisplay "percentage              dollar"
     find bud_%
     other_s_&_m_bud_increment = (1 - (bud_% / 100))
     reset bud_%;

Rule other_s_&_m_bud_inc_decrease_abs If which_bud_items = other_supplies and
   other_s_&_m_bud_direction = decrease and
   bud_terms = dollar Then reset bud_terms
     pdisplay " "
     pdisplay "Would you like to increase or decrease the budget for other supplies"
     pdisplay "and maintenance?"
     pdisplay " "
     pdisplay "increase              decrease"
     pdisplay " "
     pdisplay "Would you prefer to answer in percentage or in dollar terms?"
     pdisplay " "
     pdisplay "percentage              dollar"
     find bud_$
     other_s_&_m_bud_increment = (1 - (bud_$ / other_s_&_m_bud))
     reset bud_$ else other_s_&_m_bud_increment = 1.0;

Rule elect_bud_increment_increase_% If which_bud_items = electrocity and
   elect_bud_direction = increase and
   bud_terms = percentage Then reset bud_terms
     pdisplay " "
     pdisplay "Would you like to increase or decrease the budget for electricity?"
     pdisplay " "
     pdisplay "increase              decrease"
     pdisplay " "
     pdisplay "Would you prefer to answer in percentage or in dollar terms?"
     pdisplay " "
     pdisplay "percentage              dollar"
     find bud_%
     elect_bud_increment = (1 + (bud_% / 100))
```

```
    reset bud_%;

Rule elect_bud_increment_increase_abs If which_bud_items = electricity and
  elect_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for electricity?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    elect_bud_increment = (1 + (bud_$ / elect_bud))
    reset bud_$;

Rule elect_bud_increment_decrease_% If which_bud_items = electricity and
  elect_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for electricity?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    elect_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule elect_bud_increment_decrease_abs If which_bud_items = electricity and
  elect_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for electricity?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    elect_bud_increment = (1 - (bud_$ / elect_bud))
    reset bud_$ else elect_bud_increment = 1.0;

Rule w_&_s_bud_increment_increase_% If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for water and sewer?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    w_&_s_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule w_&_s_bud_increment_increase_abs If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for water and sewer?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    w_&_s_bud_increment = (1 + (bud_$ / w_&_s_bud))
    reset bud_$;

Rule w_&_s_bud_increment_decrease_% If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
```

```
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for water and sewer?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    w_&_s_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule w_&_s_bud_increment_decrease_abs If which_bud_items = water_&_sewer and
  w_&_s_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for water and sewer?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    w_&_s_bud_increment = (1 - (bud_$ / w_&_s_bud))
    reset bud_$ else w_&_s_bud_increment = 1.0;

Rule agency_charges_bud_inc_increase_% If which_bud_items = agency_charges and
  agency_charges_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for agency charges?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    agency_charges_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule agency_charges_bud_inc_increase_abs If which_bud_items = agency_charges and
  agency_charges_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for agency charges?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    agency_charges_bud_increment = (1 + (bud_$ / agency_charges_bud))
    reset bud_$;

Rule agency_charges_bud_inc_decrease_% If which_bud_items = agency_charges and
  agency_charges_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for agency charges?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    agency_charges_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule agency_charges_bud_inc_decrease_abs If which_bud_items = agency_charges and
  agency_charges_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for agency charges?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
```

```
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    agency_charges_bud_increment = (1 - (bud_$ / agency_charges_bud))
    reset bud_$ else agency_charges_bud_increment = 1.0;

Rule insure_bud_increment_increase_% If which_bud_items = insurance and
  insure_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for insurance?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    insure_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule insure_bud_increment_increase_abs If which_bud_items = insurance and
  insure_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for insurance?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    insure_bud_increment = (1 + (bud_$ / insure_bud))
    reset bud_$;

Rule insure_bud_increment_decrease_% If which_bud_items = insurance and
  insure_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for insurance?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
    insure_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule insure_bud_increment_decrease_abs If which_bud_items = insurance and
  insure_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for insurance?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_$
    insure_bud_increment = (1 - (bud_$ / insure_bud))
    reset bud_$ else insure_bud_increment = 1.0;

Rule other_contin_bud_increment_increase_% If which_bud_items = other_continuous and
  other_contin_bud_direction = increase and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "continuous expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage                dollar"
    find bud_%
```

```
    other_contin_bud_increment = (1 + (bud_% / 100))
    reset bud_%;

Rule other_contin_bud_increment_increase_abs If which_bud_items = other_continuous and
  other_contin_bud_direction = increase and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "continuous expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    other_contin_bud_increment = (1 + (bud_$ / other_contin_bud))
    reset bud_$;

Rule other_contin_bud_increment_decrease_% If which_bud_items = other_continuous and
  other_contin_bud_direction = decrease and
  bud_terms = percentage Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "continuous expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_%
    other_contin_bud_increment = (1 - (bud_% / 100))
    reset bud_%;

Rule other_contin_bud_increment_decrease_abs If which_bud_items = other_continuous and
  other_contin_bud_direction = decrease and
  bud_terms = dollar Then reset bud_terms
    pdisplay " "
    pdisplay "Would you like to increase or decrease the budget for other"
    pdisplay "continuous expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    find bud_$
    other_contin_bud_increment = (1 - (bud_$ / other_contin_bud))
    reset bud_$ else other_contin_bud_increment = 1.0;

Rule change_wiis_wiabis_wicbis_8

If t_drop_abis <= (t_wages)

Then change_stmts = found
    t_personal = (t_personal - t_drop_abis)
    cbis_personal = (cbis_personal - t_drop_abis)
    z = (count_it)
    x = 1
    whiletrue x <= (z) then
      personal_wiis[x] = (personal_wiis[x] - p_drop_is[x] - s_drop_is[x] - i_drop_is[x] - st_drop_is[x] - m_drop_is[x])
      x = (x + 1)
    end else
    t_personal = (t_personal - t_wages)
    cbis_personal = (cbis_personal - t_wages)
    z = (count_it)
    x = 1
    whiletrue x <= (z) then
      personal_wiis[x] = (personal_wiis[x] - wages_wiis[x])
      x = (x + 1)
    end;


Rule forget_wi_analysis

If stmt_number = 10

Then what_next = leave
    chain pts;
```

! Statement Block

ask which_bud_items: "Choose as many as you like."; choices which_bud_items:revenue,equipment,uniforms,salaries,wages,fringe_benefits,telecommunications,repair_&_maintenance, travel,other_contractual,repair_supplies,other_supplies,electricity,water_&_sewer,agency_charges,insurance,other_continuous;

ask rev_bud_direction: "Would you like to increase or decrease the budget for revenue?"; ask equip_bud_direction: "Would you like to increase or decrease the budget for equipment?"; ask uniforms_bud_direction: "Would you like to increase or decrease the budget for uniforms?"; ask salaries_bud_direction: "Would you like to increase or decrease the budget for salaries?"; ask wages_bud_direction: "Would you like to increase or decrease the budget for wages?"; ask fringes_bud_direction: "Would you like to increase or decrease the budget for fringe benefits?"; ask tele_bud_direction: "Would you like to increase or decrease the budget for telecommunications?"; ask r_&_m_bud_direction: "Would you like to increase or decrease the budget for repairs & maintenance?"; ask travel_bud_direction: "Would you like to increase or decrease the budget for travel?"; ask other_contract_bud_direction: "Would you like to increase or decrease the budget for other contractual expenses?"; ask repair_s_&_m_bud_direction: "Would you like to increase or decrease the budget for repair supplies?"; ask other_s_&_m_bud_direction: "Would you like to increase or decrease the budget for other supplies and maintenance?"; ask elect_bud_direction: "Would you like to increase or decrease the budget for electricity?"; ask w_&_s_bud_direction: "Would you like to increase or decrease the budget for water and sewer?"; ask agency_charges_bud_direction: "Would you like to increase or decrease the budget for agency charges?"; ask insure_bud_direction: "Would you like to increase or decrease the budget for insurance?"; ask other_contin_bud_direction: "Would you like to increase or decrease the budget for other continuous expenses?";

choices rev_bud_direction,equip_bud_direction,uniforms_bud_direction,salaries_bud_direction: increase,decrease; choices wages_bud_direction,fringes_bud_direction,tele_bud_direction,r_&_m_bud_direction: increase, decrease; choices travel_bud_direction,other_contract_bud_direction,repair_s_&_m_bud_direction: increase,decrease; choices other_s_&_m_bud_direction,elect_bud_direction,w_&_s_bud_direction,agency_charges_bud_direction: increase,decrease; choices insure_bud_direction, other_contin_bud_direction: increase, decrease;

ask bud_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices bud_terms: percentage, dollar;

ask bud_%: "By what percentage? Do not enter as a decimal."; ask bud_$: "By how many dollars per year?";

ask seg_drops: "Which market segments should be dropped?";

plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis, s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;

```
execute; endoff; runtime;

actions color = 15 todo = what_if_analysis display "The system has just chained to a new knowledge base and files must be" display
"loaded.  You will be instructed when to continue." display " " loadfacts pwidata display "Press any key to see the what if questions.¬"
cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end ;


Rule display_for_which_stmt If todo = what_if_analysis Then cls
    color = 11
    locate 1,29
    display "What_If Questions"
    locate 4,5
    display "1  What if the composition of the corps were to change?"
    locate 5,5
    display "2  What if the size of the corps were to change?"
    locate 6,5
    display "3  What if commutation allowances were to change?"
    locate 7,5
    display "4  What if the price of a 'bag' of uniform items were to change?"
    locate 8,5
    display "5  What if non-corps prices were to change?"
    locate 9,5
    display "6  What if costs were to change?"
    locate 10,5
    display "7  What if the budget were to change?"
    locate 11,5
    display "8  What if one or more entire market segments were dropped?"
    locate 13,5
    display "9  Perform the analysis"
    locate 14,4
    display "10  Return to main menu"
    pdisplay " "
    pdisplay " "
    pdisplay "                          What_If Questions"
    pdisplay " "
    pdisplay " "
    pdisplay "    1  What if the composition of the corps were to change?"
    pdisplay "    2  What if the size of the corps were to change?"
    pdisplay "    3  What if commutation allowances were to change?"
    pdisplay "    4  What if the price of a 'bag' of uniform items were to change?"
    pdisplay "    5  What if non-corps prices were to change?"
    pdisplay "    6  What if costs were to change?"
    pdisplay "    7  What if the budget were to change?"
    pdisplay "    8  What if one or more entire market segments were dropped?"
    pdisplay " "
    pdisplay "    9  Perform the analysis"
    pdisplay "   10  Return to main menu"
    pdisplay " "
    pdisplay "1                2                3"
    pdisplay "4                5                6"
    pdisplay "7                8                9"
    pdisplay "10"
    pdisplay " "
    find stmt_number
    which_stmt = found
    find what_next;

Rule make_changes_for_corps_comp If stmt_number = 1 Then what_next = corps_composition
    find change_wica_1
    find change_wiis_1
    find change_wiabis_1
    find change_wicbis_1;

Rule make_changes_for_corps_size_change If stmt_number = 2 Then what_next = corps_composition
    find change_wica_2
    find change_wiis_2
    find change_wiabis_2
    find change_wicbis_2;

Rule make_changes_for_ca_changes If stmt_number = 3 Then what_next = ca_change
```

```
    find change_wica_3
    find change_wiis_3
    find change_wiabis_3
    find change_wicbis_3;

Rule make_changes_for_bag_price_changes If stmt_number = 4 Then what_next = bag_price_change
    find change_wiis_4
    find change_wiabis_4
    find change_wicbis_4;

Rule make_changes_for_non_corps_price_change If stmt_number = 5 Then what_next = non_corps_price_change
    savefacts pwidata
    chain doprice;

Rule make_changes_for_cost_changes If stmt_number = 6 Then what_next = cost_change
    find change_wiis_6
    find change_wiabis_6
    find change_wicbis_6;

Rule make_changes_for_budget_changes If stmt_number = 7 Then what_next = budget_change
    savefacts pwidata
    chain dobud;

Rule make_changes_for_seg_drops If stmt_number = 8 Then what_next = drop_segs
    cls
    pdisplay " "
    pdisplay "Which market segments should be dropped?"
    pdisplay " "
    pdisplay "Public          Student_fac_staff      Interdepartmental"
    pdisplay "Music_Dept      State_related"
    find seg_drops
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      wages_wiis[x] = (wages_gen[x] + wages_stud[x])
      x = (x + 1)
    end
    find p_drop_abis
    find s_drop_abis
    find i_drop_abis
    find st_drop_abis
    find m_drop_abis
    t_drop_abis = (p_drop_abis + s_drop_abis + i_drop_abis + st_drop_abis + m_drop_abis)
    find change_stmts;

Rule p_drop If seg_drops < > public Then p_drop_abis = 0;

Rule s_drop If seg_drops < > student_fac_staff Then s_drop_abis = 0;

Rule i_drop If seg_drops < > interdepartmental Then i_drop_abis = 0;

Rule st_drop If seg_drops < > state_related Then st_drop_abis = 0;

Rule m_drop If seg_drops < > music_dept Then m_drop_abis = 0;


Rule p_drop

If t_wages > = (public_cost_this) and
   seg_drops = public

Then p_drop_abis = (public_cost_this)
    p_drop_cbis = (public_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      p_drop_iis[x] = (public_cost_wiis[x])
      public_rev_wiis[x] = 0
      public_cost_wiis[x] = 0
      x = (x + 1)
    end
    public_rev_this = 0
    public_wicbis = 0
    public_cost_this = 0

else p_drop_abis = (t_wages)
    p_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
```

```
      p_drop_is[x] = (wages_wiis[x])
      public_rev_wiis[x] = 0
      public_cost_wiis[x] = 0
      x = (x + 1)
    end
    public_rev_this = 0
    public_wicbis = 0
    public_cost_this = 0 ;

Rule s_drop

If t_wages > = (s_f_s_cost_this) and
  seg_drops = student_fac_staff

Then s_drop_abis = (s_f_s_cost_this)
    s_drop_cbis = (s_f_s_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      s_drop_is[x] = (s_f_s_cost_wiis[x])
      s_f_s_cost_wiis[x] = 0
      s_f_s_rev_wiis[x] = 0
      x = (x + 1)
    end
    s_f_s_cost_this = 0
    s_f_s_rev_this = 0
    s_f_s_wicbis = 0

else s_drop_abis = (t_wages)
    s_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      s_drop_is[x] = (wages_wiis[x])
      s_f_s_cost_wiis[x] = 0
      s_f_s_rev_wiis[x] = 0
      x = (x + 1)
    end
    s_f_s_cost_this = 0
    s_f_s_rev_this = 0
    s_f_s_wicbis = 0 ;

Rule i_drop

If t_wages > = (interdept_cost_this) and
  seg_drops = interdepartmental

Then i_drop_abis = (interdept_cost_this)
    i_drop_cbis = (interdept_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      i_drop_is[x] = (interdept_cost_wiis[x])
      interdept_rev_wiis[x] = 0
      interdept_cost_wiis[x] = 0
      x = (x + 1)
    end
    interdept_cost_this = 0
    interdept_rev_this = 0
    interdept_wicbis = 0

else i_drop_abis = (t_wages)
    i_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      i_drop_is[x] = (wages_wiis[x])
      interdept_rev_wiis[x] = 0
      interdept_cost_wiis[x] = 0
      x = (x + 1)
    end
    interdept_cost_this = 0
    interdept_rev_this = 0
    interdept_wicbis = 0

; Rule st_drop

If t_wages > = (state_cost_this) and
  seg_drops = state_related
```

```
Then st_drop_abis = (state_cost_this)
    st_drop_cbis = (state_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      st_drop_is[x] = (state_cost_wiis[x])
      state_rev_wiis[x] = 0
      state_cost_wiis[x] = 0
      x = (x + 1)
    end
    state_rev_this = 0
    state_cost_this = 0
    state_wicbis = 0

else st_drop_abis = (t_wages)
    st_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      st_drop_is[x] = (wages_wiis[x])
      state_rev_wiis[x] = 0
      state_cost_wiis[x] = 0
      x = (x + 1)
    end
    state_rev_this = 0
    state_cost_this = 0
    state_wicbis = 0 ;

Rule m_drop

If t_wages > = (music_cost_this) and
  seg_drops = music_dept

Then m_drop_abis = (music_cost_this)
    m_drop_cbis = (music_cost_this)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      m_drop_is[x] = (music_cost_wiis[x])
      music_rev_wiis[x] = 0
      music_cost_wiis[x] = 0
      x = (x + 1)
    end
    music_rev_this = 0
    music_cost_this = 0
    music_wicbis = 0

else m_drop_abis = (t_wages)
    m_drop_cbis = (t_wages)
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      m_drop_is[x] = (wages_wiis[x])
      music_rev_wiis[x] = 0
      music_cost_wiis[x] = 0
      x = (x + 1)
    end
    music_rev_this = 0
    music_cost_this = 0
    music_wicbis = 0 ;

Rule get_stats_to_change_wica_1 If stmt_number = 1 Then change_wica_1 = found
    pdisplay " "
    cls
    display "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_freshmen
    find actual_freshmen_change
    pdisplay " "
    display "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_sophomore
    find actual_sophomore_change
    pdisplay " "
```

```
    display "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease            same"
    find change_junior
    find actual_junior_change
    pdisplay " "
    display "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease            same"
    find change_senior
    find actual_senior_change
    display " "
    display " "
    display " "
    display "Please Wait"
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "Please Wait"
    total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    freshmen_number = (freshmen_number + actual_freshmen_change)
    sophomore_number = (sophomore_number + actual_sophomore_change)
    junior_number = (junior_number + actual_junior_change)
    senior_number = (senior_number + actual_senior_change)
    inc_due_to_freshmen_change = (freshmen_ca * actual_freshmen_change)
    inc_due_to_sophomore_change = (sophomore_ca * actual_sophomore_change)
    inc_due_to_junior_change = (junior_ca * actual_junior_change)
    inc_due_to_senior_change = (senior_ca * actual_senior_change)
    total_corps_number_change1 = (actual_freshmen_change + actual_sophomore_change + actual_junior_change)
    total_corps_number_change = (total_corps_number_change1 + actual_senior_change)
    change_due_to_corps_comp1 = (inc_due_to_freshmen_change + inc_due_to_sophomore_change + inc_due_to_junior_change)
    change_due_to_corps_comp = (change_due_to_corps_comp1 + inc_due_to_senior_change)
    uniform_cost_per_cadet = (cost_uniforms_this / total_corps_number)
    reset change_freshmen
    reset change_sophomore
    reset change_junior
    reset change_senior
    reset actual_freshmen_change
    reset actual_sophomore_change
    reset actual_junior_change
    reset actual_senior_change;

Rule get_stats_to_change_wica_2 If stmt_number = 2 Then change_wica_2 = found
    cls
    pdisplay " "
    display "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "There are currently {freshmen_number} freshmen.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease            same"
    find change_freshmen
    find actual_freshmen_change
    pdisplay " "
    display "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "There are currently {sophomore_number} sophomores.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease            same"
    find change_sophomore
    find actual_sophomore_change
    pdisplay " "
    display "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {junior_number} juniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease            same"
    find change_junior
    find actual_junior_change
    pdisplay " "
    display "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "There are currently {senior_number} seniors.  Would you like to increase, decrease, or"
    pdisplay "leave this number the same?"
    pdisplay " "
    pdisplay "increase              decrease            same"
    find change_senior
    find actual_senior_change
```

```
    display " "
    display " "
    display " "
    display "Please Wait"
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "Please Wait"
    total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    freshmen_number = (freshmen_number + actual_freshmen_change)
    sophomore_number = (sophomore_number + actual_sophomore_change)
    junior_number = (junior_number + actual_junior_change)
    senior_number = (senior_number + actual_senior_change)
    inc_due_to_freshmen_change = (freshmen_ca * actual_freshmen_change)
    inc_due_to_sophomore_change = (sophomore_ca * actual_sophomore_change)
    inc_due_to_junior_change = (junior_ca * actual_junior_change)
    inc_due_to_senior_change = (senior_ca * actual_senior_change)
    total_corps_number_change1 = (actual_freshmen_change + actual_sophomore_change + actual_junior_change)
    total_corps_number_change = (total_corps_number_change1 + actual_senior_change)
    new_total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
    change_due_to_corps_comp1 = (inc_due_to_freshmen_change + inc_due_to_sophomore_change + inc_due_to_junior_change)
    change_due_to_corps_comp = (change_due_to_corps_comp1 + inc_due_to_senior_change)
    uniform_cost_per_cadet = (cost_uniforms_this / total_corps_number)
    reset change_freshmen
    reset change_sophomore
    reset change_junior
    reset change_senior
    reset actual_freshmen_change
    reset actual_sophomore_change
    reset actual_junior_change
    reset actual_senior_change;

Rule get_stats_to_change_wica_3 If stmt_number = 3 Then change_wica_3 = found
    cls
    pdisplay " "
    display "The average commutation allowance for freshmen at this time is ${freshmen_ca}.  Would"
    pdisplay "The average commutation allowance for freshmen at this time is ${freshmen_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_freshmen_ca
    find actual_freshmen_change_ca
    pdisplay " "
    display "The average commutation allowance for sophomores at this time is ${sophomore_ca}.  Would"
    pdisplay "The average commutation allowance for sophomores at this time is ${sophomore_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_sophomore_ca
    find actual_sophomore_change_ca
    pdisplay " "
    display "The average commutation allowance for juniors at this time is ${junior_ca}.  Would"
    pdisplay "The average commutation allowance for juniors at this time is ${junior_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_junior_ca
    find actual_junior_change_ca
    pdisplay " "
    display "The average commutation allowance for seniors at this time is ${senior_ca}.  Would"
    pdisplay "The average commutation allowance for seniors at this time is ${senior_ca}.  Would"
    pdisplay "you like to increase, decrease or leave this amount the same?"
    pdisplay " "
    pdisplay "increase              decrease              same"
    find change_senior_ca
    find actual_senior_change_ca
    display " "
    display " "
    display " "
    display "Please Wait"
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "Please Wait"
    x = ((freshmen_number * actual_freshmen_change_ca) + (sophomore_number * actual_sophomore_change_ca))
    change_due_to_ca_changes = (x + (junior_number * actual_junior_change_ca) + (senior_number * actual_senior_change_ca));

Rule change_freshmen_same If change_freshmen = same Then actual_freshmen_change = 0;

Rule change_freshmen_increase If change_freshmen = increase Then find change_freshmen_number
```

```
    pdisplay " "
    pdisplay "By how many?"
    actual_freshmen_change = (change_freshmen_number);

Rule change_freshmen_decrease If change_freshmen = decrease Then find change_freshmen_number
    pdisplay " "
    pdisplay "By how many?"
    actual_freshmen_change = (0 - change_freshmen_number);

Rule change_sophomore_same If change_sophomore = same Then actual_sophomore_change = 0;

Rule change_sophomore_increase If change_sophomore = increase Then find change_sophomore_number
    pdisplay " "
    pdisplay "By how many?"
    actual_sophomore_change = (change_sophomore_number);

Rule change_sophomore_decrease If change_sophomore = decrease Then find change_sophomore_number
    pdisplay " "
    pdisplay "By how many?"
    actual_sophomore_change = (0 - change_sophomore_number);

Rule change_junior_same If change_junior = same Then actual_junior_change = 0;

Rule change_junior_increase If change_junior = increase Then find change_junior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_junior_change = (change_junior_number);

Rule change_junior_decrease If change_junior = decrease Then find change_junior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_junior_change = (0 - change_junior_number);

Rule change_senior_same If change_senior = same Then actual_senior_change = 0;

Rule change_senior_increase If change_senior = increase Then find change_senior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_senior_change = (change_senior_number);

Rule change_senior_decrease If change_senior = decrease Then find change_senior_number
    pdisplay " "
    pdisplay "By how many?"
    actual_senior_change = (0 - change_senior_number);

Rule change_freshmen_same_ca If change_freshmen_ca = same Then actual_freshmen_change_ca = 0;

Rule change_freshmen_increase_ca If change_freshmen_ca = increase Then find change_freshmen_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_freshmen_change_ca = (change_freshmen_number_ca);

Rule change_freshmen_decrease_ca If change_freshmen_ca = decrease Then find change_freshmen_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_freshmen_change_ca = (0 - change_freshmen_number_ca);

Rule change_sophomore_same_ca If change_sophomore_ca = same Then actual_sophomore_change_ca = 0;

Rule change_sophomore_increase_ca If change_sophomore_ca = increase Then find change_sophomore_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_sophomore_change_ca = (change_sophomore_number_ca);

Rule change_sophomore_decrease_ca If change_sophomore_ca = decrease Then find change_sophomore_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_sophomore_change_ca = (0 - change_sophomore_number_ca);

Rule change_junior_same_ca If change_junior_ca = same Then actual_junior_change_ca = 0;

Rule change_junior_increase_ca If change_junior_ca = increase Then find change_junior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_junior_change_ca = (change_junior_number_ca);

Rule change_junior_decrease_ca If change_junior_ca = decrease Then find change_junior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_junior_change_ca = (0 - change_junior_number_ca);
```

```
Rule change_senior_same_ca If change_senior_ca = same Then actual_senior_change_ca = 0;

Rule change_senior_increase_ca If change_senior_ca = increase Then find change_senior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_senior_change_ca = (change_senior_number_ca);

Rule change_senior_decrease_ca If change_senior_ca = decrease Then find change_senior_number_ca
    pdisplay " "
    pdisplay "By how much?"
    actual_senior_change_ca = (0 - change_senior_number_ca);

Rule get_stats_to_change_wiis_1 If stmt_number = 1 Then change_wiis_1 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      x = ( x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] - wages_gen[x] - wages_stud[x])
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl - wages_gen[x] - wages_stud[x])
      x = ( x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
      x = (x + 1)
    end
    x = 1
    y = (13 - (count_it))
    z = (count_it)
    whiletrue x < = (z) then
      corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
      uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
      personal_wiis[x] = (personal_wiis[x] - (1/2 * wages_gen[x]) - (1/2 * wages_stud[x]))
      vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
      corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl - (1/2 * wages_gen[x]) - (1/2 * wages_stud[x]))
      x = ( x + 1)
      y = (y + 1)
    end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wiis_2 = found
    x = 1
    whiletrue x < = 12 then
      corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
      corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
```

```
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
    uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
    corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_exp_uniforms_%[y]*total_corps_number_change*uniform_cost_per_cadet))
    x = (x + 1)
    y = (y + 1)
  end;

Rule get_stats_to_change_wiis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wiis_2 = found
  x = 1
  whiletrue x < = 12 then
    corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
    corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_corps_comp))
    uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet))
    personal_wiis[x] = (personal_wiis[x] * 10 / 9)
    vbl = (corps_exp_uniforms_%[y] * total_corps_number_change*uniform_cost_per_cadet)
    corps_cost_wiis[x] = (corps_cost_wiis[x] + vbl + (1/9 * personal_wiis[x]))
    x = (x + 1)
    y = (y + 1)
  end;

Rule get_stats_to_change_wiis_3 If stmt_number = 3 Then change_wiis_3 = found
  x = 1
  whiletrue x < = 12 then
    corps_exp_%[x] = (corps_rev_old_wiis[x] / corps_rev_old_wiis[1])
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    corps_rev_wiis[x] = (corps_rev_wiis[x] + (corps_exp_%[y] * change_due_to_ca_changes))
    x = (x + 1)
    y = (y + 1)
  end;

Rule get_stats_to_change_wiis_4 If stmt_number = 4 Then change_wiis_4 = found
  cls
  pdisplay " "
  display "Would you like to increase or decrease the cost of putting together a 'bag'"
  pdisplay "Would you like to increase or decrease the cost of putting together a 'bag'"
  pdisplay "of uniforms items?"
  pdisplay " "
  pdisplay "increase                decrease"
  find bag_price_direction
  pdisplay " "
  pdisplay "By how much per cadet?"
  find amount_bag_change
  new_total_corps_number = (freshmen_number + sophomore_number + junior_number + senior_number)
  find total_bag_price_change
  x = 1
  whiletrue x < = 12 then
    corps_exp_uniforms_%[x] = (uniforms_old_wiis[x] / uniforms_old_wiis[1])
    x = (x + 1)
  end
  x = 1
  y = (13 - (count_it))
  z = (count_it)
  whiletrue x < = (z) then
    uniforms_wiis[x] = (uniforms_wiis[x] + (corps_exp_uniforms_%[y] * total_bag_price_change))
    corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_exp_uniforms_%[y] * total_bag_price_change))
    x = (x + 1)
    y = (y + 1)
  end;

Rule increase_$_bag If bag_price_direction = increase Then total_bag_price_change = (new_total_corps_number * amount_bag_change);
```

```
Rule decrease_$_bag If bag_price_direction = decrease Then total_bag_price_change = (0 - (new_total_corps_number *
amount_bag_change));

Rule get_stats_to_change_wiis_6 If stmt_number = 6 Then change_wiis_6 = found
    cls
    display "For which expense categories would you like to change the amounts?"
    pdisplay "For which expense categories would you like to change the amounts?"
    find which_expenses
    pdisplay "Choose as many as you like. "
    pdisplay " "
    pdisplay "personnel          contractual          supplies & materials"
    pdisplay "continuous         equipment"
    find personal_increment
    find contract_increment
    find s_&_m_increment
    find contin_increment
    find equip_increment
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
     personal_wiis[x] = (personal_wiis[x] * personal_increment)
     contract_wiis[x] = (contract_wiis[x] * contract_increment)
     s_&_m_wiis[x] = (s_&_m_wiis[x] * s_&_m_increment)
     contin_wiis[x] = (contin_wiis[x] * contin_increment)
     equip_wiis[x] = (equip_wiis[x] * equip_increment)
     x = (x + 1)
    end
    find personal_directs    ! leads to a series of rules which
    find contract_directs    ! determine how each of the changes
    find s_&_m_directs       ! in these costs will affect the direct costs
    find contin_directs
    find equip_directs;

Rule get_stats_to_change_wiabis_1 If stmt_number = 1 Then change_wiabis_1 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet));

Rule personal_increment_0 If which_expenses < > personnel Then personal_increment = 1.0;

Rule personal_increment_positive_% If which_expenses = personnel and
  personal_direction = increase and
  personal_terms = percentage Then find personal_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    personal_increment = (1 + (personal_% / 100));

Rule personal_increment_positive_abs If which_expenses = personnel and
  personal_direction = increase and
  personal_terms = dollar Then find personal_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change personnel expenses?"
    personal_% = (personal_$ / cbis_personal_x)
    personal_increment = (1 + personal_%);

Rule personal_increment_negative_% If which_expenses = personnel and
  personal_direction = decrease and
  personal_terms = percentage Then find personal_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
```

```
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    personal_increment = (1 - (personal_% / 100));

Rule personal_increment_negative_abs If which_expenses = personnel and
  personal_direction = decrease and
  personal_terms = dollar Then find personal_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease personnel expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change personnel expenses?"
    personal_% = (personal_$ / cbis_personal_x)
    personal_increment = (1 - personal_%);

Rule contract_increment_0 If which_expenses < > contractual Then contract_increment = 1.0;

Rule contract_increment_positive_% If which_expenses = contractual and
  contract_direction = increase and
  contract_terms = percentage Then find contract_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contract_increment = (1 + (contract_% / 100));

Rule contract_increment_positive_abs If which_expenses = contractual and
  contract_direction = increase and
  contract_terms = dollar Then find contract_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change contractual expenses?"
    contract_% = (contract_$ / cbis_contract_x)
    contract_increment = (1 + contract_% );

Rule contract_increment_negative_% If which_expenses = contractual and
  contract_direction = decrease and
  contract_terms = percentage Then find contract_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contract_increment = (1 - (contract_% / 100));

Rule contract_increment_negative_abs If which_expenses = contractual and
  contract_direction = decrease and
  contract_terms = dollar Then find contract_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease contractual expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
```

```
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change contractual expenses?"
    contract_% = (contract_$ / cbis_contract_x)
    contract_increment = (1 - contract_% );

Rule s_&_m_increment_0 If which_expenses < > supplies_&_materials Then s_&_m_increment = 1.0;

Rule s_&_m_increment_positive_% If which_expenses = supplies_&_materials and
  s_&_m_direction = increase and
  s_&_m_terms = percentage Then find s_&_m_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "By what percentage? Do not enter as a decimal."
    s_&_m_increment = (1 + (s_&_m_% / 100));

Rule s_&_m_increment_positive_abs If which_expenses = supplies_&_materials and
  s_&_m_direction = increase and
  s_&_m_terms = dollar Then find s_&_m_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change supplies & materials?"
    s_&_m_% = (s_&_m_$ / cbis_s_&_m_x)
    s_&_m_increment = (1 + s_&_m_% );

Rule s_&_m_increment_negative_% If which_expenses = supplies_&_materials and
  s_&_m_direction = decrease and
  s_&_m_terms = percentage Then find s_&_m_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "By what percentage? Do not enter as a decimal."
    s_&_m_increment = (1 - (s_&_m_% / 100));

Rule s_&_m_increment_negative_abs If which_expenses = supplies_&_materials and
  s_&_m_direction = decrease and
  s_&_m_terms = dollar Then find s_&_m_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease supplies & materials?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage            dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change supplies & materials?"
    s_&_m_% = (s_&_m_$ / cbis_s_&_m_x)
    s_&_m_increment = (1 - s_&_m_% );

Rule contin_increment_0 If which_expenses < > continuous Then contin_increment = 1.0;

Rule contin_increment_positive_% If which_expenses = continuous and
  contin_direction = increase and
  contin_terms = percentage Then find contin_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase              decrease"
    pdisplay " "
```

```
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contin_increment = (1 + (contin_% / 100));

Rule contin_increment_positive_abs If which_expenses = continuous and
  contin_direction = increase and
  contin_terms = dollar Then find contin_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change continuous expenses?"
    contin_% = (contin_$ / cbis_contin_x)
    contin_increment = (1 + contin_% );

Rule contin_increment_negative_% If which_expenses = continuous and
  contin_direction = decrease and
  contin_terms = percentage Then find contin_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    contin_increment = (1 - (contin_% / 100));

Rule contin_increment_negative_abs If which_expenses = continuous and
  contin_direction = decrease and
  contin_terms = dollar Then find contin_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease continuous expenses?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change continuous expenses?"
    contin_% = (contin_$ / cbis_contin_x)
    contin_increment = (1 - contin_% );

Rule equip_increment_0 If which_expenses < > equipment Then equip_increment = 1.0;

Rule equip_increment_positive_% If which_expenses = equipment and
  equip_direction = increase and
  equip_terms = percentage Then find equip_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    equip_increment = (1 + (equip_% / 100));

Rule equip_increment_positive_abs If which_expenses = equipment and
  equip_direction = increase and
  equip_terms = dollar Then find equip_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
```

```
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change equipment purchases?"
    equip_% = (equip_$ / act_equip_x)
    equip_increment = (1 + equip_% );

Rule equip_increment_negative_% If which_expenses = equipment and
  equip_direction = decrease and
  equip_terms = percentage Then find equip_%
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "By what percentage?  Do not enter as a decimal."
    equip_increment = (1 - (equip_% / 100));

Rule equip_increment_negative_abs If which_expenses = equipment and
  equip_direction = decrease and
  equip_terms = dollar Then find equip_$
    pdisplay " "
    pdisplay "Would you like to increase or decrease equipment purchases?"
    pdisplay " "
    pdisplay "increase                decrease"
    pdisplay " "
    pdisplay "Would you prefer to answer in percentage or in dollar terms?"
    pdisplay " "
    pdisplay "percentage              dollar"
    pdisplay " "
    pdisplay "On an annual basis, how much would you like to change equipment purchases?"
    equip_% = (equip_$ / act_equip_x)
    equip_increment = (1 - equip_% );

Rule personal_directs If personal_increment > 1.0 Then personal_directs = found
    z = (count_it)
    y = (((personal_increment - 1) * cbis_personal) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule personal_directs If personal_increment < 1.0 Then personal_directs = found
    z = (count_it)
    y = (((1 - personal_increment) * cbis_personal) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule contract_directs If contract_increment > 1.0 Then contract_directs = found
    z = (count_it)
```

```
    y = (((contract_increment - 1) * cbis_contract) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule contract_directs If contract_increment < 1.0 Then contract_directs = found
    z = (count_it)
    y = (((1 - contract_increment) * cbis_contract) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule s_&_m_directs If s_&_m_increment > 1.0 Then s_&_m_directs = found
    z = (count_it)
    y = (((s_&_m_increment - 1) * cbis_s_&_m) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule s_&_m_directs If s_&_m_increment < 1.0 Then s_&_m_directs = found
    z = (count_it)
    y = (((1 - s_&_m_increment) * cbis_s_&_m) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule contin_directs If contin_increment > 1.0 Then contin_directs = found
    z = (count_it)
```

```
    y = (((contin_increment - 1) * cbis_contin) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule contin_directs If contin_increment < 1.0 Then contin_directs = found
    z = (count_it)
    y = (((1 - contin_increment) * cbis_contin) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule equip_directs If equip_increment > 1.0 Then equip_directs = found
    z = (count_it)
    y = (((equip_increment - 1) * act_equip) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] + (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] + (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] + (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] + (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] + (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] + (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this + (corps_cost_this * y))
    public_cost_this = (public_cost_this + (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this + (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this + (interdept_cost_this * y))
    music_cost_this = (music_cost_this + (music_cost_this * y))
    state_cost_this = (state_cost_this + (state_cost_this * y));

Rule equip_directs If equip_increment < 1.0 Then equip_directs = found
    z = (count_it)
    y = (((1 - equip_increment) * act_equip) / total_oper_exp)
    x = 1
    whiletrue x < = (z) then
      corps_cost_wiis[x] = (corps_cost_wiis[x] - (corps_cost_wiis[x] * y))
      public_cost_wiis[x] = (public_cost_wiis[x] - (public_cost_wiis[x] * y))
      s_f_s_cost_wiis[x] = (s_f_s_cost_wiis[x] - (s_f_s_cost_wiis[x] * y))
      interdept_cost_wiis[x] = (interdept_cost_wiis[x] - (interdept_cost_wiis[x] * y))
      music_cost_wiis[x] = (music_cost_wiis[x] - (music_cost_wiis[x] * y))
      state_cost_wiis[x] = (state_cost_wiis[x] - (state_cost_wiis[x] * y))
      x = (x + 1)
    end
    corps_cost_this = (corps_cost_this - (corps_cost_this * y))
    public_cost_this = (public_cost_this - (public_cost_this * y))
    s_f_s_cost_this = (s_f_s_cost_this - (s_f_s_cost_this * y))
    interdept_cost_this = (interdept_cost_this - (interdept_cost_this * y))
    music_cost_this = (music_cost_this - (music_cost_this * y))
    state_cost_this = (state_cost_this - (state_cost_this * y));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wiabis_2 = found
```

```
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal - wages_gen_wiabis - wages_stud_wiabis)
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl - wages_gen_wiabis - wages_stud_wiabis)
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 + wages_gen_wiabis + wages_stud_wiabis);

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal - (1/2 * wages_gen_wiabis) - (1/2 *wages_stud_wiabis))
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl - (1/2 * wages_gen_wiabis) - (1/2 *wages_stud_wiabis))
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 + (1/2 * wages_gen_wiabis) + (1/2 * wages_stud_wiabis));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    corps_cost_this = (corps_cost_this + (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet));

Rule get_stats_to_change_wiabis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wiabis_2 = found
    t_mil_rev = (t_mil_rev + change_due_to_corps_comp)
    cost_uniforms_this = (cost_uniforms_this + (total_corps_number_change * uniform_cost_per_cadet))
    t_personal = (t_personal * 10/9)
    vbl = (total_corps_number_change * uniform_cost_per_cadet)
    corps_cost_this = (corps_cost_this + vbl + (1/9 * t_personal))
    net_income1 = (net_income + change_due_to_corps_comp - (total_corps_number_change * uniform_cost_per_cadet))
    net_income = (net_income1 - (1/9 * t_personal));

Rule get_stats_to_change_wiabis_3 If stmt_number = 3 Then change_wiabis_3 = found
    t_mil_rev = (t_mil_rev + change_due_to_ca_changes);

Rule get_stats_to_change_wiabis_4 If stmt_number = 4 Then change_wiabis_4 = found
    cost_uniforms_this = (cost_uniforms_this + total_bag_price_change)
    corps_cost_this = (corps_cost_this + total_bag_price_change);


Rule get_stats_to_change_wiabis_6 If stmt_number = 6 Then change_wiabis_6 = found
    t_personal = (t_personal * personal_increment)
    contract_this = (contract_this * contract_increment)
    s_&_m_this = (s_&_m_this * s_&_m_increment)
    contin_this = (contin_this * contin_increment)
    deprec_this = (deprec_this * equip_increment);

Rule get_stats_to_change_wicbis_1 If stmt_number = 1 Then change_wicbis_1 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 400 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal - wages_gen_wiabis - wages_stud_wiabis)
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + wages_gen_wiabis + wages_stud_wiabis);

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 450 and
  new_total_corps_number > 400 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal - (1/2 * wages_gen_wiabis) - (1/2 * wages_stud_wiabis))
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + (1/2 * wages_gen_wiabis) + (1/2 * wages_stud_wiabis));

Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number < = 1000 and
  new_total_corps_number > 450 Then change_wicbis_2 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet));
```

```
Rule get_stats_to_change_wicbis_2 If stmt_number = 2 and
  new_total_corps_number > 1000 Then change_wicbis_2 = found
    cbis_personal = (cbis_personal * 10/9)
    cbis_corps_rev = (cbis_corps_rev + change_due_to_corps_comp)
    uniforms = (uniforms + (total_corps_number_change * uniform_cost_per_cadet))
    cbis_net_income1 = (cbis_net_income + change_due_to_corps_comp - (total_corps_number_change*uniform_cost_per_cadet))
    cbis_net_income = (cbis_net_income1 + (1/9 * cbis_personal));

Rule get_stats_to_change_wicbis_3 If stmt_number = 3 Then change_wicbis_3 = found
    cbis_corps_rev = (cbis_corps_rev + change_due_to_ca_changes);

Rule get_stats_to_change_wicbis_4 If stmt_number = 4 Then change_wicbis_4 = found
    uniforms = (uniforms + total_bag_price_change);

Rule get_stats_to_change_wicbis_6 If stmt_number = 6 Then change_wicbis_6 = found
    cbis_personal = (cbis_personal * personal_increment)
    cbis_contract = (cbis_contract * contract_increment)
    cbis_s_&_m = (cbis_s_&_m * s_&_m_increment)
    cbis_contin = (cbis_contin * contin_increment)
    act_equip = (act_equip * equip_increment);


Rule change_wiis_wiabis_wicbis_8

If t_drop_abis < = (t_wages)

Then change_stmts = found
    t_personal = (t_personal - t_drop_abis)
    cbis_personal = (cbis_personal - t_drop_abis)
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] - p_drop_is[x] - s_drop_is[x] - i_drop_is[x] - st_drop_is[x] - m_drop_is[x])
      x = (x + 1)
    end else
    t_personal = (t_personal - t_wages)
    cbis_personal = (cbis_personal - t_wages)
    z = (count_it)
    x = 1
    whiletrue x < = (z) then
      personal_wiis[x] = (personal_wiis[x] - wages_wiis[x])
      x = (x + 1)
    end;

Rule put_files_away_&_start_analysis

If stmt_number = 9

Then what_next = analysis
    savefacts widata
    chain pwidoit;

Rule forget_wi_analysis

If stmt_number = 10

Then what_next = leave
    chain ts;


! Statement Block

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5,6,7,8,9,10; ask change_freshmen: "leave this number the same?"; ask change_sophomore: "leave this number the same?"; ask change_junior: "leave this number the same?"; ask change_senior: "leave this number the same?"; choices change_freshmen,change_sophomore,change_junior,change_senior: increase, decrease, same;

ask change_freshmen_number: "By how many?"; ask change_sophomore_number: "By how many?"; ask change_junior_number: "By how many?"; ask change_senior_number: "By how many?";

ask change_freshmen_ca: "you like to increase, decrease or leave this amount the same?"; ask change_sophomore_ca: "you like to increase, decrease or leave this amount the same?"; ask change_junior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_senior_ca: "you like to increase, decrease or leave this amount the same?"; ask change_freshmen_number_ca: "By how much?"; ask change_sophomore_number_ca: "By how much?"; ask change_junior_number_ca: "By how much?"; ask change_senior_number_ca: "By how much?"; choices change_freshmen_ca,change_sophomore_ca,change_junior_ca,change_senior_ca: increase, decrease,same;

ask bag_price_direction: "of uniform items?"; choices bag_price_direction: increase, decrease; ask amount_bag_change: "By how much per cadet?";
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ask personal_%: "By what percentage? Do not enter as a decimal."; ask contract_%: "By what percentage? Do not enter as a decimal."; ask s_&_m_%: "By what percentage? Do not enter as a decimal."; ask contin_%: "By what percentage? Do not enter as a decimal."; ask equip_%: "By what percentage? Do not enter as a decimal."; ask personal_$: "On an annual basis, how much would you like to change personnel expenses?"; ask contract_$: "On an annual basis, how much would you like to change contractual expenses?"; ask s_&_m_$: "On an annual basis, how much would you like to change supplies & materials?"; ask contin_$: "On an annual basis, how much would you like to change continuous expenses?"; ask equip_$: "On an annual basis, how much would you like to change equipment purchases?";

ask which_expenses: "Choose as many as you like."; choices which_expenses: personnel, contractual, supplies_&_materials, continuous, equipment;

ask personal_direction: "Would you like to increase or decrease personnel expenses?"; ask contract_direction: "Would you like to increase or decrease contractual expenses?"; ask s_&_m_direction: "Would you like to increase or decrease supplies & materials?"; ask contin_direction: "Would you like to increase or decrease continuous expenses?"; ask equip_direction: "Would you like to increase or decrease equipment purchases?"; choices personal_direction,contract_direction,s_&_m_direction,contin_direction,equip_direction: increase, decrease;

ask personal_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contract_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask s_&_m_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask contin_terms: "Would you prefer to answer in percentage or in dollar terms?"; ask equip_terms: "Would you prefer to answer in percentage or in dollar terms?"; choices personal_terms,contract_terms,s_&_m_terms,contin_terms,equip_terms: percentage, dollar;

ask seg_drops: "Which market segments should be dropped?"; choices seg_drops:Public, Student_fac_staff, Interdepartmental, Music_Dept, State_related;

plural: corps_exp_%, corps_rev_wiis, which_segments, which_expenses,which_bud_items,wages_wiis; plural:public_rev_wiis, s_f_s_rev_wiis, interdept_rev_wiis, music_rev_wiis,state_rev_wiis,seg_drops;

bkcolor = 1;
```

```
execute; endoff; runtime;

actions color = 15 loadfacts widata

!bcall killit !bcall create

locate 4,6 display "The processing in progress now is quite extensive. Seven new" display "worksheets are being created. This takes quite some time, so please" display "be patient. You will be instructed when to continue." pdisplay "The processing in progress now is quite extensive. Seven new" pdisplay "worksheets are being created. This takes quite some time, so please" pdisplay "be patient. You will be instructed when to continue."

wks is_this,b1..b76,\vpp\playabis

is_this[9] = (t_mil_rev) is_this[15] = (cost_uniforms_this) is_this[36] = (t_personal) is_this[47] = (contract_this) is_this[54] = (s_&_m_this) is_this[62] = (contin_this) is_this[63] = (deprec_this) is_this[19] = (public_rev_this) is_this[20] = (s_f_s_rev_this) is_this[21] = (interdept_rev_this) is_this[22] = (music_rev_this) is_this[23] = (state_rev_this) is_this[68] = (corps_cost_this) is_this[70] = (public_cost_this) is_this[71] = (s_f_s_cost_this) is_this[72] = (interdept_cost_this) is_this[73] = (music_cost_this) is_this[74] = (state_cost_this)

is_this[16] = (is_this[9] - is_this[15]) is_this[24] = (is_this[19] + is_this[20] + is_this[21] + is_this[22] + is_this[23]) is_this[25] = (is_this[16] + is_this[24]) is_this[64] = (is_this[36] + is_this[47] + is_this[54] + is_this[62] + is_this[63]) is_this[65] = (is_this[25] - is_this[64]) net_income = (is_this[65])

pwks is_this,b1..b76,\vpp\wiabis reset is_this wks is_last,c1..c76,\vpp\playabis pwks is_last,c1..c76,\vpp\wiabis reset is_last wks is_2,d1..d76,\vpp\playabis pwks is_2,d1..d76,\vpp\wiabis reset is_2

ca[8] = (freshmen_number) ca[9] = (sophomore_number) ca[10] = (junior_number) ca[11] = (senior_number) ca[3] = (freshmen_ca) ca[4] = (sophomore_ca) ca[5] = (junior_ca) ca[6] = (senior_ca)

ca[1] = (current_year) ca[2] = 0 ca[7] = 0 pwks ca,b1..b11,\vpp\wica wks ca_last,c1..c11,\vpp\playca pwks ca_last,c1..c11,\vpp\wica reset ca_last wks ca_2,d1..d11,\vpp\playca pwks ca_2,d1..d11,\vpp\wica reset ca_2

bud[3] = (rev_bud) bud[5] = (equip_bud) bud[7] = (fringes_bud) bud[8] = (salaries_bud) bud[9] = (wages_bud) bud[29] = (uniforms_bud) bud[12] = (tele_bud) bud[13] = (r_&_m_bud) bud[14] = (travel_bud) bud[15] = (other_contract_bud) bud[18] = (repair_s_&_m_bud) bud[19] = (other_s_&_m_bud) bud[22] = (elect_bud) bud[23] = (w_&_s_bud) bud[24] = (steam_bud) bud[25] = (insure_bud) bud[26] = (other_contin_bud) bud[1] = (current_yr) bud[2] = 0 bud[4] = 0 bud[6] = 0 bud[11] = 0 bud[17] = 0 bud[21] = 0 bud[28] = 0 bud[10] = (bud[7] + bud[8] + bud[9]) bud[16] = (bud[12] + bud[13] + bud[14] + bud[15]) bud[20] = (bud[18] + bud[19]) bud[27] = (bud[22] + bud[23] + bud[24] + bud[25] + bud[26]) pwks bud,b1..b29, vpp\wibud reset bud wks bud_last,c1..c29,\vpp\playbud pwks bud_last,c1..c29,\vpp\wibud reset bud_last wks bud_2,d1..d29,\vpp\playbud pwks bud_2,d1..d19,\vpp\wibud reset bud_2

wks cb,b1..b68,\vpp\playcbis cb[10] = (uniforms) cb[55] = (act_equip) cb[31] = (cbis_personal) cb[9] = (cbis_corps_rev) cb[41] = (cbis_contract) cb[47] = (cbis_s_&_m) cb[51] = (cbis_contin) cb[14] = (public_wicbis)

cb[14] = (public_wicbis) cb[15] = (s_f_s_wicbis) cb[16] = (interdept_wicbis) cb[17] = (music_wicbis) cb[18] = (state_wicbis)

cb[11] = (cb[9] - cb[10]) cb[19] = (cb[14] + cb[15] + cb[16] + cb[17] + cb[18]) cb[20] = (cb[11] + cb[19]) cb[56] = (cb[31] + cb[41] + cb[47] + cb[54] + cb[55]) cb[57] = (cb[11] + cb[19] - cb[56]) pwks cb,b1..b68,\vpp\wicbis reset cb wks cb_last,c1..c68,\vpp playcbis pwks cb_last,c1..c68,\vpp\wicbis reset cb_last wks cb_2,d1..d68,\vpp\playcbis pwks cb_2,d1..d68,\vpp\wicbis reset cb_2 find monthly_info_here

wks cth,c1..c14,\vpp\playabbs pwks cth,c1..c14,\vpp\wiabbs wks dth,d1..d14,\vpp\playabbs pwks dth,d1..d14,\vpp\wiabbs reset dth wks bs,b1..b14,\vpp\playabbs bs[13] = (cth[13] + net_income) !! reserve calculation bs[12] = (bs[14] - bs[13]) !! due to calculation pwks bs,b1..b14,\vpp\wiabbs reset cth reset bs chain pwts ;


Rule monthly_info_here_1 If count_it = 1 Then monthly_info_here = found
    pwks corps_rev_wiis,b12,\vpp\wiis
    pwks uniforms_wiis,b13,\vpp\wiis
    pwks public_rev_wiis,b17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18,\vpp\wiis
    pwks interdept_rev_wiis,b19,\vpp\wiis
    pwks music_rev_wiis,b20,\vpp\wiis
    pwks state_rev_wiis,b21,\vpp\wiis
    pwks personal_wiis,b34,\vpp\wiis
    pwks contract_wiis,b45,\vpp\wiis
    pwks s_&_m_wiis,b52,\vpp\wiis
    pwks contin_wiis,b60,\vpp\wiis
    pwks equip_wiis,b61,\vpp\wiis
    pwks corps_cost_wiis,b66,\vpp\wiis
    pwks public_cost_wiis,b68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69,\vpp\wiis
    pwks interdept_cost_wiis,b70,\vpp\wiis
    pwks music_cost_wiis,b71,\vpp\wiis
    pwks state_cost_wiis,b72,\vpp\wiis

    x = 1
```

```
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14,\vpp\wiis
    pwks t_other_rev,b22,\vpp\wiis
    pwks t_gr_profit,b23,\vpp\wiis
    pwks t_oper,b62,\vpp\wiis
    pwks ni,b63,\vpp\wiis

    wks var,c1..c74,\vpp\playis
    pwks var,c1..c74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,d1..d74,\vpp\playis
    pwks var,d1..d74,\vpp\wiis
    reset var
    wks var,e1..e74,\vpp\playis
    pwks var,e1..e74,\vpp\wiis
    reset var
    wks var,f1..f74,\vpp\playis
    pwks var,f1..f74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var;

Rule monthly_info_here_2 If count_it = 2 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..c12,\vpp\wiis
    pwks uniforms_wiis,b13..c13,\vpp\wiis
    pwks public_rev_wiis,b17..c17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..c18,\vpp\wiis
    pwks interdept_rev_wiis,b19..c19,\vpp\wiis
    pwks music_rev_wiis,b20..c20,\vpp\wiis
    pwks state_rev_wiis,b21..c21,\vpp\wiis
    pwks personal_wiis,b34..c34,\vpp\wiis
    pwks contract_wiis,b45..c45,\vpp\wiis
    pwks s_&_m_wiis,b52..c52,\vpp\wiis
    pwks contin_wiis,b60..c60,\vpp\wiis
    pwks equip_wiis,b61..c61,\vpp\wiis
    pwks corps_cost_wiis,b66..c66,\vpp\wiis
    pwks public_cost_wiis,b68..c68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..c69,\vpp\wiis
    pwks interdept_cost_wiis,b70..c70,\vpp\wiis
    pwks music_cost_wiis,b71..c71,\vpp\wiis
    pwks state_cost_wiis,b72..c72,\vpp\wiis

!!!!! start
    wks retire,b26..c26,\vpp\playis
    wks fica_o,b27..c27,\vpp\playis
    wks fica_s,b28..c28,\vpp\playis
```

```
wks gr_ins,b29..c29,\vpp\playis
wks med_hosp,b30..c30,\vpp\playis
wks sals,b31..c31,\vpp\playis !     wks wages_g,b32..c32,\vpp\playis !     wks wages_s,b33..c33,\vpp\playis
wks tele,b36..c36,\vpp\playis
wks r_&_m,b37..c37,\vpp\playis
wks x1,b38..c38,\vpp\playis
wks x2,b39..c39,\vpp\playis
wks x3,b40..c40,\vpp\playis
wks x4,b41..c41,\vpp\playis
wks x5,b42..c42,\vpp\playis
wks x6,b43..c43,\vpp\playis
wks travel,b44..c44,\vpp\playis
wks r1,b50..c50,\vpp\playis
wks r2,b51..c51,\vpp\playis
wks s1,b47..c47,\vpp\playis
wks s2,b48..c48,\vpp\playis
wks s3,b49..c49,\vpp\playis
wks elect,b54..c54,\vpp\playis
wks w_&_s,b55..c55,\vpp\playis
wks insure,b56..c56,\vpp\playis
wks agency,b57..c57,\vpp\playis
wks other1,b58..c58,\vpp\playis
wks other2,b59..c59,\vpp\playis !!!!!!      stop


x = 1
z = (count_it)
whiletrue x < = (z) then
  gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
  vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
  t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
  t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
  vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
  t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
  ni[x] = (t_gr_profit[x] - t_oper[x])

!!!!!   start
  retire[x] = (retire[x] + fica_o[x] + fica_s[x] + gr_ins[x] + med_hosp[x])
  wages_gen[x] = (personal_wiis[x] - retire[x] - sals[x])
  other_contract[x] = (x1[x] + x2[x] + x3[x] + x4[x] + x5[x] + x6[x])
  repair[x] = (r1[x] + r2[x])
  other_sup[x] = (s1[x] + s2[x] + s3[x])
  other_contin[x] = (other1[x] + other2[x]) !!!!!!      stop

  x = (x + 1)
end

pwks gr_profit_uniforms,b14..c14,\vpp\wiis
pwks t_other_rev,b22..c22,\vpp\wiis
pwks t_gr_profit,b23..c23,\vpp\wiis
pwks t_oper,b62..c62,\vpp\wiis
pwks ni,b63..c63,\vpp\wiis

!!!!!!  start

pwks retire,b26..c26,\vpp\wiis
pwks wages_gen,b32..c32,\vpp\wiis
pwks sals,b31..c31,\vpp\wiis
reset retire
reset wages_gen
reset sals
reset fica_o
reset fica_s
reset gr_ins
reset med_hosp
pwks tele,b36..c36,\vpp\wiis
pwks r_&_m,b37..c37,\vpp\wiis
pwks travel,b44..c44,\vpp\wiis
pwks other_contract,b38..c38,\vpp\wiis
reset tele
reset r_&_m
reset travel
reset other_contract
reset x1
reset x2
reset x3
reset x4
reset x5
reset x6
```

```
    pwks repair,b50..c50,\vpp\wiis
    pwks other_sup,b47..c47,\vpp\wiis
    reset r1
    reset r2
    reset s1
    reset s2
    reset s3
    reset repair
    reset other_sup
    pwks elect,b54..c54,\vpp\wiis
    pwks w_&_s,b55..c55,\vpp\wiis
    pwks insure,b56..c56,\vpp\wiis
    pwks agency,b57..c57,\vpp\wiis
    pwks other_contin,b58..c58,\vpp\wiis
    reset elect
    reset w_&_s
    reset insure
    reset agency
    reset other_contin
    reset other1
    reset other2

!!!!! stop



    wks var,d1..d74,\vpp\playis
    pwks var,d1..d74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,e1..e74,\vpp\playis
    pwks var,e1..e74,\vpp\wiis
    reset var
    wks var,f1..f74,\vpp\playis
    pwks var,f1..f74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var;

Rule monthly_info_here_3 If count_it = 3 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..d12,\vpp\wiis
    pwks uniforms_wiis,b13..d13,\vpp\wiis
    pwks public_rev_wiis,b17..d17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..d18,\vpp\wiis
    pwks interdept_rev_wiis,b19..d19,\vpp\wiis
    pwks music_rev_wiis,b20..d20,\vpp\wiis
    pwks state_rev_wiis,b21..d21,\vpp\wiis
    pwks personal_wiis,b34..d34,\vpp\wiis
    pwks contract_wiis,b45..d45,\vpp\wiis
    pwks s_&_m_wiis,b52..d52,\vpp\wiis
    pwks contin_wiis,b60..d60,\vpp\wiis
    pwks equip_wiis,b61..d61,\vpp\wiis
    pwks corps_cost_wiis,b66..d66,\vpp\wiis
    pwks public_cost_wiis,b68..d68,\vpp\wiis
```

```
    pwks s_f_s_cost_wiis,b69..d69,\vpp\wiis
    pwks interdept_cost_wiis,b70..d70,\vpp\wiis
    pwks music_cost_wiis,b71..d71,\vpp\wiis
    pwks state_cost_wiis,b72..d72,\vpp\wiis

!!!!!  start
    wks retire,b26..d26,\vpp\playis
    wks fica_o,b27..d27,\vpp\playis
    wks fica_s,b28..d28,\vpp\playis
    wks gr_ins,b29..d29,\vpp\playis
    wks med_hosp,b30..d30,\vpp\playis
    wks sals,b31..d31,\vpp\playis !     wks wages_g,b32..d32,\vpp\playis !     wks wages_s,b33..d33,\vpp\playis
    wks tele,b36..d36,\vpp\playis
    wks r_&_m,b37..d37,\vpp\playis
    wks x1,b38..d38,\vpp\playis
    wks x2,b39..d39,\vpp\playis
    wks x3,b40..d40,\vpp\playis
    wks x4,b41..d41,\vpp\playis
    wks x5,b42..d42,\vpp\playis
    wks x6,b43..d43,\vpp\playis
    wks travel,b44..d44,\vpp\playis
    wks r1,b50..d50,\vpp\playis
    wks r2,b51..d51,\vpp\playis
    wks s1,b47..d47,\vpp\playis
    wks s2,b48..d48,\vpp\playis
    wks s3,b49..d49,\vpp\playis
    wks elect,b54..d54,\vpp\playis
    wks w_&_s,b55..d55,\vpp\playis
    wks insure,b56..d56,\vpp\playis
    wks agency,b57..d57,\vpp\playis
    wks other1,b58..d58,\vpp\playis
    wks other2,b59..d59,\vpp\playis !!!!!!      stop




    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])

!!!!!   start
      retire[x] = (retire[x] + fica_o[x] + fica_s[x] + gr_ins[x] + med_hosp[x])
      wages_gen[x] = (personal_wiis[x] - retire[x] - sals[x])
      other_contract[x] = (x1[x] + x2[x] + x3[x] + x4[x] + x5[x] + x6[x])
      repair[x] = (r1[x] + r2[x])
      other_sup[x] = (s1[x] + s2[x] + s3[x])
      other_contin[x] = (other1[x] + other2[x]) !!!!!!      stop

      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..d14,\vpp\wiis
    pwks t_other_rev,b22..d22,\vpp\wiis
    pwks t_gr_profit,b23..d23,\vpp\wiis
    pwks t_oper,b62..d62,\vpp\wiis
    pwks ni,b63..d63,\vpp\wiis

!!!!!!  start

    pwks retire,b26..d26,\vpp\wiis
    pwks wages_gen,b32..d32,\vpp\wiis
    pwks sals,b31..d31,\vpp\wiis
    reset retire
    reset wages_gen
    reset sals
    reset fica_o
    reset fica_s
    reset gr_ins
    reset med_hosp
    pwks tele,b36..d36,\vpp\wiis
    pwks r_&_m,b37..d37,\vpp\wiis
```

```
    pwks travel,b44..d44,\vpp\wiis
    pwks other_contract,b38..d38,\vpp\wiis
    reset tele
    reset r_&_m
    reset travel
    reset other_contract
    reset x1
    reset x2
    reset x3
    reset x4
    reset x5
    reset x6

    pwks repair,b50..d50,\vpp\wiis
    pwks other_sup,b47..d47,\vpp\wiis
    reset r1
    reset r2
    reset s1
    reset s2
    reset s3
    reset repair
    reset other_sup
    pwks elect,b54..d54,\vpp\wiis
    pwks w_&_s,b55..d55,\vpp\wiis
    pwks insure,b56..d56,\vpp\wiis
    pwks agency,b57..d57,\vpp\wiis
    pwks other_contin,b58..d58,\vpp\wiis
    reset elect
    reset w_&_s
    reset insure
    reset agency
    reset other_contin
    reset other1
    reset other2

!!!!! stop


    wks var,e1..e74,\vpp\playis
    pwks var,e1..e74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,f1..f74,\vpp\playis
    pwks var,f1..f74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var;

Rule monthly_info_here_4 If count_it = 4 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..e12,\vpp\wiis
    pwks uniforms_wiis,b13..e13,\vpp\wiis
    pwks public_rev_wiis,b17..e17,\vpp\wiis
```

```
    pwks s_f_s_rev_wiis,b18..e18,\vpp\wiis
    pwks interdept_rev_wiis,b19..e19,\vpp\wiis
    pwks music_rev_wiis,b20..e20,\vpp\wiis
    pwks state_rev_wiis,b21..e21,\vpp\wiis
    pwks personal_wiis,b34..e34,\vpp\wiis
    pwks contract_wiis,b45..e45,\vpp\wiis
    pwks s_&_m_wiis,b52..e52,\vpp\wiis
    pwks contin_wiis,b60..e60,\vpp\wiis
    pwks equip_wiis,b61..e61,\vpp\wiis
    pwks corps_cost_wiis,b66..e66,\vpp\wiis
    pwks public_cost_wiis,b68..e68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..e69,\vpp\wiis
    pwks interdept_cost_wiis,b70..e70,\vpp\wiis
    pwks music_cost_wiis,b71..e71,\vpp\wiis
    pwks state_cost_wiis,b72..e72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..e14,\vpp\wiis
    pwks t_other_rev,b22..e22,\vpp\wiis
    pwks t_gr_profit,b23..e23,\vpp\wiis
    pwks t_oper,b62..e62,\vpp\wiis
    pwks ni,b63..e63,\vpp\wiis

    wks var,f1..f74,\vpp'playis
    pwks var,f1..f74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp'playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp'playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp'playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp'playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var;

Rule monthly_info_here_5 If count_it = 5 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..f12,\vpp\wiis
    pwks uniforms_wiis,b13..f13,\vpp\wiis
    pwks public_rev_wiis,b17..f17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..f18,\vpp\wiis
    pwks interdept_rev_wiis,b19..f19,\vpp\wiis
    pwks music_rev_wiis,b20..f20,\vpp\wiis
```

```
    pwks state_rev_wiis,b21..f21,\vpp\wiis
    pwks personal_wiis,b34..f34,\vpp\wiis
    pwks contract_wiis,b45..f45,\vpp\wiis
    pwks s_&_m_wiis,b52..f52,\vpp\wiis
    pwks contin_wiis,b60..f60,\vpp\wiis
    pwks equip_wiis,b61..f61,\vpp\wiis
    pwks corps_cost_wiis,b66..f66,\vpp\wiis
    pwks public_cost_wiis,b68..f68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..f69,\vpp\wiis
    pwks interdept_cost_wiis,b70..f70,\vpp\wiis
    pwks music_cost_wiis,b71..f71,\vpp\wiis
    pwks state_cost_wiis,b72..f72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..f14,\vpp\wiis
    pwks t_other_rev,b22..f22,\vpp\wiis
    pwks t_gr_profit,b23..f23,\vpp\wiis
    pwks t_oper,b62..f62,\vpp\wiis
    pwks ni,b63..f63,\vpp\wiis

    wks var,g1..g74,\vpp\playis
    pwks var,g1..g74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var;

Rule monthly_info_here_6 If count_it = 6 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..g12,\vpp\wiis
    pwks uniforms_wiis,b13..g13,\vpp\wiis
    pwks public_rev_wiis,b17..g17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..g18,\vpp\wiis
    pwks interdept_rev_wiis,b19..g19,\vpp\wiis
    pwks music_rev_wiis,b20..g20,\vpp\wiis
    pwks state_rev_wiis,b21..g21,\vpp\wiis
    pwks personal_wiis,b34..g34,\vpp\wiis
    pwks contract_wiis,b45..g45,\vpp\wiis
```

```
    pwks s_&_m_wiis,b52..g52,\vpp\wiis
    pwks contin_wiis,b60..g60,\vpp\wiis
    pwks equip_wiis,b61..g61,\vpp\wiis
    pwks corps_cost_wiis,b66..g66,\vppiis
    pwks public_cost_wiis,b68..g68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..g69,\vpp\wiis
    pwks interdept_cost_wiis,b70..g70,\vpp\wiis
    pwks music_cost_wiis,b71..g71,\vpp\wiis
    pwks state_cost_wiis,b72..g72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..g14,\vpp\wiis
    pwks t_other_rev,b22..g22,\vpp\wiis
    pwks t_gr_profit,b23..g23,\vpp\wiis
    pwks t_oper,b62..g62,\vpp\wiis
    pwks ni,b63..g63,\vpp\wiis

    wks var,h1..h74,\vpp\playis
    pwks var,h1..h74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,i1..i74,\vpp\playis
    pwks var,i1..i74,\vpp\wiis
    reset var
    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var;

Rule monthly_info_here_7 If count_it = 7 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..h12,\vpp\wiis
    pwks uniforms_wiis,b13..h13,\vpp\wiis
    pwks public_rev_wiis,b17..h17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..h18,\vpp\wiis
    pwks interdept_rev_wiis,b19..h19,\vpp\wiis
    pwks music_rev_wiis,b20..h20,\vpp\wiis
    pwks state_rev_wi,b21..h21,\vpp\wiis
    pwks personal_wiis,b34..h34,\vpp\wiis
    pwks contract_wiis,b45..h45,\vpp\wiis
    pwks s_&_m_wiis,b52..h52,\vpp\wiis
    pwks contin_wiis,b60..h60,\vpp\wiis
    pwks equip_wiis,b61..h61,\vpp\wiis
```

```
pwks corps_cost_wiis,b66..h66,\vpp\wiis
pwks public_cost_wiis,b68..h68,\vpp\wiis
pwks s_f_s_cost_wiis,b69..h69,\vpp\wiis
pwks interdept_cost_wiis,b70..h70,\vpp\wiis
pwks music_cost_wiis,b71..h71,\vpp\wiis
pwks state_cost_wiis,b72..h72,\vpp\wiis

x = 1
z = (count_it)
whiletrue x < = (z) then
  gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
  vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
  t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
  t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
  vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
  t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
  ni[x] = (t_gr_profit[x] - t_oper[x])
  x = (x + 1)
end

pwks gr_profit_uniforms,b14..h14,\vpp\wiis
pwks t_other_rev,b22..h22,\vpp\wiis
pwks t_gr_profit,b23..h23,\vpp\wiis
pwks t_oper,b62..h62,\vpp\wiis
pwks ni,b63..h63,\vpp\wiis

wks var,i1..i74,\vpp\playis
pwks var,i1..i74,\vpp\wiis
pwks var,aa1..aa74,\vpp\wiis
reset var
wks var,j1..j74,\vpp\playis
pwks var,j1..j74,\vpp\wiis
reset var
wks var,k1..k74,\vpp\playis
pwks var,k1..k74,\vpp\wiis
reset var
wks var,l1..l74,\vpp\playis
pwks var,l1..l74,\vpp\wiis
reset var
wks var,m1..m74,\vpp\playis
pwks var,m1..m74,\vpp\wiis
reset var
wks var,n1..n74,\vpp\playis
pwks var,n1..n74,\vpp\wiis
reset var
wks var,o1..o74,\vpp\playis
pwks var,o1..o74,\vpp\wiis
reset var
wks var,p1..p74,\vpp\playis
pwks var,p1..p74,\vpp\wiis
reset var
wks var,q1..q74,\vpp\playis
pwks var,q1..q74,\vpp\wiis
reset var
wks var,r1..r74,\vpp\playis
pwks var,r1..r74,\vpp\wiis
reset var
wks var,s1..s74,\vpp\playis
pwks var,s1..s74,\vpp\wiis
reset var
wks var,t1..t74,\vpp\playis
pwks var,t1..t74,\vpp\wiis
reset var;

Rule monthly_info_here_8 If count_it = 8 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..i12,\vpp\wiis
    pwks uniforms_wiis,b13..i13,\vpp\wiis
    pwks public_rev_wiis,b17..i17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..i18,\vpp\wiis
    pwks interdept_rev_wiis,b19..i19,\vpp\wiis
    pwks music_rev_wiis,b20..i20,\vpp\wiis
    pwks state_rev_wiis,b21..i21,\vpp\wiis
    pwks personal_wiis,b34..i34,\vpp\wiis
    pwks contract_wiis,b45..i45,\vpp\wiis
    pwks s_&_m_wiis,b52..i52,\vpp\wiis
    pwks contin_wiis,b60..i60,\vpp\wiis
    pwks equip_wiis,b61..i61,\vpp\wiis
    pwks corps_cost_wiis,b66..i66,\vpp\wiis
    pwks public_cost_wiis,b68..i68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..i69,\vpp\wiis
```

```
    pwks interdept_cost_wiis,b70..i70,\vpp\wiis
    pwks music_cost_wiis,b71..i71,\vpp\wiis
    pwks state_cost_wiis,b72..i72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..i14,\vpp\wiis
    pwks t_other_rev,b22..i22,\vpp\wiis
    pwks t_gr_profit,b23..i23,\vpp\wiis
    pwks t_oper,b62..i62,\vpp\wiis
    pwks ni,b63..i63,\vpp\wiis

    wks var,j1..j74,\vpp\playis
    pwks var,j1..j74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var
    wks var,t1..t74,\vpp\playis
    pwks var,t1..t74,\vpp\wiis
    reset var
    wks var,u1..u74,\vpp\playis
    pwks var,u1..u74,\vpp\wiis
    reset var;

Rule monthly_info_here_9 If count_it = 9 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..j12,\vpp\wiis
    pwks uniforms_wiis,b13..j13,\vpp\wiis
    pwks public_rev_wiis,b17..j17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..j18,\vpp\wiis
    pwks interdept_rev_wiis,b19..j19,\vpp\wiis
    pwks music_rev_wiis,b20..j20,\vpp\wiis
    pwks state_rev_wiis,b21..j21,\vpp\wiis
    pwks personal_wiis,b34..j34,\vpp\wiis
    pwks contract_wiis,b45..j45,\vpp\wiis
    pwks s_&_m_wiis,b52..j52,\vpp\wiis
    pwks contin_wiis,b60..j60,\vpp\wiis
    pwks equip_wiis,b61..j61,\vpp\wiis
    pwks corps_cost_wiis,b66..j66,\vpp\wiis
    pwks public_cost_wiis,b68..j68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..j69,\vpp\wiis
    pwks interdept_cost_wiis,b70..j70,\vpp\wiis
    pwks music_cost_wiis,b71..j71,\vpp\wiis
    pwks state_cost_wiis,b72..j72,\vpp\wiis
```

```
    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..j14,\vpp\wiis
    pwks t_other_rev,b22..j22,\vpp\wiis
    pwks t_gr_profit,b23..j23,\vpp\wiis
    pwks t_oper,b62..j62,\vpp\wiis
    pwks ni,b63..j63,\vpp\wiis

    wks var,k1..k74,\vpp\playis
    pwks var,k1..k74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var
    wks var,t1..t74,\vpp\playis
    pwks var,t1..t74,\vpp\wiis
    reset var
    wks var,u1..u74,\vpp\playis
    pwks var,u1..u74,\vpp\wiis
    reset var
    wks var,v1..v74,\vpp\playis
    pwks var,v1..v74,\vpp\wiis
    reset var;

Rule monthly_info_here_10 If count_it = 10 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..k12,\vpp\wiis
    pwks uniforms_wiis,b13..k13,\vpp\wiis
    pwks public_rev_wiis,b17..k17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..k18,\vpp\wiis
    pwks interdept_rev_wiis,b19..k19,\vpp\wiis
    pwks music_rev_wiis,b20..k20,\vpp\wiis
    pwks state_rev_wiis,b21..k21,\vpp\wiis
    pwks personal_wiis,b34..k34,\vpp\wiis
    pwks contract_wiis,b45..k45,\vpp\wiis
    pwks s_&_m_wiis,b52..k52,\vpp\wiis
    pwks contin_wiis,b60..k60,\vpp\wiis
    pwks equip_wiis,b61..k61,\vpp\wiis
    pwks corps_cost_wiis,b66..k66,\vpp\wiis
    pwks public_cost_wiis,b68..k68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..k69,\vpp\wiis
    pwks interdept_cost_wiis,b70..k70,\vpp\wiis
    pwks music_cost_wiis,b71..k71,\vpp\wiis
    pwks state_cost_wiis,b72..k72,\vpp\wiis

    x = 1
    z = (count_it)
```

```
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
      t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
      t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
      vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
      t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
      ni[x] = (t_gr_profit[x] - t_oper[x])
      x = (x + 1)
    end

    pwks gr_profit_uniforms,b14..k14,\vpp\wiis
    pwks t_other_rev,b22..k22,\vpp\wiis
    pwks t_gr_profit,b23..k23,\vpp\wiis
    pwks t_oper,b62..k62,\vpp\wiis
    pwks ni,b63..k63,\vpp\wiis

    wks var,l1..l74,\vpp\playis
    pwks var,l1..l74,\vpp\wiis
    pwks var,aa1..aa74,\vpp\wiis
    reset var
    wks var,m1..m74,\vpp\playis
    pwks var,m1..m74,\vpp\wiis
    reset var
    wks var,n1..n74,\vpp\playis
    pwks var,n1..n74,\vpp\wiis
    reset var
    wks var,o1..o74,\vpp\playis
    pwks var,o1..o74,\vpp\wiis
    reset var
    wks var,p1..p74,\vpp\playis
    pwks var,p1..p74,\vpp\wiis
    reset var
    wks var,q1..q74,\vpp\playis
    pwks var,q1..q74,\vpp\wiis
    reset var
    wks var,r1..r74,\vpp\playis
    pwks var,r1..r74,\vpp\wiis
    reset var
    wks var,s1..s74,\vpp\playis
    pwks var,s1..s74,\vpp\wiis
    reset var
    wks var,t1..t74,\vpp\playis
    pwks var,t1..t74,\vpp\wiis
    reset var
    wks var,u1..u74,\vpp\playis
    pwks var,u1..u74,\vpp\wiis
    reset var
    wks var,v1..v74,\vpp\playis
    pwks var,v1..v74,\vpp\wiis
    reset var
    wks var,w1..w74,\vpp\playis
    pwks var,w1..w74,\vpp\wiis
    reset var;

Rule monthly_info_here_11 If count_it = 11 Then monthly_info_here = found
    pwks corps_rev_wiis,b12..l12,\vpp\wiis
    pwks uniforms_wiis,b13..l13,\vpp\wiis
    pwks public_rev_wiis,b17..l17,\vpp\wiis
    pwks s_f_s_rev_wiis,b18..l18,\vpp\wiis
    pwks interdept_rev_wiis,b19..l19,\vpp\wiis
    pwks music_rev_wiis,b20..l20,\vpp\wiis
    pwks state_rev_wiis,b21..l21,\vpp\wiis
    pwks personal_wiis,b34..l34,\vpp\wiis
    pwks contract_wiis,b45..l45,\vpp\wiis
    pwks s_&_m_wiis,b52..l52,\vpp\wiis
    pwks contin_wiis,b60..l60,\vpp\wiis
    pwks equip_wiis,b61..l61,\vpp\wiis
    pwks corps_cost_wiis,b66..l66,\vpp\wiis
    pwks public_cost_wiis,b68..l68,\vpp\wiis
    pwks s_f_s_cost_wiis,b69..l69,\vpp\wiis
    pwks interdept_cost_wiis,b70..l70,\vpp\wiis
    pwks music_cost_wiis,b71..l71,\vpp\wiis
    pwks state_cost_wiis,b72..l72,\vpp\wiis

    x = 1
    z = (count_it)
    whiletrue x < = (z) then
      gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
      vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
```

```
    t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
    t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
    vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
    t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
    ni[x] = (t_gr_profit[x] - t_oper[x])
    x = (x + 1)
  end

  pwks gr_profit_uniforms,b14..l14,\vpp\wiis
  pwks t_other_rev,b22..l22,\vpp\wiis
  pwks t_gr_profit,b23..l23,\vpp\wiis
  pwks t_oper,b62..l62,\vpp\wiis
  pwks ni,b63..l63,\vpp\wiis

  wks var,m1..m74,\vpp\playis
  pwks var,m1..m74,\vpp\wiis
  pwks var,aa1..aa74,\vpp\wiis
  reset var
  wks var,n1..n74,\vpp\playis
  pwks var,n1..n74,\vpp\wiis
  reset var
  wks var,o1..o74,\vpp\playis
  pwks var,o1..o74,\vpp\wiis
  reset var
  wks var,p1..p74,\vpp\playis
  pwks var,p1..p74,\vpp\wiis
  reset var
  wks var,q1..q74,\vpp\playis
  pwks var,q1..q74,\vpp\wiis
  reset var
  wks var,r1..r74,\vpp\playis
  pwks var,r1..r74,\vpp\wiis
  reset var
  wks var,s1..s74,\vpp\playis
  pwks var,s1..s74,\vpp\wiis
  reset var
  wks var,t1..t74,\vpp\playis
  pwks var,t1..t74,\vpp\wiis
  reset var
  wks var,u1..u74,\vpp\playis
  pwks var,u1..u74,\vpp\wiis
  reset var
  wks var,v1..v74,\vpp\playis
  pwks var,v1..v74,\vpp\wiis
  reset var
  wks var,w1..w74,\vpp\playis
  pwks var,w1..w74,\vpp\wiis
  reset var
  wks var,x1..x74,\vpp\playis
  pwks var,x1..x74,\vpp\wiis
  reset var;

Rule monthly_info_here_12 If count_it = 12 Then monthly_info_here = found
  pwks corps_rev_wiis,b12..m12,\vpp\wiis
  pwks uniforms_wiis,b13..m13,\vpp\wiis
  pwks public_rev_wiis,b17..m17,\vpp\wiis
  pwks s_f_s_rev_wiis,b18..m18,\vpp\wiis
  pwks interdept_rev_wiis,b19..m19,\vpp\wiis
  pwks music_rev_wiis,b20..m20,\vpp\wiis
  pwks state_rev_wiis,b21..m21,\vpp\wiis
  pwks personal_wiis,b34..m34,\vpp\wiis
  pwks contract_wiis,b45..m45,\vpp\wiis
  pwks s_&_m_wiis,b52..m52,\vpp\wiis
  pwks contin_wiis,b60..m60,\vpp\wiis
  pwks equip_wiis,b61..m61,\vpp\wiis
  pwks corps_cost_wiis,b66..m66,\vpp\wiis
  pwks public_cost_wiis,b68..m68,\vpp\wiis
  pwks s_f_s_cost_wiis,b69..m69,\vpp\wiis
  pwks interdept_cost_wiis,b70..m70,\vpp\wiis
  pwks music_cost_wiis,b71..m71,\vpp\wiis
  pwks state_cost_wiis,b72..m72,\vpp\wiis

  x = 1
  z = (count_it)
  whiletrue x < = (z) then
    gr_profit_uniforms[x] = (corps_rev_wiis[x] - uniforms_wiis[x])
    vbl = (public_rev_wiis[x] + s_f_s_rev_wiis[x] + interdept_rev_wiis[x])
    t_other_rev[x] = (vbl + music_rev_wiis[x] + state_rev_wiis[x])
    t_gr_profit[x] = (gr_profit_uniforms[x] + t_other_rev[x])
    vbl = (personal_wiis[x] + contract_wiis[x] + s_&_m_wiis[x])
```

```
  t_oper[x] = (vbl + contin_wiis[x] + equip_wiis[x])
  ni[x] = (t_gr_profit[x] - t_oper[x])
  x = (x + 1)
end

pwks gr_profit_uniforms,b14..m14,\vpp\wiis
pwks t_other_rev,b22..m22,\vpp\wiis
pwks t_gr_profit,b23..m23,\vpp\wiis
pwks t_oper,b62..m62,\vpp\wiis
pwks ni,b63..m63,\vpp\wiis

wks var,n1..n74,\vpp\playis
pwks var,n1..n74,\vpp\wiis
pwks var,aa1..aa74,\vpp\wiis
reset var
wks var,o1..o74,\vpp\playis
pwks var,o1..o74,\vpp\wiis
reset var
wks var,p1..p74,\vpp\playis
pwks var,p1..p74,\vpp\wiis
reset var
wks var,q1..q74,\vpp\playis
pwks var,q1..q74,\vpp\wiis
reset var
wks var,r1..r74,\vpp\playis
pwks var,r1..r74,\vpp\wiis
reset var
wks var,s1..s74,\vpp\playis
pwks var,s1..s74,\vpp\wiis
reset var
wks var,t1..t74,\vpp\playis
pwks var,t1..t74,\vpp\wiis
reset var
wks var,u1..u74,\vpp\playis
pwks var,u1..u74,\vpp\wiis
reset var
wks var,v1..v74,\vpp\playis
pwks var,v1..v74,\vpp\wiis
reset var
wks var,w1..w74,\vpp\playis
pwks var,w1..w74,\vpp\wiis
reset var
wks var,x1..x74,\vpp\playis
pwks var,x1..x74,\vpp\wiis
reset var
wks var,y1..y74,\vpp\playis
pwks var,y1..y74,\vpp\wiis
reset var;


!statements block

plural: gr_profit_uniforms, t_other_rev, t_gr_profit, t_oper, ni;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 pdisplay " " pdisplay "What would you like to do? Answer /Q when finished" pdisplay " " pdisplay "budget analysis        ratio
analysis            trend statements" pdisplay "return to main menu" pdisplay " "
  find todo
  find dummy
  cls ;

!Rules Block

Rule go_to_wibudget_kbs

if todo = budget_analysis

then dummy = found
    chain pwibud;


Rule go_to_wiratio6_kbs

If todo = ratio_analysis

then dummy = found
    chain pwirat6;


Rule go_to_witrend_kbs

If todo = trend_statements

Then dummy = found
    chain pwitrend;


Rule return_to_main_menu

If todo = return_to_main_menu

Then dummy = found
    chain pts;


!Statements Block

ask todo: "What would you like to do?    Answer /Q when finished"; choices todo:budget_analysis,ratio_analysis,
trend_statements,return_to_main_menu;

bkcolor = 1;
```

```
endoff; execute; runtime;

actions

color = 15 todo = budget_analysis find beg_display find farse chain pwits;

!rules block

Rule beginning_display

If todo = budget_analysis Then beg_display = found
    cls
    locate 1,29
    display "BUDGET ANALYSIS"
    pdisplay "                    BUDGET ANALYSIS"
    pdisplay " "
    locate 3,6 display "Budget analysis is used to determine whether or not the organiztion's" display "revenues and expenses have been
within budget over time.  For the Tailor" display "Shop, a budget is determined in advance for the year.  A monthly review" display "of the
budget versus actual data is conducted to determine whether or" display "not the Tailor Shop is operating within its budget.  An acceptance
" display "range, which is currently + or - 20% of the expected amount for each" display "revenue and expense category, is used to deter-
mine whether or not each" display "item is within budget." display " " pdisplay "      Budget analysis is used to determine whether or not
the organiztion's" pdisplay "revenues and expenses have been within budget over time.  For the Tailor" pdisplay "Shop, a budget is deter-
mined in advance for the year.  A monthly review" pdisplay "of the budget versus actual data is conducted to determine whether or"
pdisplay "not the Tailor Shop is operating within its budget.  An acceptance " pdisplay "range, which is currently + or - 20% of the ex-
pected amount for each" pdisplay "revenue and expense category, is used to determine whether or not each" pdisplay "item is within
budget." pdisplay " ";



Rule tell_user_of_budget_limits If todo = budget_analysis Then find change_limits  ! statement allows user to specify which limits to
change
    pdisplay "Would you like to change any of these ranges for the revenue"
    pdisplay "categories?"
    pdisplay ""
    pdisplay "no      yes"
    pdisplay " "
    pdisplay "Would you like to change any of these ranges for the expense"
    pdisplay "categories?"
    pdisplay ""
    pdisplay "no      yes"
    pdisplay " "
    find change_limits_costs ! statement allows user to specify limits
    farse = ok
    military_ll_b = 20
    military_ul_b = 20
    public_ll_b = 20
    public_ul_b = 20
    s_f_s_ll_b = 20
    s_f_s_ul_b = 20
    interdept_ll_b = 20
    interdept_ul_b = 20
    music_ll_b = 20
    music_ul_b = 20
    state_ll_b = 20
    state_ul_b = 20
    fringes_ll_b = 20
    salaries_ll_b = 20
    wages_ll_b = 20
    total_personal_ll_b = 20
    tele_ll_b = 20
    R_and_M_ll_b = 20
    travel_ll_b = 20
    other_contract_ll_b = 20
    total_contract_ll_b = 20
    repair_ll_b = 20
    other_s_and_m_ll_b = 20
    total_s_and_m_ll_b = 20
    equip_ll_b = 20
    uniforms_ll_b = 20
    elect_ll_b = 20
    w_and_s_ll_b = 20
    insure_ll_b = 20
    agency_ll_b = 20
    other_contin_ll_b = 20
    total_contin_ll_b = 20
```

```
fringes_ul_b = 20
salaries_ul_b = 20
wages_ul_b = 20
total_personal_ul_b = 20
tele_ul_b = 20
R_and_M_ul_b = 20
travel_ul_b = 20
other_contract_ul_b = 20
total_contract_ul_b = 20
repair_ul_b = 20
other_s_and_m_ul_b = 20
total_s_and_m_ul_b = 20
equip_ul_b = 20
uniforms_ul_b = 20
elect_ul_b = 20
w_and_s_ul_b = 20
insure_ul_b = 20
agency_ul_b = 20
other_contin_ul_b = 20
total_contin_ul_b = 20
find change_values ! leads to a series of rules to change or leave limits on revenues
find change_values_costs ! leads to rules as above, but for costs
find explain_rev_budget
find rev_budget ! leads to a series of rules which get budget and if there
                ! is a difference, accounts for it through prompts
 reset rev_budget
find kill_time_display
find expectations  ! find expected values for all revenue categories
find cost_expectations ! fill in later
cls
display "The calculations are now complete.  Press any key to examine"
display "the revenue part of the analysis. ¬"
pdisplay "The calculations are now complete.  Press any key to examine"
pdisplay "the revenue part of the analysis."
pdisplay " "

find mil_rev_to_display       ! leads to rules which determine whether or
find public_rev_to_display    ! not each revenue category is within its
find s_f_s_rev_to_display     ! limits, and then informs the user
find interdept_rev_to_display
find music_rev_to_display
find state_rev_to_display
find within_rev_to_display
cls
display "The revenue section of budgeting anlaysis is now finished.  Press any"
display "key to examine the expense section. ¬"

pdisplay "The revenue section of budgeting anlaysis is now finished.  Press any"
pdisplay "key to examine the expense section."
pdisplay " "

find personal_to_display
find contract_to_display
find contin_to_display
find s_and_m_to_display
find uniforms_to_display
find equip_to_display;
```

Rule display_explanation_and_kill_time **If** todo = budget_analysis **Then** kill_time_display = found

```
    cls
    locate 1,4 display "The following analysis will determine whether or not each revenue and" display "expense category is over budget,
under budget, or within budget (i.e., over," display "under, or within the previously prescribed ranges). In this analysis, if" display "an item
is over or under budget, this will be indicated along with the " display "percentage by which it is over or under budget. The actual and
budget" display "values will not be displayed. Given the annual budget, one must break the" display "budget down into 12 monthly inter-
vals. This is done by using the previous" display "year's actual figures to determine how much of the current year's budget" display "should
have been used thus far in any given month. For categories which" display "provide a fairly steady flow of income or expense (e.g. sala-
ries), any" display "exception is important. For other categories however, the flow of funds" display "may be discontinuous. For example,
most of the revenue from the corps is" display "booked to the Tailor Shop late in the year, while revenue from the music" display "depart-
ment is typically paid twice, once in the fall and once in the" display "spring. Repairs and maintenance will be erratic. For categories such
" display "as these, an early or late payment will appear as an exception."  locate 18,4 display "At this time, calculation of all expected
values is in progress. Please" display "be patient as this takes time. You will be instructed when to continue."

pdisplay "    The following analysis will determine whether or not each revenue and" pdisplay "expense category is over budget, under
budget, or within budget (i.e., over," pdisplay "under, or within the previously prescribed ranges). In this analysis, if" pdisplay "an item is
over or under budget, this will be indicated along with the " pdisplay "percentage by which it is over or under budget. The actual and
budget" pdisplay "values will not be displayed. Given the annual budget, one must break the" pdisplay "budget down into 12 monthly in-
tervals. This is done by using the previous" pdisplay "year's actual figures to determine how much of the current year's budget" pdisplay
"should have been used thus far in any given month. For categories which" pdisplay "provide a fairly steady flow of income or expense
(e.g. salaries), any" pdisplay "exception is important. For other categories however, the flow of funds" pdisplay "may be discontinuous.
For example, most of the revenue from the corps is" pdisplay "booked to the Tailor Shop late in the year, while revenue from the music"
```

```
pdisplay "department is typically paid twice, once in the fall and once in the" pdisplay "spring.  Repairs and maintenance will be erratic.
For categories such " pdisplay "as these, an early or late payment will appear as an exception." pdisplay " " pdisplay "At this time, calcu-
lation of all expected values is in progress.  Please" pdisplay "be patient as this takes time.  You will be instructed when to continue."
pdisplay " ";


Rule display_to_explain_rev_budget If todo = budget_analysis Then explain_rev_budget = found
    cls
    locate 3,6 display "The annual budget for the Tailor Shop is determined for revenue in" display "total, and by category for expenses (eg.
personal, continuous, etc.)." display "In order to determine whether or not revenue is within budget, the" display "budget is first divided
into market segments.  Thus, any increase or" display "decrease in the expected revenues must be allocated to one or more of" display "these
revenue segments.  If such an increase or decrease does occur," display "you will be asked to determine which segments are responsible for"
display "the change." display " " display " " pdisplay "The annual budget for the Tailor Shop is determined for revenue in" pdisplay "total,
and by category for expenses (eg. personal, continuous, etc.)." pdisplay "In order to determine whether or not revenue is within budget, the"
pdisplay "budget is first divided into market segments.  Thus, any increase or" pdisplay "decrease in the expected revenues must be allocated
to one or more of" pdisplay "these revenue segments.  If such an increase or decrease does occur," pdisplay "you will be asked to determine
which segments are responsible for" pdisplay "the change." pdisplay " ";


Rule current_fringes_lt_lb If act_fringes_this_yr < (lb_fringes) and
  todo = budget_analysis Then personal_to_display = found
    under_lb_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_gt_ub If act_fringes_this_yr > (ub_fringes) and
  todo = budget_analysis Then personal_to_display = found
    over_ub_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_fringes_w_in_bounds If act_fringes_this_yr > = (lb_fringes) and
  act_fringes_this_yr < = (ub_fringes) Then personal_to_display = found
    w_in_personal = fringe_benefits
    find salaries_to_display
    find wages_to_display
    find personal_total_to_display
    find actual_display_personal;

Rule current_salaries_lt_lb If act_salaries_this_yr < (lb_salaries) Then salaries_to_display = found
    under_lb_personal = salaries;

Rule current_salaries_gt_ub If act_salaries_this_yr > (ub_salaries) Then salaries_to_display = found
    over_ub_personal = salaries;

Rule current_salaries_w_in_bounds If act_salaries_this_yr > = (lb_salaries) and
  act_salaries_this_yr < = (ub_salaries) Then salaries_to_display = found
    w_in_personal = salaries;

Rule current_wages_lt_lb If act_wages_this_yr < (lb_wages) Then wages_to_display = found
    under_lb_personal = wages;

Rule current_wages_gt_ub If act_wages_this_yr > (ub_wages) Then wages_to_display = found
    over_ub_personal = wages;

Rule current_wages_w_in_bounds If act_wages_this_yr > = (lb_wages) and
  act_wages_this_yr < = (ub_wages) Then wages_to_display = found
    w_in_personal = wages;

Rule total_personal_lt_lb If act_total_personal_this_yr < (lb_total_personal) Then personal_total_to_display = found
    total_personal = under;

Rule total_personal_gt_ub If act_total_personal_this_yr > (ub_total_personal) Then personal_total_to_display = found
    total_personal = over;

Rule total_personal_w_in_bounds If act_total_personal_this_yr > = (lb_total_personal) and
  act_total_personal_this_yr < = (ub_total_personal) Then personal_total_to_display = found
    total_personal = within;

Rule display_total_personal_under If total_personal = under and
  under_lb_personal < > unknown Then actual_display_personal = found
    color = 14
    display " "
    display "Total Personal expenses are under budget.  This is due to the fact" display "that the following individual expense item(s) is (are)
under budget:" display "{under_lb_personal} - "
```

```
    pdisplay "Total Personal expenses are under budget. This is due to the fact" pdisplay "that the following individual expense item(s) is
(are) under budget:" pdisplay "{under_lb_personal}" pdisplay " "
    color = 15;

Rule display_total_personal_over If total_personal = over and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display " "
    display "Total Personal expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is (are)
over budget:" display "{over_ub_personal} ¬"
    pdisplay "Total Personal expenses are over budget. This is due to the fact" pdisplay "that the following individual expense item(s) is
(are) over budget:" pdisplay "{over_ub_personal}" pdisplay " "
    color = 15;


Rule display_total_personal_within If total_personal = within and
  under_lb_personal = unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 10
    display " "
    display "Personal expenses are all within budget. ¬"
    pdisplay " "
    pdisplay "Personal expenses are all within budget."
    pdisplay " "
    color = 15;

Rule display_personal_within_w_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display " "
    display "Total personal expenses are within budget. However, the following are" display "under budget," display "{under_lb_personal}"
display "and the following are over budget," display "{over_ub_personal} ¬"
    pdisplay " "
    pdisplay "Total personal expenses are within budget. However, the following are" pdisplay "under budget," pdisplay
"{under_lb_personal}" pdisplay "and the following are over budget," pdisplay "{over_ub_personal}"
    color = 15;



Rule display_personal_within_high_outliers If total_personal = within and
  under_lb_personal = unknown and
  over_ub_personal < > unknown Then actual_display_personal = found
    color = 12
    display " "
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "{over_ub_personal}"
    color = 15;

Rule display_personal_within_w_low_outliers If total_personal = within and
  under_lb_personal < > unknown and
  over_ub_personal = unknown Then actual_display_personal = found
    color = 14
    display " "
    display "Total personal expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_personal} ¬"
    pdisplay "Total personal expenses are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "{under_lb_personal}"
    color = 15;

!!!!!!!!!!!!!!!!!!! contract begins

Rule current_tele_lt_lb If act_tele_this_yr < (lb_tele) and
  todo = budget_analysis Then contract_to_display = found
    under_lb_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_teles_gt_ub If act_tele_this_yr > (ub_tele) and
  todo = budget_analysis Then contract_to_display = found
    over_ub_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
```

```
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_tele_w_in_bounds If act_tele_this_yr > = (lb_tele) and
  act_tele_this_yr < = (ub_tele) Then contract_to_display = found
    w_in_contract = telecommunications
    find R_and_M_to_display
    find travel_to_display
    find other_contract_to_display
    find contract_total_to_display
    find actual_display_contract;

Rule current_R_and_M_lt_lb If act_R_and_M_this_yr < (lb_R_and_M) Then R_and_M_to_display = found
    under_lb_contract = repair_and_maintenance;

Rule current_R_and_M_gt_ub If act_R_and_M_this_yr > (ub_R_and_M) Then R_and_M_to_display = found
    over_ub_contract = repair_and_maintenance;

Rule current_R_and_M_w_in_bounds If act_R_and_M_this_yr > = (lb_R_and_M) and
  act_R_and_M_this_yr < = (ub_R_and_M) Then R_and_M_to_display = found
    w_in_contract = repair_and_maintenance;

Rule current_travel_lt_lb If act_travel_this_yr < (lb_travel) Then travel_to_display = found
    under_lb_contract = travel;

Rule current_travel_gt_ub If act_travel_this_yr > (ub_travel) Then travel_to_display = found
    over_ub_contract = travel;

Rule current_travel_w_in_bounds If act_travel_this_yr > = (lb_travel) and
  act_travel_this_yr < = (ub_travel) Then travel_to_display = found
    w_in_contract = travel;

Rule current_other_contract_lt_lb If act_contract_other_this_yr < (lb_other_contract) Then other_contract_to_display = found
    under_lb_contract = other_contractual;

Rule current_other_contract_gt_ub If act_contract_other_this_yr > (ub_other_contract) Then other_contract_to_display = found
    over_ub_contract = other_contractual;

Rule other_contract_w_in_bounds If act_contract_other_this_yr > = (lb_other_contract) and
  act_contract_other_this_yr < = (ub_other_contract) Then other_contract_to_display = found
    w_in_contract = other_contractual;

Rule total_contract_lt_lb If act_total_contract_this_yr < (lb_total_contract) Then contract_total_to_display = found
    total_contract = under;

Rule total_contract_gt_ub If act_total_contract_this_yr > (ub_total_contract) Then contract_total_to_display = found
    total_contract = over;

Rule total_contract_w_in_bounds If act_total_contract_this_yr > = (lb_total_contract) and
  act_total_contract_this_yr < = (ub_total_contract) Then contract_total_to_display = found
    total_contract = within;

Rule display_total_contract_under If total_contract = under and
  under_lb_contract < > unknown Then actual_display_contract = found
    color = 14
    display ' '
    display "Total contractual expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_contract) ¬" pdisplay ' '
    pdisplay "Total contractual expenses are under budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) under budget:" pdisplay "(under_lb_contract)" pdisplay ' '

    color = 15;

Rule display_total_contract_over If total_contract = over and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display ' '
    display "Total contractual expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "(over_ub_contract) ¬"
    pdisplay ' '
    pdisplay "Total contractual expenses are over budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) over budget:" pdisplay "(over_ub_contract)" pdisplay ' '


    color = 15;

Rule display_total_contract_within If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract = unknown Then actual_display_contract = found
```

```
    color = 10
    display " "
    display "Contractual expenses are all within budget. ¬ "
    pdisplay " "
    pdisplay "Contractual expenses are all within budget."
    pdisplay " "

    color = 15;

Rule display_contract_within_w_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 14
    display " "
    display "Total contractual expenses are within budget. However, the following are" display "under budget," display
"{under_lb_contract}" display "and the following are over budget," display "{over_ub_contract} ¬ "
    pdisplay " "
    pdisplay "Total contractual expenses are within budget. However, the following are" pdisplay "under budget," pdisplay
"{under_lb_contract}" pdisplay "and the following are over budget," pdisplay "{over_ub_contract}" pdisplay " "

    color = 15;

Rule display_contract_within_high_outliers If total_contract = within and
  under_lb_contract = unknown and
  over_ub_contract < > unknown Then actual_display_contract = found
    color = 12
    display " "
    display "Total contractual expenses are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_contract) ¬ "
    pdisplay " "
    pdisplay "Total contractual expenses are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "{over_ub_contract}" pdisplay " "


    color = 15;

Rule display_contract_within_w_low_outliers If total_contract = within and
  under_lb_contract < > unknown and
  over_ub_contract = unknown Then actual_display_contract = found
    color = 14
    display " "
    display "Total contractual expenses are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_contract) ¬ "
    pdisplay " "
    pdisplay "Total contractual expenses are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "{under_lb_contract}" pdisplay " "


    color = 15;

!!!!!!!!!!!!!!contin starts


Rule current_elect_lt_lb If act_elect_this_yr < (lb_elect) and
  todo = budget_analysis Then contin_to_display = found
    under_lb_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_gt_ub If act_elect_this_yr > (ub_elect) and
  todo = budget_analysis Then contin_to_display = found
    over_ub_contract = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find contin_other_to_display
    find contin_total_to_display
    find actual_display_contin;

Rule current_elect_w_in_bounds If act_elect_this_yr > = (lb_elect) and
  act_elect_this_yr < = (ub_elect) Then contin_to_display = found
    w_in_contin = electricity
    find w_and_s_to_display
    find insure_to_display
    find agency_to_display
    find other_contin_to_display
```

```
    find contin_total_to_display
    find actual_display_contin;

Rule current_w_and_s_lt_lb If act_w_and_s_this_yr < (lb_w_and_s) Then w_and_s_to_display = found
    under_lb_contin = water_and_sewer;

Rule current_w_and_s_gt_ub If act_w_and_s_this_yr > (ub_w_and_s) Then w_and_s_to_display = found
    over_ub_contin = water_and_sewer;

Rule current_w_and_s_w_in_bounds If act_w_and_s_this_yr > = (lb_w_and_s) and
  act_w_and_s_this_yr < = (ub_w_and_s) Then w_and_s_to_display = found
    w_in_contin = water_and_sewer;

Rule current_insure_lt_lb If act_insure_this_yr < (lb_insure) Then insure_to_display = found
    under_lb_contin = insurance;

Rule current_insure_gt_ub If act_insure_this_yr > (ub_insure) Then insure_to_display = found
    over_ub_contin = insurance;

Rule current_insure_w_in_bounds If act_insure_this_yr > = (lb_insure) and
  act_insure_this_yr < = (ub_insure) Then insure_to_display = found
    w_in_contin = travel;

Rule current_agency_lt_lb If act_agency_this_yr < (lb_agency) Then agency_to_display = found
    under_lb_contin = agency_charges;

Rule current_agency_gt_ub If act_agency_this_yr > (ub_agency) Then agency_to_display = found
    over_ub_contin = agency_charges;

Rule agency_w_in_bounds If act_agency_this_yr > = (lb_agency) and
  act_agency_this_yr < = (ub_agency) Then agency_to_display = found
    w_in_contin = agency;

Rule current_other_contin_lt_lb If act_comp_perp_this_yr < (lb_other_contin) Then other_contin_to_display = found
    under_lb_contin = other_continuous_charges;

Rule current_other_contin_gt_ub If act_comp_perp_this_yr > (ub_other_contin) Then other_contin_to_display = found
    over_ub_contin = computer_peripheral;

Rule other_contin_w_in_bounds If act_comp_perp_this_yr > = (lb_other_contin) and
  act_comp_perp_this_yr < = (ub_other_contin) Then other_contin_to_display = found
    w_in_contin = other;

Rule total_contin_lt_lb If act_total_contin_this_yr < (lb_total_contin) Then contin_total_to_display = found
    total_contin = under;

Rule total_contin_gt_ub If act_total_contin_this_yr > (ub_total_contin) Then contin_total_to_display = found
    total_contin = over;

Rule total_contin_w_in_bounds If act_total_contin_this_yr > = (lb_total_contin) and
  act_total_contin_this_yr < = (ub_total_contin) Then contin_total_to_display = found
    total_contin = within;

Rule display_total_contin_under If total_contin = under and
  under_lb_contin < > unknown Then actual_display_contin = found
    color = 14
    display ' '
    display "Total continuous expenses are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "(under_lb_contin) ¬" pdisplay ' '
    pdisplay "Total continuous expenses are under budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) under budget:" pdisplay "(under_lb_contin)" pdisplay ' '

    color = 15;

Rule display_total_contin_over If total_contin = over and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display "Total continuous expenses are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "(over_ub_contin) ¬"
    pdisplay ' '
    pdisplay "Total continuous expenses are over budget. This is due to the fact" pdisplay "that the following individual expense item(s) is
(are) over budget:" pdisplay "(over_ub_contin)" pdisplay ' '


    color = 15;

Rule display_total_contin_within If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin = unknown Then actual_display_contin = found
```

```
    color = 10
    display ' '
    display 'Continuous expenses are all within budget. ¬'
    pdisplay ' '
    pdisplay 'Continuous expenses are all within budget.'
    pdisplay ' '

    color = 15;

Rule display_contin_within_w_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display 'Total continuous expenses are within budget. However, the following are' display 'under budget,' display '{under_lb_contin}'
display 'and the following are over budget,' display '{over_ub_contin) ¬'

    pdisplay ' '
    pdisplay 'Total continuous expenses are within budget. However, the following are' pdisplay 'under budget,' pdisplay
'{under_lb_contin}' pdisplay 'and the following are over budget,' pdisplay '{over_ub_contin}' pdisplay ' '

    color = 15;

Rule display_contin_within_high_outliers If total_contin = within and
  under_lb_contin = unknown and
  over_ub_contin < > unknown Then actual_display_contin = found
    color = 12
    display ' '
    display 'Total continuous expenses are within budget. However, the following' display 'individual expense item(s) are over budget:'
display '{over_ub_contin) ¬'

    pdisplay ' '
    pdisplay 'Total continuous expenses are within budget. However, the following' pdisplay 'individual expense item(s) are over budget:'
pdisplay '{over_ub_contin)' pdisplay ' '

    color = 15;

Rule display_contin_within_w_low_outliers If total_contin = within and
  under_lb_contin < > unknown and
  over_ub_contin = unknown Then actual_display_contin = found
    color = 14
    display ' '
    display 'Total continuous expenses are within budget. However, the following' display 'individual expense item(s) are under budget:'
display '{under_lb_contin) ¬'
    pdisplay ' '
    pdisplay 'Total continuous expenses are within budget. However, the following' pdisplay 'individual expense item(s) are under budget:'
pdisplay '{under_lb_contin)' pdisplay ' '


    color = 15;

!!!!!!!!!s & m begins

Rule current_repair_lt_lb If act_repair_this_yr < (lb_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    under_lb_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_gt_ub If act_repair_this_yr > (ub_repair) and
  todo = budget_analysis Then s_and_m_to_display = found
    over_ub_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_repair_w_in_bounds If act_repair_this_yr > = (lb_repair) and
  act_repair_this_yr < = (ub_repair) Then s_and_m_to_display = found
    w_in_s_and_m = repairs
    find other_s_and_m_to_display
    find s_and_m_total_to_display
    find actual_display_s_and_m;

Rule current_other_s_and_m_lt_lb If act_s_and_m_other_this_yr < (lb_other_s_and_m) Then other_s_and_m_to_display = found
    under_lb_s_and_m = other_supplies_&_materials;

Rule current_other_s_and_M_gt_ub If act_s_and_m_other_this_yr > (ub_other_s_and_m) Then other_s_and_m_to_display = found
    over_ub_s_and_m = other_supplies_&_materials;
```

```
Rule current_other_s_and_m_w_in_bounds If act_s_and_m_other_this_yr > = (lb_other_s_and_m) and
  act_s_and_m_other_this_yr < = (ub_other_s_and_m) Then other_s_and_m_to_display = found
    w_in_s_and_m = other_supplies_&_materials;

Rule total_s_and_m_lt_lb If act_total_s_and_m_this_yr < (lb_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = under;

Rule total_s_and_m_gt_ub If act_total_s_and_m_this_yr > (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = over;

Rule total_s_and_m_w_in_bounds If act_total_s_and_m_this_yr > = (lb_total_s_and_m) and
  act_total_s_and_m_this_yr < = (ub_total_s_and_m) Then s_and_m_total_to_display = found
    total_s_and_m = within;

Rule display_total_s_and_m_under If total_s_and_m = under and
  under_lb_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 14
    display ' '
    display "Total supplies & materials are under budget. This is due to the fact" display "that the following individual expense item(s) is
(are) under budget:" display "{under_lb_s_and_m} ¬"

pdisplay ' '
    pdisplay "Total supplies & materials are under budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) under budget:" pdisplay "{under_lb_s_and_m)" pdisplay ' '

    color = 15;

Rule display_total_s_and_m_over If total_s_and_m = over and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display ' '
    display "Total supplies and materials are over budget. This is due to the fact" display "that the following individual expense item(s) is
(are) over budget:" display "{over_ub_s_and_m) ¬"

    pdisplay ' '
    pdisplay "Total supplies and materials are over budget. This is due to the fact" pdisplay "that the following individual expense item(s)
is (are) over budget:" pdisplay "{over_ub_s_and_m)" pdisplay ' '

    color = 15;

Rule display_total_s_and_m_within If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m = unknown Then actual_display_s_and_m = found
    color = 10
    display ' '
    display "Supplies & materials are all within budget. ¬"

    pdisplay ' '
    pdisplay "Supplies & materials are all within budget."
    pdisplay ' '

    color = 15;

Rule display_s_and_m_within_w_outliers If total_s_and_m = within and
  under_lb_s_and_m < > unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display ' '
    display "Total supplies and materials are within budget. However, the following are" display "under budget," display
"{under_lb_s_and_m" display "and the following are over budget," display "{over_ub_s_and_m) ¬"

    pdisplay ' '
    pdisplay "Total supplies and materials are within budget. However, the following are" pdisplay "under budget," pdisplay
"{under_lb_s_and_m" pdisplay "and the following are over budget," pdisplay "{over_ub_s_and_m)" pdisplay ' '


    color = 15;

Rule display_s_and_m_within_high_outliers If total_s_and_m = within and
  under_lb_s_and_m = unknown and
  over_ub_s_and_m < > unknown Then actual_display_s_and_m = found
    color = 12
    display ' '
    display "Total supplies & materials are within budget. However, the following" display "individual expense item(s) are over budget:"
display "{over_ub_s_and_m) ¬"
    pdisplay ' '
    pdisplay "Total supplies & materials are within budget. However, the following" pdisplay "individual expense item(s) are over budget:"
pdisplay "{over_ub_s_and_m)" pdisplay ' '
```

```
    color = 15;

Rule display_s_and_m_within_w_low_outliers If total_s_and_m = within and
   under_lb_s_and_m < > unknown and
   over_ub_s_and_m = unknown Then actual_display_s_and_m = found
     color = 14
     display ' '
     display "Total supplies & materials are within budget. However, the following" display "individual expense item(s) are under budget:"
display "{under_lb_contin} ¬"

     pdisplay ' '
     pdisplay "Total supplies & materials are within budget. However, the following" pdisplay "individual expense item(s) are under budget:"
pdisplay "{under_lb_contin}" pdisplay ' '

     color = 15;

!!!!!!!!!! uniforms begins

Rule current_uniforms_lt_lb If act_uniforms_this_yr < (lb_uniforms) and
   todo = budget_analysis Then uniforms_to_display = found
     under_uniforms = yes
     color = 14
     percent = (((exp_uniforms - act_uniforms_this_yr)/exp_uniforms) * 100)
     format percent, 6.2
     display ' '
     display "Expenses for uniforms so far this year are under budget by {percent}%. ¬"

     pdisplay ' '
     pdisplay "Expenses for uniforms so far this year are under budget by {percent}%."
     pdisplay ' '

     color = 15;

Rule current_uniforms_gt_ub If act_uniforms_this_yr > (ub_uniforms) and
   todo = budget_analysis Then uniforms_to_display = found
     over_uniforms = yes
      color = 12
      percent = (((act_uniforms_this_yr - exp_uniforms) / exp_uniforms) * 100)
     format percent, 6.2
     display ' '
      display "Expenses for uniforms are over budget this year by {percent}%. ¬"

     pdisplay ' '
      pdisplay "Expenses for uniforms are over budget this year by {percent}%."
      pdisplay ' '

      color = 15;

Rule current_uniforms_w_in_bounds If act_uniforms_this_yr > = (lb_uniforms) and
   act_uniforms_this_yr < = (ub_uniforms) Then uniforms_to_display = found
     w_in_uniforms = yes
     color = 10
     display ' '
     display "Expenses for uniforms are within the budgeted amount. ¬"

     pdisplay ' '
     pdisplay "Expenses for uniforms are within the budgeted amount."
     pdisplay ' '
     color = 15;

Rule current_equip_lt_budget If act_equip_this_yr < (lb_equip) and
   todo = budget_analysis Then equip_to_display = found
     under_equip = yes
     color = 14
     percent = (((exp_equip - act_equip_this_yr)/exp_equip) * 100)
     left = (bud_equip_this_yr - act_equip_this_yr)
     format percent, 6.2
     display ' '
     display "Expenses for equipment so far this year are under budget by {percent}%." display "In fact, there is ${left} left in the budget
for equipment. ¬"

     pdisplay ' '
     pdisplay "Expenses for equipment so far this year are under budget by {percent}%." pdisplay "In fact, there is ${left} left in the budget
for equipment." pdisplay ' '

     color = 15;

Rule current_equip_gt_ub If act_equips_this_yr > (ub_equip) and
   todo = budget_analysis Then equip_to_display = found
     over_equip = yes
```

```
    color = 12
    percent = (((act_equip_this_yr - exp_equip) / exp_equip) * 100)
    actual = (act_equip_this_yr - exp_equip)
    format percent, 6.2
    display " "
    display "Expenses for equipment are over budget this year by {percent}%, i.e., ${actual}.¬"

    pdisplay " "
    pdisplay "Expenses for equipment are over budget this year by {percent}%, i.e., ${actual}."
    pdisplay " "

    color = 15;

Rule current_equip_w_in_bounds If act_equip_this_yr > = (lb_equip) and
  act_equip_this_yr < = (ub_equip) Then equip_to_display = found
    w_in_equip = yes
    color = 10
    display " "
    display "Expenses for equipment is within the budgeted amount.¬"

    pdisplay " "
    pdisplay "Expenses for equipment is within the budgeted amount."
    pdisplay " "

    color = 15;

Rule budget_limits_ok If change_limits = no Then military_ll = (military_ll_b)
    military_ul = (military_ul_b)
    public_ll = (public_ll_b)
    public_ul = (public_ul_b)
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b)
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b)
    music_ll = (music_ll_b)
    music_ul = (music_ul_b)
    state_ll = (state_ll_b)
    state_ul = (state_ul_b)
    change_values = found;

Rule budget_limits_not_ok If change_limits = yes Then pdisplay "Which revenue limits would you like to change?"
    pdisplay " "
    pdisplay "military              public              stu fac staff"
    pdisplay "interdepartmental     music dept          state related"
    pdisplay " "
    find which_rev_limits
    find mil_limits
    find public_limits
    find s_f_s_limits
    find interdept_limits
    find music_limits
    find state_limits
    change_values = found;

Rule budget_cost_limits_ok If change_limits_costs = no Then fringes_ll = (fringes_ll_b)
    salaries_ll = (salaries_ll_b)
    wages_ll = (wages_ll_b)
    total_personal_ll = (total_personal_ll_b)
    tele_ll = (tele_ll_b)
    R_and_M_ll = (R_and_M_ll_b)
    travel_ll = (travel_ll_b)
    other_contract_ll = (other_contract_ll_b)
    total_contract_ll = (total_contract_ll_b)
    repair_ll = (repair_ll_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    total_s_and_m_ll = (total_s_and_m_ll_b)
    equip_ll = (equip_ll_b)
    uniforms_ll = (uniforms_ll_b)
    elect_ll = (elect_ll_b)
    w_and_s_ll = (w_and_s_ll_b)
    insure_ll = (insure_ll_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    total_contin_ll = (total_contin_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ul = (salaries_ul_b)
    wages_ul = (wages_ul_b)
    total_personal_ul = (total_personal_ul_b)
    tele_ul = (tele_ul_b)
    R_and_M_ul = (R_and_M_ul_b)
```

```
    travel_ul = (travel_ul_b)
    other_contract_ul = (other_contract_ul_b)
    total_contract_ul = (total_contract_ul_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ul = (other_s_and_m_ul_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    equip_ul = (equip_ul_b)
    uniforms_ul = (uniforms_ul_b)
    elect_ul = (elect_ul_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ul = (insure_ul_b)
    agency_ul = (agency_ul_b)
    other_contin_ul = (other_contin_ul_b)
    total_contin_ul = (total_contin_ul_b)
    change_values_costs = found;

Rule budget_cost_limits_not_ok If change_limits_costs = yes Then pdisplay "Which expense category limits would you like to change?"
    pdisplay "equipment          uniforms          personnel"
    pdisplay "contractual        supplies materials   continuous"
    pdisplay " "
    find which_cost_limits
    find equip_limits
    find uniforms_limits
    find personal_limits
    find contract_limits
    find s_and_m_limits
    find contin_limits
    change_values_costs = found;

Rule go_get_rev_budget_data If todo = budget_analysis Then !wks budget_rev, b3..c3, \vpp\wibud
    rev_budget = found
    wks budget_rev_now,b3,\vpp\wibud
    wks budget_rev_past,c3,\vpp\wibud !    budget_rev_now = (budget_rev[1]) !    budget_rev_past = (budget_rev[2])
    diff = (budget_rev_now - budget_rev_past)
    find rev_diff;


Rule rev_budget_same If diff = 0 Then mil_exp_inc = 0
    public_exp_inc = 0
    s_f_s_exp_inc = 0
    interdept_exp_inc = 0
    music_exp_inc = 0
    state_exp_inc = 0
    rev_diff = found;

Rule rev_budget_higher If diff > 0 Then display "The amount budgeted for revenue this year has increased from the "
    display "previous year by ${diff}.  Which market segments are responsible for "
    display "contributing more this year to total revenue?  Please make certain that your"

    pdisplay "The amount budgeted for revenue this year has increased from the "
    pdisplay "previous year by ${diff}.  Which market segments are responsible for "
    pdisplay "contributing more this year to total revenue?  Please make certain that your"
    pdisplay "input adds up to ${diff} >"
    pdisplay " "
    pdisplay "military          public          stu fac staff"
    pdisplay "interdepartmental     music dept       state related"
    pdisplay " "
    find resp_rev_mkt_segments  ! statement - determines which segments
                        ! are expected to contribute more this year
    rev_diff = found
    find mil_higher? ! leads to a series of rules which calculate
              ! changes in expectations
    find check_math;

Rule rev_budget_lower If diff < 0 Then diff = (@abs(diff))
    display "The amount budgeted for revenue this year has decreased from the "
    display "previous year by ${diff}.  Which market segments are responsible for"
    display "contributing less this year to total revenue?  Please make certain that your"

    pdisplay "The amount budgeted for revenue this year has decreased from the "
    pdisplay "previous year by ${diff}.  Which market segments are responsible for"
    pdisplay "contributing less this year to total revenue?  Please make certain that your"
    pdisplay "input adds up to ${diff}."
    pdisplay " "
    pdisplay "military          public          stu fac staff"
    pdisplay "interdepartmental     music dept       state related"
    pdisplay " "

    find resp_rev_mkt_segments_l  ! statement - determines which segments
                        ! are expected to contribute less this year
```

```
    diff = (0 - diff)
    rev_diff = found
    find mil_lower? ! leads to a series of rules which calculate
                    ! changes in expectations
    find check_math;

Rule military_exp_higher If resp_rev_mkt_segments = military Then pdisplay "How much is military revenue expected to increase?"
    pdisplay " "
    find mil_exp_inc_h
    mil_exp_inc = (mil_exp_inc_h)
    mil_higher? = found
    find public_higher?;

Rule military_exp_not_higher If resp_rev_mkt_segments < > military Then mil_exp_inc = 0
    mil_higher? = found
    find public_higher?;

Rule military_exp_lower If resp_rev_mkt_segments_l = military Then pdisplay "How much is military revenue expected to decrease?"
    pdisplay " "
    find mil_exp_inc_l
    mil_exp_inc = (0 - mil_exp_inc_l)
    mil_lower? = found
    find public_lower?;

Rule military_exp_not_lower If resp_rev_mkt_segments_l < > military Then mil_exp_inc = 0
    mil_lower? = found
    find public_lower?;

Rule public_exp_higher If resp_rev_mkt_segments = public Then pdisplay "How much is public revenue expected to increase?"
    pdisplay " "    find public_exp_inc_h
    public_exp_inc = (public_exp_inc_h)
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_not_higher If resp_rev_mkt_segments < > public Then public_exp_inc = 0
    public_higher? = found
    find s_f_s_higher?;

Rule public_exp_lower If resp_rev_mkt_segments_l = public Then pdisplay "How much is public revenue expected to decrease?"
    pdisplay " "
    find public_exp_inc_l
    public_exp_inc = (0 - public_exp_inc_l)
    public_lower? = found
    find s_f_s_lower?;

Rule public_exp_not_lower If resp_rev_mkt_segments_l < > lower Then public_exp_inc = 0
    public_lower? = found
    find s_f_s_lower?;

Rule s_f_s_exp_higher If resp_rev_mkt_segments = stu_fac_staff Then pdisplay "How much is student/faculty/staff revenue expected to
increase?"
    pdisplay " "
    find s_f_s_exp_inc_h
    s_f_s_exp_inc = (s_f_s_exp_inc_h)
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_not_higher If resp_rev_mkt_segments < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_higher? = found
    find interdept_higher?;

Rule s_f_s_exp_lower If resp_rev_mkt_segments_l = stu_fac_staff Then pdisplay "How much is student/faculty/staff revenue expected to
decrease?"
    pdisplay " "
    find s_f_s_exp_inc_l
    s_f_s_exp_inc = (0 - s_f_s_exp_inc_l)
    s_f_s_lower? = found
    find interdept_lower?;

Rule s_f_s_exp_not_lower If resp_rev_mkt_segments_l < > stu_fac_staff Then s_f_s_exp_inc = 0
    s_f_s_lower? = found
    find interdept_lower?;

Rule interdept_exp_higher If resp_rev_mkt_segments = interdepartmental Then pdisplay "How much is interdepartmental revenue expected
to increase?"
    pdisplay " "
    find interdept_exp_inc_h
    interdept_exp_inc = (interdept_exp_inc_h)
    interdept_higher? = found
    find music_higher?;
```

```
Rule interdept_exp_not_higher If resp_rev_mkt_segments < > interdepartmental Then interdept_exp_inc = 0
    interdept_higher? = found
    find music_higher?;

Rule interdept_exp_lower If resp_rev_mkt_segments_1 = interdepartmental Then pdisplay "How much is interdepartmental revenue expected to decrease?"
    pdisplay " "
    find interdept_exp_inc_l
    interdept_exp_inc = (0 - interdept_exp_inc_l)
    interdept_lower? = found
    find music_lower?;

Rule interdept_exp_not_lower If resp_rev_mkt_segments_1 < > interdepartmental Then interdept_exp_inc = 0
    interdept_lower? = found
    find music_lower?;

Rule music_exp_higher If resp_rev_mkt_segments = music_dept Then pdisplay "How much is music department revenue expected to increase?"
    pdisplay " "
    find music_exp_inc_h
    music_exp_inc = (music_exp_inc_h)
    music_higher? = found
    find state_higher?;

Rule music_exp_not_higher If resp_rev_mkt_segments < > music_dept Then music_exp_inc = 0
    music_higher? = found
    find state_higher?;

Rule music_exp_lower If resp_rev_mkt_segments_1 = music_dept Then pdisplay "How much is music department revenue expected to decrease?"
    pdisplay " "
    find music_exp_inc_l
    music_exp_inc = (0 - music_exp_inc_l)
    music_lower? = found
    find state_lower?;

Rule music_exp_not_lower If resp_rev_mkt_segments_1 < > music_dept Then music_exp_inc = 0
    music_lower? = found
    find state_lower?;

Rule state_exp_higher If resp_rev_mkt_segments = state_related Then pdisplay "How much is state related revenue expected to increase?"
    pdisplay " "
    find state_exp_inc_h
    state_exp_inc = (state_exp_inc_h)
     n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;

Rule state_exp_not_higher If resp_rev_mkt_segments < > state_related Then state_exp_inc = 0
    n = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    diff1 = (@abs(diff))
    state_higher? = found;

Rule state_exp_lower If resp_rev_mkt_segments_1 = state_related Then pdisplay "How much is state related revenue expected to decrease?"
    pdisplay " "
    find state_exp_inc_l
    state_exp_inc = (0 - state_exp_inc_l)
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diff1 = (@abs(diff));

Rule state_exp_not_lower If resp_rev_mkt_segments_1 < > state_related Then state_exp_inc = 0
    state_lower? = found
    m = (mil_exp_inc + public_exp_inc + s_f_s_exp_inc + interdept_exp_inc + music_exp_inc + state_exp_inc)
    n = (@abs(m))
    diff1 = (@abs(diff));

Rule math_is_ok If diff1 = (n) Then check_math = done;

Rule math_not_ok If diff1 < > (n) Then display "The increments you have given do not add up to the total increment in the"
    display "budget. Therefore, let's start this part over."
    display "Press any key to continue. ¬"
    display ""
    display ""

    pdisplay "The increments you have given do not add up to the total increment in the"
    pdisplay "budget. Therefore, let's start this part over."
    pdisplay "Press any key to continue."
```

pdisplay ""
pdisplay ""

reset rev_budget
reset rev_diff
reset mil_higher?
reset public_higher?
reset s_f_s_higher?
reset interdept_higher?
reset music_higher?
reset state_higher?
reset mil_lower?
reset public_lower?
reset s_f_s_lower?
reset interdept_lower?
reset music_lower?
reset state_lower?
reset mil_exp_inc_h
reset public_exp_inc_h
reset s_f_s_exp_inc_h
reset interdept_exp_inc_h
reset music_exp_inc_h
reset state_exp_inc_h
reset mil_exp_inc_l
reset public_exp_inc_l
reset s_f_s_exp_inc_l
reset interdept_exp_inc_l
reset music_exp_inc_l
reset state_exp_inc_l
reset mil_exp_inc
reset public_exp_inc
reset s_f_s_exp_inc
reset interdept_exp_inc
reset music_exp_inc
reset state_exp_inc
reset resp_rev_mkt_segments
reset resp_rev-mkt_segments_l
reset farse
reset display_clause
reset change_limits
reset change_values
check_math = done
reset check_math
find rev_diff;

Rule find_military_limits **If** which_rev_limits = military **Then** display "What percentage below expected should the lower limit be for military revenue?"
pdisplay "What percentage below expected should the lower limit be for military revenue?"
pdisplay "Please do not use decimals."
pdisplay " "
find military_ll
display "What percentage above expected should the upper limit be for military revenue?"
pdisplay "What percentage above expected should the upper limit be for military revenue?"
pdisplay "Please do not use decimals."
pdisplay " "
find military_ul
mil_limits = found;

Rule dont_find_military_limits **If** which_rev_limits < > military **Then** mil_limits = found
military_ll = (military_ll_b)
military_ul = (military_ul_b);

Rule find_public_limits **If** which_rev_limits = public **Then** display "What percentage below expected should the lower limit be for revenue from the public? Please do not use decimals." pdisplay "What percentage below expected should the lower limit be for revenue from the public? Please do not use decimals."
pdisplay " "
find public_ll
display "What percentage above expected should the upper limit be for revenue from the public? Please do not use decimals."
pdisplay "What percentage above expected should the upper limit be for revenue from the public? Please do not use decimals."
pdisplay " "
find public_ul
public_limits = found;

Rule dont_find_public_limits **If** which_rev_limits < > public **Then** public_limits = found
public_ll = (public_ll_b)
public_ul = (public_ul_b);

Rule find_s_f_s_limits **If** which_rev_limits = s_f_s **Then** display "What percentage below expected should the lower limit be for revenue from students, faculty, and staff? Please do not use decimals." pdisplay "What percentage below expected should the lower limit be for revenue from students, faculty, and staff? Please do not use decimals."

```
    pdisplay " "
    find s_f_s_ll
    display "What percentage above expected should the upper limit be for revenue from students, faculty, and staff? Please do not use
decimals."
    pdisplay "What percentage above expected should the upper limit be for revenue from students, faculty, and staff? Please do not use
decimals."
    pdisplay " "

    find s_f_s_ul
    s_f_s_limits = found;

Rule dont_find_s_f_s_limits If which_rev_limits < > s_f_s Then s_f_s_limits = found
    s_f_s_ll = (s_f_s_ll_b)
    s_f_s_ul = (s_f_s_ul_b);

Rule find_interdept_limits If which_rev_limits = interdepartmental Then display "What percentage below expected should the lower limit
be for interdepartmental revenue? Please do not use decimals."
      pdisplay "What percentage below expected should the lower limit be for interdepartmental revenue? Please do not use decimals."
    pdisplay " "
    find interdept_ll
    display "What percentage above expected should the upper limit be for interdepartmental revenue? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for interdepartmental revenue? Please do not use decimals."
    pdisplay " "
    find interdept_ul
    interdept_limits = found;

Rule dont_find_interdept_limits If which_rev_limits < > interdepartmental Then interdept_limits = found
    interdept_ll = (interdept_ll_b)
    interdept_ul = (interdept_ul_b);

Rule find_music_limits If which_rev_limits = music_dept Then display "What percentage below expected should the lower limit be for
music department revenue? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for music department revenue? Please do not use decimals."
    pdisplay " "
    find music_ll
    display "What percentage above expected should the upper limit be for music department revenue? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for music department revenue? Please do not use decimals."
    pdisplay " "
    find music_ul
    music_limits = found;

Rule dont_find_music_limits If which_rev_limits < > music_dept Then music_limits = found
    music_ll = (music_ll_b)
    music_ul = (music_ul_b);

Rule find_state_limits If which_rev_limits = state_related Then display "What percentage below expected should the lower limit be for state
related revenue? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for state related revenue? Please do not use decimals."
    pdisplay " "
    find state_ll
    display "What percentage above expected should the upper limit be for state related revenue? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for state related revenue? Please do not use decimals."
    pdisplay " "
    find state_ul
    state_limits = found;

Rule dont_find_state_limits If which_rev_limits < > state_related Then state_limits = found
    state_ll = (state_ll_b)
    state_ul = (state_ul_b);

Rule find_equip_limits If which_cost_limits = equipment Then display "What percentage below expected should the lower limit be for
equipment purchases? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for equipment purchases? Please do not use decimals."
    pdisplay " "
    find equip_ll
    display "What percentage above expected should the upper limit be for equipment purchases? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for equipment purchases? Please do not use decimals."
    pdisplay " "
    find equip_ul
    equip_limits = found;

Rule dont_find_equip_limits If which_cost_limits < > equipment Then equip_limits = found
    equip_ll = (equip_ll_b)
    equip_ul = (equip_ul_b);

Rule find_uniform_limits If which_cost_limits = uniforms Then display "What percentage below expected should the lower limit be for
uniform purchases? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for uniform purchases? Please do not use decimals."
    pdisplay " "
    find uniforms_ll
```

```
    display "What percentage above expected should the upper limit be for uniform purchases? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for uniform purchases? Please do not use decimals."
    pdisplay " "
    find uniforms_ul
    uniforms_limits = found;

Rule dont_find_uniform_limits If which_cost_limits < > uniforms Then uniforms_limits = found
    uniforms_ll = (uniforms_ll_b)
    uniforms_ul = (uniforms_ul_b);

Rule find_personal_limits If which_cost_limits = personal Then display "What percentage below expected should the lower limit be for
personal expenses? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for personal expenses? Please do not use decimals."
    pdisplay " "
    find total_personal_ll
    display "What percentage above expected should the upper limit be for personal expenses? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for personal expenses? Please do not use decimals."
    pdisplay " "
    find total_personal_ul
    personal_limits = found
    find finish_personal_limits;

Rule dont_find_personal_limits If which_cost_limits < > personal Then personal_limits = found
    total_personal_ll = (total_personal_ll_b)
    total_personal_ul = (total_personal_ul_b)
    fringes_ll = (fringes_ll_b)
    fringes_ul = (fringes_ul_b)
    salaries_ll = (salaries_ll_b)
    salaries_ul = (salaries_ul_b)
    wages_ll = (wages_ll_b)
    wages_ul = (wages_ul_b);

Rule make_all_personal_limits_same   ! simplifying assumption If todo = budget_analysis            ! within any category, the upper
                                     ! and lower limits considered to Then fringes_ll = (total_personal_ll)  ! be acceptable are the same.
    fringes_ul = (total_personal_ul)  ! It was felt that placing one
    salaries_ll = (total_personal_ll) ! set of limits on salaries and
    salaries_ul = (total_personal_ul) ! another on wages, for example,
    wages_ll = (total_personal_ll)    ! would be highly unlikely
    wages_ul = (total_personal_ul)
    finish_personal_limits = done;

Rule find_contract_limits If which_cost_limits = contractual Then display "What percentage below expected should the lower limit be for
contractual expenses? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for contractual expenses? Please do not use decimals."
    pdisplay " "
    find total_contract_ll
    display "What percentage above expected should the upper limit be for contractual expenses? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for contractual expenses? Please do not use decimals."
    pdisplay " "
    find total_contract_ul
    contract_limits = found
    find finish_contract_limits;

Rule dont_find_contract_limits If which_cost_limits < > contractual Then contract_limits = found
    total_contract_ll = (total_contract_ll_b)
    total_contract_ul = (total_contract_ul_b)
    tele_ll = (tele_ll_b)
    tele_ul = (tele_ul_b)
    R_and_M_ll = (R_and_M_ll_b)
    R_and_M_ul = (R_and_M_ul_b)
    travel_ll = (travel_ll_b)
    travel_ul = (travel_ul_b)
    other_contract_ll = (other_contract_ll_b)
    other_contract_ul = (other_contract_ul_b);

Rule make_all_contract_limits_same If todo = budget_analysis Then tele_ll = (total_contract_ll)
    tele_ul = (total_contract_ul)
    R_and_M_ll = (total_contract_ll)
    R_and_M_ul = (total_contract_ul)
    travel_ll = (total_contract_ll)
    travel_ul = (total_contract_ul)
    other_contract_ll = (total_contract_ll)
    other_contract_ul = (total_contract_ul)
    finish_contract_limits = done;

Rule find_s_and_m_limits If which_cost_limits = S_and_M Then display "What percentage below expected should the lower limit be for
supplies & materials? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for supplies & materials? Please do not use decimals."
    pdisplay " "
    find total_s_and_m_ll
```

```
    display "What percentage above expected should the upper limit be for supplies & materials? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for supplies & materials? Please do not use decimals."
    pdisplay " "
    find total_s_and_m_ul
    s_and_m_limits = found
    find finish_s_and_m_limits;

Rule dont_find_s_and_m_limits If which_cost_limits < > S_and_M Then s_and_m_limits = found
    total_s_and_m_ll = (total_s_and_m_ll_b)
    total_s_and_m_ul = (total_s_and_m_ul_b)
    repair_ll = (repair_ll_b)
    repair_ul = (repair_ul_b)
    other_s_and_m_ll = (other_s_and_m_ll_b)
    other_s_and_m_ul = (other_s_and_m_ul_b);

Rule make_all_s_and_m_limits_same If todo = budget_analysis Then repair_ll = (total_s_and_m_ll)
    repair_ul = (total_s_and_m_ul)
    other_s_and_m_ll = (total_s_and_m_ll)
    other_s_and_m_ul = (total_s_and_m_ul)
    finish_s_and_m_limits = done;

Rule find_contin_limits If which_cost_limits = continuous Then display "What percentage below expected should the lower limit be for
continuous expenses? Please do not use decimals."
    pdisplay "What percentage below expected should the lower limit be for continuous expenses? Please do not use decimals."
    pdisplay " "
    find total_contin_ll
    display "What percentage above expected should the upper limit be for continuous expenses? Please do not use decimals."
    pdisplay "What percentage above expected should the upper limit be for continuous expenses? Please do not use decimals."
    pdisplay " "
    find total_contin_ul
    contin_limits = found
    find finish_contin_limits;

Rule dont_find_contin_limits If which_cost_limits < > continuous Then contin_limits = found
    total_contin_ll = (total_contin_ll_b)
    total_contin_ul = (total_contin_ul_b)
    elect_ll = (elect_ll_b)
    elect_ul = (elect_ul_b)
    w_and_s_ll = (w_and_s_ll_b)
    w_and_s_ul = (w_and_s_ul_b)
    insure_ll = (insure_ll_b)
    insure_ul = (insure_ul_b)
    agency_ll = (agency_ll_b)
    other_contin_ll = (other_contin_ll_b)
    other_contin_ul = (other_contin_ul_b)
    agency_ul = (agency_ul_b);

Rule make_all_contin_limits_same If todo = budget_analysis Then elect_ll = (total_contin_ll)
    elect_ul = (total_contin_ul)
    w_and_s_ll = (total_contin_ll)
    w_and_s_ul = (total_contin_ul)
    insure_ll = (total_contin_ll)
    insure_ul = (total_contin_ul)
    agency_ll = (total_contin_ll)
    other_contin_ll = (total_contin_ll)
    agency_ul = (total_contin_ul)
    other_contin_ul = (total_contin_ul)
    finish_contin_limits = done;


Rule calc_expects_&_bounds_revs If todo = budget_analysis Then exp_inc[1] = (public_exp_inc)
    exp_inc[2] = (s_f_s_exp_inc)
    exp_inc[3] = (interdept_exp_inc)
    exp_inc[4] = (music_exp_inc)
    exp_inc[5] = (state_exp_inc)
    ll[1] = (public_ll)
    ul[1] = (public_ul)
    ll[2] = (s_f_s_ll)
    ul[2] = (s_f_s_ul)
    ll[3] = (interdept_ll)
    ul[3] = (interdept_ul)
    ll[4] = (music_ll)
    ul[4] = (music_ul)
    ll[5] = (state_ll)
    ul[5] = (state_ul)
    wks mil_rev_this_yr, b12,\vpp\wiis
    wks mil_rev_last_yr, n12,\vpp\wiis !     wks other_rev_this_yr, b17..b21,\vpp\wiis
    wks other_rev_this_yr[1],b17,\vpp\wiis
    wks other_rev_this_yr[2],b18,\vpp\wiis
    wks other_rev_this_yr[3],b19,\vpp\wiis
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    wks other_rev_this_yr[4],b20,\vpp\wiis
    wks other_rev_this_yr[5],b21,\vpp\wiis



    wks x1,n17,\vpp\wiis
    wks x2,n18,\vpp\wiis
    wks x3,n19,\vpp\wiis
    wks x4,n20,\vpp\wiis
    wks x5,n21,\vpp\wiis
    mil_rev_exp = (mil_rev_last_yr +((mil_rev_last_yr/budget_rev_past)*mil_exp_inc))
    lb_mil = (mil_rev_exp * (1 - (military_ll/100)))
    ub_mil = (mil_rev_exp * (1 + (military_ul/100)))
    x = 1
    whiletrue x < 6  then
     ex[1] = (x1 + ((x1/budget_rev_past)*exp_inc[1]))
     ex[2] = (x2 + ((x2/budget_rev_past)*exp_inc[1]))
     ex[3] = (x3 + ((x3/budget_rev_past)*exp_inc[1]))
     ex[4] = (x4 + ((x4/budget_rev_past)*exp_inc[1]))
     ex[5] = (x5 + ((x5/budget_rev_past)*exp_inc[1]))
     lb[x] = (ex[x] * (1 - (ll[x] / 100)))
     ub[x] = (ex[x] * (1 + (ul[x] / 100)))
     x = (x+1)

    end
    expectations = found;

Rule calc_expects_and_bounds_costs If todo = budget_analysis Then wks bud_equip_this_yr, b5,\vpp\wibud
    wks bud_equip_last_yr, c5,\vpp\wibud !    wks bud_personal_this_yr, b7..b10,\vpp\wibud
    wks bpty1,b7,\vpp\wibud
    wks bpty2,b8,\vpp\wibud
    wks bpty3,b9,\vpp\wibud
    wks bpty4,b10,\vpp\wibud


!    wks bud_personal_last_yr, c7..c10,\vpp\wibud
    bud_fringes_this_yr = (bpty1)
    bud_salaries_this_yr = (bpty2)
    bud_wages_this_yr = (bpty3)
    bud_total_personal_this_yr = (bpty4)

    wks bud_fringes_last_yr,c7,\vpp\wibud      !!!NEW
    wks bud_salaries_last_yr,c8,\vpp\wibud     !!!NEW
    wks bud_wages_last_yr,c9,\vpp\wibud        !!!NEW
    wks bud_total_personal_last_yr,c10,\vpp\wibud    !!!NEW

!    wks bud_contract_this_yr, b12..b16,\vpp\wibud

    wks bcty1,b12,\vpp\wibud
    wks bcty2,b13,\vpp\wibud
    wks bcty3,b14,\vpp\wibud
    wks bcty4,b15,\vpp\wibud
    wks bcty5,b16,\vpp\wibud

    bud_tele_this_yr = (bcty1)
    bud_R_and_M_this_yr = (bcty2)
    bud_travel_this_yr = (bcty3)
    bud_contract_other_this_yr = (bcty4)
    bud_total_contract_this_yr = (bcty5)

!    wks bud_contract_last_yr, c12..c16,\vpp\wibud


    wks bud_tele_last_yr,c12,\vpp\wibud
    wks bud_R_and_M_last_yr,c13,\vpp\wibud
    wks bud_travel_last_yr,c14,\vpp\wibud
    wks bud_contract_other_last_yr,c15,\vpp\wibud
    wks bud_total_contract_last_yr,c16,\vpp\wibud


!    wks bud_s_and_m_this_yr, b18..b20,\vpp\wibud !    wks bud_s_and_m_last_yr, c18..c20,\vpp\wibud
    wks bsmty1,b18,\vpp\wibud
    wks bsmty2,b19,\vpp\wibud
    wks bsmty3,b20,\vpp\wibud

    bud_repair_this_yr = (bsmty1)
    bud_s_and_m_other_this_yr = (bsmty2)
    bud_total_s_and_m_this_yr = (bsmty3)
    wks bud_repair_last_yr,c18,\vpp\wibud
    wks bud_s_and_m_other_last_yr,c19,\vpp\wibud
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    wks bud_total_s_and_m_last_yr,c20,\vpp\wibud !    wks bud_contin_this_yr, b22..b27,\vpp\wibud

    wks bcn1,b22,\vpp\wibud
    wks bcn2,b23,\vpp\wibud
    wks bcn3,b24,\vpp\wibud
    wks bcn4,b25,\vpp\wibud
    wks bcn5,b26,\vpp\wibud
    wks bcn6,b27,\vpp\wibud

    bud_elect_this_yr = (bcn1)
    bud_w_and_s_this_yr = (bcn2)
    bud_agency_this_yr = (bcn3)
    bud_insure_this_yr = (bcn4)
    bud_contin_other_this_yr = (bcn5)
    bud_total_contin_this_yr = (bcn6)

!   wks bud_contin_last_yr, c22..c27,\vpp\wibud


    wks bud_elect_last_yr,c22,\vpp\wibud
    wks bud_w_and_s_last_yr,c23,\vpp\wibud
    wks bud_agency_last_yr,c24,\vpp\wibud
    wks bud_insure_last_yr,c25,\vpp\wibud
    wks bud_contin_other_last_yr,c26,\vpp\wibud
    wks bud_total_contin_last_yr,c27,\vpp\wibud
    wks bud_uniforms_this_yr, b29,\vpp\wibud
    wks bud_uniforms_last_yr, c29,\vpp\wibud !      wks act_personal_this_yr, b26..b34,\vpp\wiis !      wks act_personal_last_yr,
n26..n34,\vpp\wiis

    wks apty1,b26,\vpp\wiis
    wks apty2,b27,\vpp\wiis
    wks apty3,b28,\vpp\wiis
    wks apty4,b29,\vpp\wiis
    wks apty5,b30,\vpp\wiis
    wks apty6,b31,\vpp\wiis
    wks apty7,b32,\vpp\wiis
    wks apty8,b33,\vpp\wiis
    wks apty9,b34,\vpp\wiis
    wks aply1,n26,\vpp\wiis
    wks aply2,n27,\vpp\wiis
    wks aply3,n28,\vpp\wiis
    wks aply4,n29,\vpp\wiis
    wks aply5,n30,\vpp\wiis
    wks aply6,n31,\vpp\wiis
    wks aply7,n32,\vpp\wiis
    wks aply8,n33,\vpp\wiis
    wks aply9,n34,\vpp\wiis

    act_fringes_this_yr_a = (apty1 + apty2 + apty3)
    act_fringes_this_yr_b = (apty4 + apty5)
    act_fringes_this_yr = (act_fringes_this_yr_a + act_fringes_this_yr_b)
    act_salaries_this_yr = (apty6)
    act_wages_this_yr = (apty7 + apty8)
    act_total_personal_this_yr = (apty9)
    act_fringes_last_yr_a = (aply1 + aply2 + aply3)
    act_fringes_last_yr_b = (aply4 + aply5)
    act_fringes_last_yr = (act_fringes_last_yr_a + act_fringes_last_yr_b)
    act_salaries_last_yr = (aply6)
    act_wages_last_yr = (aply7 + aply8)
    act_total_personal_last_yr = (aply9) !    wks act_contract_this_yr, b36..b45,\vpp\wiis !    wks act_contract_last_yr, n36..n45,\vpp\wiis

    wks acty1,b36,\vpp\wiis
    wks acty2,b37,\vpp\wiis
    wks acty3,b38,\vpp\wiis
    wks acty4,b39,\vpp\wiis
    wks acty5,b40,\vpp\wiis
    wks acty6,b41,\vpp\wiis
    wks acty7,b42,\vpp\wiis
    wks acty8,b43,\vpp\wiis
    wks acty9,b44,\vpp\wiis
    wks acty10,b45,\vpp\wiis
    wks acly1,n36,\vpp\wiis
    wks acly2,n37,\vpp\wiis
    wks acly3,n38,\vpp\wiis
    wks acly4,n39,\vpp\wiis
    wks acly5,n40,\vpp\wiis
    wks acly6,n41,\vpp\wiis
    wks acly7,n42,\vpp\wiis
    wks acly8,n43,\vpp\wiis
    wks acly9,n44,\vpp\wiis
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wks acly10,n45,\vpp\wiis

act_tele_this_yr = (acty1)
act_R_and_M_this_yr = (acty2)
act_travel_this_yr = (acty9)
act_contract_other_this_yr_a = (acty3 + acty4 + acty5)
act_contract_other_this_yr_b = (acty6 + acty7 + acty8)
act_contract_other_this_yr = (act_contract_other_this_yr_a + act_contract_other_this_yr_b)
act_total_contract_this_yr = (acty10)
act_tele_last_yr = (acly1)
act_R_and_M_last_yr = (acly2)
act_travel_last_yr = (acly9)
act_contract_other_last_yr_a = (acly3 + acly4 + acly5)
act_contract_other_last_yr_b = (acly6 + acly7 + acly8)
act_contract_other_last_yr = (act_contract_other_last_yr_a + act_contract_other_last_yr_b)
act_total_contract_last_yr = (acly10) !    wks act_s_and_m_this_yr, b47..b52,\vpp\wiis !    wks act_s_and_m_last_yr, n47..n52,\vpp\wiis

wks asmty1,b47,\vpp\wiis
wks asmty2,b48,\vpp\wiis
wks asmty3,b49,\vpp\wiis
wks asmty4,b50,\vpp\wiis
wks asmty5,b51,\vpp\wiis
wks asmty6,b52,\vpp\wiis
wks asmly1,n47,\vpp\wiis
wks asmly2,n48,\vpp\wiis
wks asmly3,n49,\vpp\wiis
wks asmly4,n50,\vpp\wiis
wks asmly5,n51,\vpp\wiis
wks asmly6,n52,\vpp\wiis

act_repair_this_yr = (asmty4 + asmty5)
act_s_and_m_other_this_yr = (asmty1 + asmty2 + asmty3)
act_total_s_and_m_this_yr = (asmty6)
act_repair_last_yr = (asmly4 + asmly5)
act_s_and_m_other_last_yr = (asmly1 + asmly2 + asmly3)
act_total_s_and_m_last_yr = (asmly6) !    wks act_contin_this_yr, b54..b60,\vpp\wiis !    wks act_contin_last_yr, n54..n60,\vpp\wiis

wks acontint1,b54,\vpp\wiis
wks acontint2,b55,\vpp\wiis
wks acontint3,b56,\vpp\wiis
wks acontint4,b57,\vpp\wiis
wks acontint5,b58,\vpp\wiis
wks acontint6,b59,\vpp\wiis
wks acontint7,b60,\vpp\wiis
wks acontinl1,n54,\vpp\wiis
wks acontinl2,n55,\vpp\wiis
wks acontinl3,n56,\vpp\wiis
wks acontinl4,n57,\vpp\wiis
wks acontinl5,n58,\vpp\wiis
wks acontinl6,n59,\vpp\wiis
wks acontinl7,n60,\vpp\wiis

act_elect_this_yr = (acontint1)
act_w_and_s_this_yr = (acontint2)
act_insure_this_yr = (acontint3 + acontint6)
act_agency_this_yr = (acontint4)
act_comp_perp_this_yr = (acontint5)
act_total_contin_this_yr = (acontint7)
act_elect_last_yr = (acontinl1)
act_w_and_s_last_yr = (acontinl2)
act_insure_last_yr = (acontinl3 + acontinl6)
act_agency_last_yr = (acontinl4)
act_comp_perp_last_yr = (acontinl5)
act_total_contin_last_yr = (acontinl7)
wks act_equip_this_yr, b61,\vpp\wiis
wks act_equip_last_yr, n61,\vpp\wiis
wks act_uniforms_this_yr, b13,\vpp\wiis
wks act_uniforms_last_yr, n13,\vpp\wiis
exp_equip = ((act_equip_last_yr / bud_equip_last_yr) * bud_equip_this_yr)
exp_fringes = ((act_fringes_last_yr / bud_fringes_last_yr) * bud_fringes_this_yr)
exp_salaries = ((act_salaries_last_yr / bud_salaries_last_yr) * bud_salaries_this_yr)
exp_wages = ((act_wages_last_yr / bud_wages_last_yr) * bud_wages_this_yr)
exp_total_personal = ((act_total_personal_last_yr / bud_total_personal_last_yr) * bud_total_personal_this_yr)
exp_tele = ((act_tele_last_yr / bud_tele_last_yr) * bud_tele_this_yr)
exp_R_and_M = ((act_R_and_M_last_yr / bud_R_and_M_last_yr) * bud_R_and_M_this_yr)
exp_travel = ((act_travel_last_yr / bud_travel_last_yr) * bud_travel_this_yr)
exp_contract_other = ((act_contract_other_last_yr / bud_contract_other_last_yr) * bud_contract_other_this_yr)
exp_total_contract = ((act_total_contract_last_yr / bud_total_contract_last_yr) * bud_total_contract_this_yr)
exp_repair = ((act_repair_last_yr / bud_repair_last_yr) * bud_repair_this_yr)
exp_s_and_m_other = ((act_s_and_m_other_last_yr / bud_s_and_m_other_last_yr) * bud_s_and_m_other_this_yr)
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    exp_total_s_and_m = ((act_total_s_and_m_last_yr / bud_total_s_and_m_last_yr) * bud_total_s_and_m_this_yr)
    exp_elect = ((act_elect_last_yr / bud_elect_last_yr) * bud_elect_this_yr)
    exp_w_and_s = ((act_w_and_s_last_yr / bud_w_and_s_last_yr) * bud_w_and_s_this_yr)
    exp_agency = ((act_agency_last_yr / bud_agency_last_yr) * bud_agency_this_yr)
    exp_other_contin = ((act_comp_perp_last_yr / bud_contin_other_last_yr) * bud_contin_other_this_yr)
    exp_insure = ((act_insure_last_yr / bud_insure_last_yr) * bud_insure_this_yr)
    exp_total_contin = ((act_total_contin_last_yr / bud_total_contin_last_yr) * bud_total_contin_this_yr)
    exp_uniforms = ((act_uniforms_last_yr / bud_uniforms_last_yr) * bud_uniforms_this_yr)
    lb_fringes = (exp_fringes * (1 - (fringes_ll/100)))
    ub_fringes = (exp_fringes * (1 + (fringes_ul/100)))
    lb_salaries = (exp_salaries * (1 - (salaries_ll/100)))
    ub_salaries = (exp_salaries * (1 + (salaries_ul/100)))
    lb_wages = (exp_wages * (1 - (wages_ll/100)))
    ub_wages = (exp_wages * (1 + (wages_ul/100)))
    lb_total_personal = (exp_total_personal * (1 - (total_personal_ll/100)))
    ub_total_personal = (exp_total_personal * (1 + (total_personal_ul/100)))
    lb_tele = (exp_tele * (1 - (tele_ll/100)))
    ub_tele = (exp_tele * (1 + (tele_ul/100)))
    lb_R_and_M = (exp_R_and_M * (1 - (R_and_M_ll/100)))
    ub_R_and_M = (exp_R_and_M * (1 + (R_and_M_ul/100)))
    lb_travel = (exp_travel * (1 - (travel_ll/100)))
    ub_travel = (exp_travel * (1 + (travel_ul/100)))
    lb_other_contract = (exp_contract_other * (1 - (other_contract_ll/100)))
    ub_other_contract = (exp_contract_other * (1 + (other_contract_ul/100)))
    lb_total_contract = (exp_total_contract * (1 - (total_contract_ll/100)))
    ub_total_contract = (exp_total_contract * (1 + (total_contract_ul/100)))
    lb_repair = (exp_repair * (1 - (repair_ll/100)))
    ub_repair = (exp_repair * (1 + (repair_ul/100)))
    lb_other_s_and_m = (exp_s_and_m_other * (1 - (other_s_and_m_ll/100)))
    ub_other_s_and_m = (exp_s_and_m_other * (1 + (other_s_and_m_ul/100)))
    lb_total_s_and_m = (exp_total_s_and_m * (1 - (total_s_and_m_ll/100)))
    ub_total_s_and_m = (exp_total_s_and_m * (1 + (total_s_and_m_ul/100)))
    lb_equip = (exp_equip * (1 - (equip_ll/100)))
    ub_equip = (exp_equip * (1 + (equip_ul/100)))
    lb_uniforms = (exp_uniforms * (1 - (uniforms_ll/100)))
    ub_uniforms = (exp_uniforms * (1 + (uniforms_ul/100)))
    lb_elect = (exp_elect * (1 - (elect_ll/100)))
    ub_elect = (exp_elect * (1 + (elect_ul/100)))
    lb_w_and_s = (exp_w_and_s * (1 - (w_and_s_ll/100)))
    ub_w_and_s = (exp_w_and_s * (1 + (w_and_s_ul/100)))
    lb_insure = (exp_insure * (1 - (insure_ll/100)))
    ub_insure = (exp_insure * (1 + (insure_ul/100)))
    lb_agency = (exp_agency * (1 - (agency_ll/100)))
    lb_other_contin = (exp_other_contin * (1 - (other_contin_ll/100)))
    ub_agency = (exp_agency * (1 + (agency_ul/100)))
    ub_other_contin = (exp_other_contin * (1 + (other_contin_ul/100)))
    lb_total_contin = (exp_total_contin * (1 - (total_contin_ll/100)))
    ub_total_contin = (exp_total_contin * (1 + (total_contin_ul/100)))
    cost_expectations = found;


Rule current_public_lt_lb If other_rev_this_yr[1] < (lb[1]) Then public_rev_to_display = under
    find public_display;

Rule current_public_gt_ub If other_rev_this_yr[1] > (ub[1]) Then public_rev_to_display = over
    find public_display;

Rule current_public_w_in_bounds If other_rev_this_yr[1] > = (lb[1]) and
  other_rev_this_yr[1] < = (ub[1]) Then public_rev_to_display = within
    within_budget = public;


Rule display_public_under If public_rev_to_display = under Then percent = (((ex[1] - other_rev_this_yr[1]) / ex[1]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from the public so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    public_display = done;

Rule display_public_over If public_rev_to_display = over Then percent = (((other_rev_this_yr[1] - ex[1]) / ex[1]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the public so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
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    pdisplay "The revenue collected from the public so far"
    pdisplay "this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    public_display = done;

Rule current_s_f_s_lt_lb If other_rev_this_yr[2] < (lb[2]) Then s_f_s_rev_to_display = under
    find s_f_s_display;

Rule current_s_f_s_gt_ub If other_rev_this_yr[2] > (ub[2]) Then s_f_s_rev_to_display = over
    find s_f_s_display;

Rule current_s_f_s_w_in_bounds If other_rev_this_yr[2] > = (lb[2]) and
  other_rev_this_yr[2] < = (ub[2]) Then s_f_s_rev_to_display = within
    within_budget = stu_fac_staff;

Rule display_s_f_s_under If s_f_s_rev_to_display = under Then percent = (((ex[2] - other_rev_this_yr[2]) / ex[2]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from students, faculty, and staff so"
    pdisplay "far this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    s_f_s_display = done;

Rule display_s_f_s_over If s_f_s_rev_to_display = over Then percent = (((other_rev_this_yr[2] - ex[2]) / ex[2]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from students, faculty, and staff so"
    display "far this year is (percent)% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from students, faculty, and staff so"
    pdisplay "far this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    s_f_s_display = done;

Rule current_interdept_lt_lb If other_rev_this_yr[3] < (lb[3]) Then interdept_rev_to_display = under
    find interdept_display;

Rule current_interdept_gt_ub If other_rev_this_yr[3] > (ub[3]) Then interdept_rev_to_display = over
    find interdept_display;

Rule current_interdept_w_in_bounds If other_rev_this_yr[3] > = (lb[3]) and
  other_rev_this_yr[3] < = (ub[3]) Then interdept_rev_to_display = within
    within_budget = interdepartmental;

Rule display_public_under If interdept_rev_to_display = under Then percent = (((ex[3] - other_rev_this_yr[3]) / ex[3]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from other departments so far"
    display "this year is (percent)% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from other departments so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    interdept_display = done;

Rule interdept_public_over If interdept_rev_to_display = over Then percent = (((other_rev_this_yr[3] - ex[3]) / ex[3]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from other departments so far"
    display "this year is (percent)% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from other departments so far"
    pdisplay "this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    interdept_display = done;

Rule music_public_lt_lb If other_rev_this_yr[4] < (lb[4]) Then music_rev_to_display = under
    find music_display;

Rule current_music_gt_ub If other_rev_this_yr[4] > (ub[4]) Then music_rev_to_display = over
    find music_display;
```

```
Rule current_music_w_in_bounds If other_rev_this_yr[4] > = (lb[4]) and
  other_rev_this_yr[4] < = (ub[4]) Then music_rev_to_display = within
    within_budget = music;

Rule display_music_under If music_rev_to_display = under Then percent = (((ex[4] - other_rev_this_yr[4]) / ex[4]) * 100)
    color = 12
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is {percent}% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from the music department so far"
    pdisplay "this year is {percent}% less than expected."
    pdisplay " "
    color = 15
    music_display = done;

Rule display_music_over If music_rev_to_display = over Then percent = (((other_rev_this_yr[4] - ex[4]) / ex[4]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from the music department so far"
    display "this year is {percent}% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from the music department so far"
    pdisplay "this year is {percent}% more than expected. ¬"
    pdisplay " "
    color = 15
    music_display = done;

Rule current_state_lt_lb If other_rev_this_yr[5] < (lb[5]) Then state_rev_to_display = under
    find state_display;

Rule current_state_gt_ub If other_rev_this_yr[5] > (ub[5]) Then state_rev_to_display = over
    find state_display;

Rule current_state_w_in_bounds If other_rev_this_yr[5] > = (lb[5]) and
  other_rev_this_yr[5] < = (ub[5]) Then state_rev_to_display = within
    within_budget = state;

Rule display_state_under If state_rev_to_display = under Then percent = (((ex[5] - other_rev_this_yr[5]) / ex[5]) * 100)
    format percent, 6.2
    color = 12
    display "The revenue collected from state related activities so far"
    display "this year is {percent}% less than expected. ¬"
    display " "
    pdisplay "The revenue collected from state related activities so far"
    pdisplay "this year is {percent}% less than expected."
    pdisplay " "
    color = 15
    state_display = done;

Rule display_state_over If state_rev_to_display = over Then percent = (((other_rev_this_yr[5] - ex[5]) / ex[5]) * 100)
    color = 10
    format percent, 6.2
    display "The revenue collected from state related activities so far"
    display "this year is {percent}% more than expected. ¬"
    display " "
    pdisplay "The revenue collected from state related activities so far"
    pdisplay "this year is {percent}% more than expected."
    pdisplay " "
    color = 15
    state_display = done;

Rule current_mil_lt_lb If mil_rev_this_yr < (lb_mil) Then mil_rev_to_display = under
    find mil_display;

Rule current_mil_gt_ub If mil_rev_this_yr > (ub_mil) Then mil_rev_to_display = over
    find mil_display;

Rule current_mil_w_in_bounds If mil_rev_this_yr > = (lb_mil) and
  mil_rev_this_yr < = (ub_mil) Then mil_rev_to_display = within
    within_budget = the_corps;

Rule display_mil_under If mil_rev_to_display = under Then percent = (((mil_rev_exp - mil_rev_this_yr) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 12
    display " "
    display "The revenue collected from the corps so far"
    display "this year is {percent}% less than expected. ¬"
    display " "
    pdisplay " "
```

```
    pdisplay "The revenue collected from the corps so far"
    pdisplay "this year is (percent)% less than expected."
    pdisplay " "
    color = 15
    mil_display = done;

Rule display_mil_over If mil_rev_to_display = over Then percent = (((mil_rev_this_yr - mil_rev_exp) / mil_rev_exp) * 100)
    format percent, 6.2
    color = 10
    display " "
    display "The revenue collected from the corps so far"
    display "this year is (percent)% more than expected.¬"
    display " "
    pdisplay " "
    pdisplay "The revenue collected from the corps so far"
    pdisplay "this year is (percent)% more than expected."
    pdisplay " "
    color = 15
    mil_display = done;

Rule none_w_in_budget If within_budget = unknown Then within_rev_to_display = found;

Rule display_those_w_in_budget If todo = budget_analysis Then within_rev_to_display = found
    display " "
    color = 14
    display "The following revenue categories are within budget:"
      display "(within_budget)"
    color = 15
    display "  ¬"
    pdisplay "The following revenue categories are within budget:"
      pdisplay "(within_budget)"
    pdisplay "  ";


!statements block

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis;

ask change_limits:"Would you like to change any of these ranges for the revenue categories?"; choices change_limits: no, yes;

ask change_limits_costs:"Would you like to change any of these ranges for the expense categories?"; choices change_limits_costs: no,yes;

ask which_rev_limits: "Which revenue limits would you like to change?"; choices which_rev_limits: military, public, stu_fac_staff,
interdepartmental,music_dept, state_related;

ask which_cost_limits: "Which expense category limits would you like to change?"; choices which_cost_limits: equipment, uniforms, per-
sonal, contractual, supplies_materials, continuous;

ask military_ll: "Please do not use decimals."; ask military_ul: "Please do not use decimals.";

range military_ll: 1,100; range military_ul: 1,100;

ask s_f_s_ul: ""; ask s_f_s_ll: "";

range s_f_s_ll: 1,100; range s_f_s_ul: 1,100;

ask public_ul: ""; ask public_ll: "";

range public_ll: 1,100; range public_ul: 1,100;

ask interdept_ul: ""; ask interdept_ll: "";

range interdept_ll: 1,100; range interdept_ul: 1,100;

ask music_ul: ""; ask music_ll: "";

range music_ll: 1,100; range music_ul: 1,100;

ask state_ul: ""; ask state_ll: "";

range state_ll: 1,100; range state_ul: 1,100;

ask equip_ll: ""; ask equip_ul: "";

range equip_ll: 1,100; range equip_ul: 1,100;

ask uniforms_ll: ""; ask uniforms_ul: "";

range uniforms_ll: 1,100; range uniforms_ul: 1,100;
```

```
ask total_personal_ll: ""; ask total_personal_ul: "";

range total_personal_ll: 1,100; range total_personal_ul: 1,100;

ask total_contract_ll: ""; ask total_contract_ul: "";

range total_contract_ll: 1,100; range total_contract_ul: 1,100;

ask total_s_and_m_ll: ""; ask total_s_and_m_ul: "";

range total_s_and_m_ll: 1,100; range total_s_and_m_ul: 1,100;

ask total_contin_ll: ""; ask total_contin_ul: "";

range total_contin_ll: 1,100; range total_contin_ul: 1,100;


ask resp_rev_mkt_segments: "input adds up to ${diff}."; choices resp_rev_mkt_segments: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;

ask resp_rev_mkt_segments_l: "input adds up to ${diff}."; choices resp_rev_mkt_segments_l: military, public, stu_fac_staff, interdepartmental, music_dept, state_related;


ask mil_exp_inc_h: "How much is military revenue expected to increase?"; range mil_exp_inc_h: 0,1000000;

ask mil_exp_inc_l: "How much is military revenue expected to decrease?"; range mil_exp_inc_l: 0,1000000;

ask public_exp_inc_h: "How much is public revenue expected to increase?"; range public_exp_inc_h: 0,1000000;

ask s_f_s_exp_inc_h: "How much is student/faculty/staff revenue expected to increase?"; range s_f_s_exp_inc_h: 0,1000000;

ask interdept_exp_inc_h: "How much is interdepartmental revenue expected to increase?"; range interdept_exp_inc_h: 0,1000000;

ask music_exp_inc_h: "How much is music department revenue expected to increase?"; range music_exp_inc_h: 0,1000000;

ask state_exp_inc_h: "How much is state related revenue expected to increase?"; range state_exp_inc_h: 0,1000000;


ask public_exp_inc_l: "How much is public revenue expected to decrease?"; range public_exp_inc_l: 0,1000000;

ask s_f_s_exp_inc_l: "How much is student/faculty/staff revenue expected to decrease?"; range s_f_s_exp_inc_l: 0,1000000;

ask interdept_exp_inc_l: "How much is interdepartmental revenue expected to decrease?"; range interdept_exp_inc_l: 0,1000000;

ask music_exp_inc_l: "How much is music department revenue expected to decrease?"; range music_exp_inc_l: 0,1000000;

ask state_exp_inc_l: "How much is state related revenue expected to decrease?"; range state_exp_inc_l: 0,1000000;


plural:within_budget, over_budget, under_budget, which_rev_limits, resp_rev_mkt_segments, resp_rev_mkt_segments_l; plural:exp_inc, ll, ul,lb,ub,ex,other_rev_last_yr,bud_personal; plural:bud_contract, bud_s_and_m, bud_contin_this_yr,act_personal, act_contract; plural:act_s_and_m, act_contin, which_cost_limits,under_lb_personal; plural:over_ub_personal, w_in_personal, over_ub_contract,under_lb_contract; plural:w_in_contract,over_ub_contin, under_lb_contin, w_in_contin; plural:w_in_s_and_m,over_ub_s_and_m, under_lb_s_and_m,other_rev_this_yr;

bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 todo = ratio_analysis !   find farse display "Please be patient. The data required to perform ratio analysis is quite" display
"extensive and requires a lot of time to retrieve. When the system is " display "finished retrieving the data and performing the calculations,
it will" display "proceed directly with the analysis." pdisplay " " pdisplay "Please be patient. The data required to perform ratio analysis
is quite" pdisplay "extensive and requires a lot of time to retrieve. When the system is" pdisplay "finished retrieving the data and performing
the calculations, it will" pdisplay "proceed directly with the analysis." pdisplay " "
    continue_r = yes
    find update_r
    find current_ratio_display
    savefacts ratdata
    chain pwirat5;

!rules block

!rule start_ratio_analysis !If todo = ratio_analysis !Then farse = found !    wks date,b1,\vpp\wiabis !    display "The most recent data is
for the year ending June (date)." !    pdisplay "The most recent data is for the year ending June (date)." !    find continue_r !    pdisplay
" " !    pdisplay "Is this the most current year end?" !    pdisplay " " !    pdisplay "yes              no" !    find update_r !    find
current_ratio_display !    savefacts ratdata !    chain pwirat5;


Rule continue_on_dont_update If continue_r = yes Then update_r = found
    !wks ca,b13..d16,\vpp\wica
    wks ca[1],b13,\vpp\wica
    wks ca[2],c13,\vpp\wica
    wks ca[3],d13,\vpp\wica
    wks ca[4],b14,\vpp\wica
    wks ca[5],c14,\vpp\wica
    wks ca[6],d14,\vpp\wica
    wks ca[7],b15,\vpp\wica
    wks ca[8],c15,\vpp\wica
    wks ca[9],d15,\vpp\wica
    wks ca[10],b16,\vpp\wica
    wks ca[11],c16,\vpp\wica
    wks ca[12],d16,\vpp\wica
    ca_weight_this = (ca[1])
    ca_weight_last = (ca[2])
    ca_weight_2 = (ca[3])
    ca_ave_this = (ca[4])
    ca_ave_last = (ca[5])
    ca_ave_2 = (ca[6])
    corps_comp_this = (ca[7])
    corps_comp_last = (ca[8])
    corps_comp_2 = (ca[9])
    t_num_cadets_this = (ca[10])
    t_num_cadets_last = (ca[11])
    t_num_cadets_2 = (ca[12])
    reset ca !    wks bs_this,b1..b14,\vpp\wiabbs
    wks bs_this[1],b1,\vpp\wiabbs
    wks bs_this[2],b2,\vpp\wiabbs
    wks bs_this[3],b3,\vpp\wiabbs
    wks bs_this[4],b4,\vpp\wiabbs
    wks bs_this[5],b5,\vpp\wiabbs
    wks bs_this[6],b6,\vpp\wiabbs
    wks bs_this[7],b7,\vpp\wiabbs
    wks bs_this[8],b8,\vpp\wiabbs
    wks bs_this[9],b9,\vpp\wiabbs
    wks bs_this[10],b10,\vpp\wiabbs
    wks bs_this[11],b11,\vpp\wiabbs
    wks bs_this[12],b12,\vpp\wiabbs
    wks bs_this[13],b13,\vpp\wiabbs
    wks bs_this[14],b14,\vpp\wiabbs !    wks bs_last,c1..c14,\vpp\wiabbs
    wks bs_last[1],c1,\vpp\wiabbs
    wks bs_last[2],c2,\vpp\wiabbs
    wks bs_last[3],c3,\vpp\wiabbs
    wks bs_last[4],c4,\vpp\wiabbs
    wks bs_last[5],c5,\vpp\wiabbs
    wks bs_last[6],c6,\vpp\wiabbs
    wks bs_last[7],c7,\vpp\wiabbs
    wks bs_last[8],c8,\vpp\wiabbs
    wks bs_last[9],c9,\vpp\wiabbs
    wks bs_last[10],c10,\vpp\wiabbs
    wks bs_last[11],c11,\vpp\wiabbs
    wks bs_last[12],c12,\vpp\wiabbs
    wks bs_last[13],c13,\vpp\wiabbs
    wks bs_last[14],c14,\vpp\wiabbs !    wks bs_2_ago,d1..d14,\vpp\wiabbs
    wks bs_2_ago[1],d1,\vpp\wiabbs
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wks bs_2_ago[2],d2,\vpp\wiabbs
wks bs_2_ago[3],d3,\vpp\wiabbs
wks bs_2_ago[4],d4,\vpp\wiabbs
wks bs_2_ago[5],d5,\vpp\wiabbs
wks bs_2_ago[6],d6,\vpp\wiabbs
wks bs_2_ago[7],d7,\vpp\wiabbs
wks bs_2_ago[8],d8,\vpp\wiabbs
wks bs_2_ago[9],d9,\vpp\wiabbs
wks bs_2_ago[10],d10,\vpp\wiabbs
wks bs_2_ago[11],d11,\vpp\wiabbs
wks bs_2_ago[12],d12,\vpp\wiabbs
wks bs_2_ago[13],d13,\vpp\wiabbs
wks bs_2_ago[14],d14,\vpp\wiabbs
wks t_assets_3,e9,\vpp\wiabbs
wks inv_3_ago,e7,\vpp\wiabbs !     wks is_this,b1..b85,\vpp\wiabis
 wks is_this[1],b1,\vpp\wiabis
 wks is_this[2],b2,\vpp\wiabis
 wks is_this[3],b3,\vpp\wiabis
 wks is_this[4],b4,\vpp\wiabis
 wks is_this[5],b5,\vpp\wiabis
 wks is_this[6],b6,\vpp\wiabis
 wks is_this[7],b7,\vpp\wiabis
 wks is_this[8],b8,\vpp\wiabis
 wks is_this[9],b9,\vpp\wiabis
 wks is_this[10],b10,\vpp\wiabis
 wks is_this[11],b11,\vpp\wiabis
 wks is_this[12],b12,\vpp\wiabis
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 wks is_this[23],b23,\vpp\wiabis
 wks is_this[24],b24,\vpp\wiabis
 wks is_this[25],b25,\vpp\wiabis
 wks is_this[26],b26,\vpp\wiabis
 wks is_this[27],b27,\vpp\wiabis
 wks is_this[28],b28,\vpp\wiabis
 wks is_this[29],b29,\vpp\wiabis
 wks is_this[30],b30,\vpp\wiabis
 wks is_this[31],b31,\vpp\wiabis
 wks is_this[32],b32,\vpp\wiabis
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 wks is_this[34],b34,\vpp\wiabis
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 wks is_this[38],b38,\vpp\wiabis
 wks is_this[39],b39,\vpp\wiabis
 wks is_this[40],b40,\vpp\wiabis
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 wks is_this[47],b47,\vpp\wiabis
 wks is_this[48],b48,\vpp\wiabis
 wks is_this[49],b49,\vpp\wiabis
 wks is_this[50],b50,\vpp\wiabis
 wks is_this[51],b51,\vpp\wiabis
 wks is_this[52],b52,\vpp\wiabis
 wks is_this[53],b53,\vpp\wiabis
 wks is_this[54],b54,\vpp\wiabis
 wks is_this[55],b55,\vpp\wiabis
 wks is_this[56],b56,\vpp\wiabis
 wks is_this[57],b57,\vpp\wiabis
 wks is_this[58],b58,\vpp\wiabis
 wks is_this[59],b59,\vpp\wiabis
 wks is_this[60],b60,\vpp\wiabis
 wks is_this[61],b61,\vpp\wiabis
 wks is_this[62],b62,\vpp\wiabis
 wks is_this[63],b63,\vpp\wiabis
 wks is_this[64],b64,\vpp\wiabis
 wks is_this[65],b65,\vpp\wiabis
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wks is_this[66],b66,\vpp\wiabis
wks is_this[67],b67,\vpp\wiabis
wks is_this[68],b68,\vpp\wiabis
wks is_this[69],b69,\vpp\wiabis
wks is_this[70],b70,\vpp\wiabis
wks is_this[71],b71,\vpp\wiabis
wks is_this[72],b72,\vpp\wiabis
wks is_this[73],b73,\vpp\wiabis
wks is_this[74],b74,\vpp\wiabis
wks is_this[75],b75,\vpp\wiabis
wks is_this[76],b76,\vpp\wiabis
wks is_this[77],b77,\vpp\wiabis
wks is_this[78],b78,\vpp\wiabis
wks is_this[79],b79,\vpp\wiabis
wks is_this[80],b80,\vpp\wiabis
wks is_this[81],b81,\vpp\wiabis
wks is_this[82],b82,\vpp\wiabis
wks is_this[83],b83,\vpp\wiabis
wks is_this[84],b84,\vpp\wiabis
wks is_this[85],b85,\vpp\wiabis !     wks is_last,c1..c85,\vpp\wiabis
wks is_last[1],c1,\vpp\wiabis
wks is_last[2],c2,\vpp\wiabis
wks is_last[3],c3,\vpp\wiabis
wks is_last[4],c4,\vpp\wiabis
wks is_last[5],c5,\vpp\wiabis
wks is_last[6],c6,\vpp\wiabis
wks is_last[7],c7,\vpp\wiabis
wks is_last[8],c8,\vpp\wiabis
wks is_last[9],c9,\vpp\wiabis
wks is_last[10],c10,\vpp\wiabis
wks is_last[11],c11,\vpp\wiabis
wks is_last[12],c12,\vpp\wiabis
wks is_last[13],c13,\vpp\wiabis
wks is_last[14],c14,\vpp\wiabis
wks is_last[15],c15,\vpp\wiabis
wks is_last[16],c16,\vpp\wiabis
wks is_last[17],c17,\vpp\wiabis
wks is_last[18],c18,\vpp\wiabis
wks is_last[19],c19,\vpp\wiabis
wks is_last[20],c20,\vpp\wiabis
wks is_last[21],c21,\vpp\wiabis
wks is_last[22],c22,\vpp\wiabis
wks is_last[23],c23,\vpp\wiabis
wks is_last[24],c24,\vpp\wiabis
wks is_last[25],c25,\vpp\wiabis
wks is_last[26],c26,\vpp\wiabis
wks is_last[27],c27,\vpp\wiabis
wks is_last[28],c28,\vpp\wiabis
wks is_last[29],c29,\vpp\wiabis
wks is_last[30],c30,\vpp\wiabis
wks is_last[31],c31,\vpp\wiabis
wks is_last[32],c32,\vpp\wiabis
wks is_last[33],c33,\vpp\wiabis
wks is_last[34],c34,\vpp\wiabis
wks is_last[35],c35,\vpp\wiabis
wks is_last[36],c36,\vpp\wiabis
wks is_last[37],c37,\vpp\wiabis
wks is_last[38],c38,\vpp\wiabis
wks is_last[39],c39,\vpp\wiabis
wks is_last[40],c40,\vpp\wiabis
wks is_last[41],c41,\vpp\wiabis
wks is_last[42],c42,\vpp\wiabis
wks is_last[43],c43,\vpp\wiabis
wks is_last[44],c44,\vpp\wiabis
wks is_last[45],c45,\vpp\wiabis
wks is_last[46],c46,\vpp\wiabis
wks is_last[47],c47,\vpp\wiabis
wks is_last[48],c48,\vpp\wiabis
wks is_last[49],c49,\vpp\wiabis
wks is_last[50],c50,\vpp\wiabis
wks is_last[51],c51,\vpp\wiabis
wks is_last[52],c52,\vpp\wiabis
wks is_last[53],c53,\vpp\wiabis
wks is_last[54],c54,\vpp\wiabis
wks is_last[55],c55,\vpp\wiabis
wks is_last[56],c56,\vpp\wiabis
wks is_last[57],c57,\vpp\wiabis
wks is_last[58],c58,\vpp\wiabis
wks is_last[59],c59,\vpp\wiabis
wks is_last[60],c60,\vpp\wiabis
```

```
wks is_last[61],c61,\vpp\wiabis
wks is_last[62],c62,\vpp\wiabis
wks is_last[63],c63,\vpp\wiabis
wks is_last[64],c64,\vpp\wiabis
wks is_last[65],c65,\vpp\wiabis
wks is_last[66],c66,\vpp\wiabis
wks is_last[67],c67,\vpp\wiabis
wks is_last[68],c68,\vpp\wiabis
wks is_last[69],c69,\vpp\wiabis
wks is_last[70],c70,\vpp\wiabis
wks is_last[71],c71,\vpp\wiabis
wks is_last[72],c72,\vpp\wiabis
wks is_last[73],c73,\vpp\wiabis
wks is_last[74],c74,\vpp\wiabis
wks is_last[75],c75,\vpp\wiabis
wks is_last[76],c76,\vpp\wiabis
wks is_last[77],c77,\vpp\wiabis
wks is_last[78],c78,\vpp\wiabis
wks is_last[79],c79,\vpp\wiabis
wks is_last[80],c80,\vpp\wiabis
wks is_last[81],c81,\vpp\wiabis
wks is_last[82],c82,\vpp\wiabis
wks is_last[83],c83,\vpp\wiabis
wks is_last[84],c84,\vpp\wiabis
wks is_last[85],c85,\vpp\wiabis !    wks is_2_ago,d1..d85,\vpp\wiabis
wks is_2_ago[1],d1,\vpp\wiabis
wks is_2_ago[2],d2,\vpp\wiabis
wks is_2_ago[3],d3,\vpp\wiabis
wks is_2_ago[4],d4,\vpp\wiabis
wks is_2_ago[5],d5,\vpp\wiabis
wks is_2_ago[6],d6,\vpp\wiabis
wks is_2_ago[7],d7,\vpp\wiabis
wks is_2_ago[8],d8,\vpp\wiabis
wks is_2_ago[9],d9,\vpp\wiabis
wks is_2_ago[10],d10,\vpp\wiabis
wks is_2_ago[11],d11,\vpp\wiabis
wks is_2_ago[12],d12,\vpp\wiabis
wks is_2_ago[13],d13,\vpp\wiabis
wks is_2_ago[14],d14,\vpp\wiabis
wks is_2_ago[15],d15,\vpp\wiabis
wks is_2_ago[16],d16,\vpp\wiabis
wks is_2_ago[17],d17,\vpp\wiabis
wks is_2_ago[18],d18,\vpp\wiabis
wks is_2_ago[19],d19,\vpp\wiabis
wks is_2_ago[20],d20,\vpp\wiabis
wks is_2_ago[21],d21,\vpp\wiabis
wks is_2_ago[22],d22,\vpp\wiabis
wks is_2_ago[23],d23,\vpp\wiabis
wks is_2_ago[24],d24,\vpp\wiabis
wks is_2_ago[25],d25,\vpp\wiabis
wks is_2_ago[26],d26,\vpp\wiabis
wks is_2_ago[27],d27,\vpp\wiabis
wks is_2_ago[28],d28,\vpp\wiabis
wks is_2_ago[29],d29,\vpp\wiabis
wks is_2_ago[30],d30,\vpp\wiabis
wks is_2_ago[31],d31,\vpp\wiabis
wks is_2_ago[32],d32,\vpp\wiabis
wks is_2_ago[33],d33,\vpp\wiabis
wks is_2_ago[34],d34,\vpp\wiabis
wks is_2_ago[35],d35,\vpp\wiabis
wks is_2_ago[36],d36,\vpp\wiabis
wks is_2_ago[37],d37,\vpp\wiabis
wks is_2_ago[38],d38,\vpp\wiabis
wks is_2_ago[39],d39,\vpp\wiabis
wks is_2_ago[40],d40,\vpp\wiabis
wks is_2_ago[41],d41,\vpp\wiabis
wks is_2_ago[42],d42,\vpp\wiabis
wks is_2_ago[43],d43,\vpp\wiabis
wks is_2_ago[44],d44,\vpp\wiabis
wks is_2_ago[45],d45,\vpp\wiabis
wks is_2_ago[46],d46,\vpp\wiabis
wks is_2_ago[47],d47,\vpp\wiabis
wks is_2_ago[48],d48,\vpp\wiabis
wks is_2_ago[49],d49,\vpp\wiabis
wks is_2_ago[50],d50,\vpp\wiabis
wks is_2_ago[51],d51,\vpp\wiabis
wks is_2_ago[52],d52,\vpp\wiabis
wks is_2_ago[53],d53,\vpp\wiabis
wks is_2_ago[54],d54,\vpp\wiabis
wks is_2_ago[55],d55,\vpp\wiabis
```

```
wks is_2_ago[56],d56,\vpp\wiabis
wks is_2_ago[57],d57,\vpp\wiabis
wks is_2_ago[58],d58,\vpp\wiabis
wks is_2_ago[59],d59,\vpp\wiabis
wks is_2_ago[60],d60,\vpp\wiabis
wks is_2_ago[61],d61,\vpp\wiabis
wks is_2_ago[62],d62,\vpp\wiabis
wks is_2_ago[63],d63,\vpp\wiabis
wks is_2_ago[64],d64,\vpp\wiabis
wks is_2_ago[65],d65,\vpp\wiabis
wks is_2_ago[66],d66,\vpp\wiabis
wks is_2_ago[67],d67,\vpp\wiabis
wks is_2_ago[68],d68,\vpp\wiabis
wks is_2_ago[69],d69,\vpp\wiabis
wks is_2_ago[70],d70,\vpp\wiabis
wks is_2_ago[71],d71,\vpp\wiabis
wks is_2_ago[72],d72,\vpp\wiabis
wks is_2_ago[73],d73,\vpp\wiabis
wks is_2_ago[74],d74,\vpp\wiabis
wks is_2_ago[75],d75,\vpp\wiabis
wks is_2_ago[76],d76,\vpp\wiabis
wks is_2_ago[77],d77,\vpp\wiabis
wks is_2_ago[78],d78,\vpp\wiabis
wks is_2_ago[79],d79,\vpp\wiabis
wks is_2_ago[80],d80,\vpp\wiabis
wks is_2_ago[81],d81,\vpp\wiabis
wks is_2_ago[82],d82,\vpp\wiabis
wks is_2_ago[83],d83,\vpp\wiabis
wks is_2_ago[84],d84,\vpp\wiabis
wks is_2_ago[85],d85,\vpp\wiabis
current_year = (bs_this[1])
last_year = (current_year - 1)
year_2_ago = (current_year - 2)
total_inv = (bs_this[7])
last_yr_inventory = (bs_last[7])
inv_2_ago = (bs_2_ago[7])
new_due_to = (bs_this[12])
last_yr_due_to = (bs_last[12])
due_to_2_ago = (bs_2_ago[12])
net_income = (is_this[65])
net_income_last = (is_last[65])
net_income_2 = (is_2_ago[65])
total_current_value = (bs_this[8])
last_yr_equip_value = (bs_last[8])
equip_2_ago = (bs_2_ago[8])
gross_profit = (is_this[16])
gross_profit_last = (is_last[16])
gross_profit_2 = (is_2_ago[16])
t_mil_rev = (is_this[9])
mil_rev_last = (is_last[9])
mil_rev_2 = (is_2_ago[9])
t_expenses = (is_this[15] + is_this[64])
cost_uniforms_this = (is_this[15])
cost_uniforms_last = (is_last[15])
cost_uniforms_2 = (is_2_ago[15])
total_oper_exp_last = (is_last[64])
total_oper_exp_2 = (is_2_ago[64])
t_other_rev = (is_this[24])
other_rev_last = (is_last[24])
other_rev_2 = (is_2_ago[24])
t_personal = (is_this[36])
personal_last = (is_last[36])
corps_e_to_r_this = (is_this[79])
public_e_to_r_this = (is_this[81])
s_f_s_e_to_r_this = (is_this[82])
interdept_e_to_r_this = (is_this[83])
music_e_to_r_this = (is_this[84])
state_e_to_r_this = (is_this[85])
corps_e_to_r_last = (is_last[79])
public_e_to_r_last = (is_last[81])
s_f_s_e_to_r_last = (is_last[82])
interdept_e_to_r_last = (is_last[83])
music_e_to_r_last = (is_last[84])
state_e_to_r_last = (is_last[85])
corps_e_to_r_2 = (is_2_ago[79])
public_e_to_r_2 = (is_2_ago[81])
s_f_s_e_to_r_2 = (is_2_ago[82])
interdept_e_to_r_2 = (is_2_ago[83])
music_e_to_r_2 = (is_2_ago[84])
state_e_to_r_2 = (is_2_ago[85])
```

```
    reset bs_this
    reset bs_last
    reset bs_2_ago
    reset is_this
    reset is_last
    reset is_2_ago;


Rule continue_on_update_first If continue_r = no Then update_r = found
    display "Please be patient as the accrual statements must be calculated and this takes"
    display "a little time.  It also requires a little information which you will be asked"
    display "to supply."
    display ""
    pdisplay ""
    pdisplay "Please be patient as the accrual statements must be calculated and this takes"
    pdisplay "a little time.  It also requires a little information which you will be asked"
    pdisplay "to supply."
    pdisplay "" !    wks mil_rev,aa7..aa12,\vpp\wiis
    wks mil_rev[1],aa7,\vpp\wiis
    wks mil_rev[2],aa8,\vpp\wiis
    wks mil_rev[3],aa9,\vpp\wiis
    wks mil_rev[4],aa10,\vpp\wiis
    wks mil_rev[5],aa11,\vpp\wiis
    wks mil_rev[6],aa12,\vpp\wiis
    t_mil_rev = (mil_rev[6])
    wks cgs,aa13,\vpp\wiis !    wks other_rev,aa17..aa22,\vpp\wiis
    wks other_rev[1],aa17,\vpp\wiis
    wks other_rev[2],aa18,\vpp\wiis
    wks other_rev[3],aa19,\vpp\wiis
    wks other_rev[4],aa20,\vpp\wiis
    wks other_rev[5],aa21,\vpp\wiis
    wks other_rev[6],aa22,\vpp\wiis
    t_other_rev = (other_rev[6])
    public_rev = (other_rev[1])
    s_f_s_rev = (other_rev[2])
    interdept_rev = (other_rev[3])
    music_rev = (other_rev[4])
    state_rev = (other_rev[5]) !    wks personal,aa26..aa34,\vpp\wiis
    wks personal[1],aa26,\vpp\wiis
    wks personal[2],aa27,\vpp\wiis
    wks personal[3],aa28,\vpp\wiis
    wks personal[4],aa29,\vpp\wiis
    wks personal[5],aa30,\vpp\wiis
    wks personal[6],aa31,\vpp\wiis
    wks personal[7],aa32,\vpp\wiis
    wks personal[8],aa33,\vpp\wiis
    wks personal[9],aa34,\vpp\wiis
    t_personal = (personal[9]) !    wks contractual,aa36..aa45,\vpp\wiis
    wks contractual[1],aa36,\vpp\wiis
    wks contractual[2],aa37,\vpp\wiis
    wks contractual[3],aa38,\vpp\wiis
    wks contractual[4],aa39,\vpp\wiis
    wks contractual[5],aa40,\vpp\wiis
    wks contractual[6],aa41,\vpp\wiis
    wks contractual[7],aa42,\vpp\wiis
    wks contractual[8],aa43,\vpp\wiis
    wks contractual[9],aa44,\vpp\wiis
    wks contractual[10],aa45,\vpp\wiis
    t_contract = (contractual[10]) !    wks s_and_m,aa47..aa52,\vpp\wiis
    wks s_and_m[1],aa47,\vpp\wiis
    wks s_and_m[2],aa48,\vpp\wiis
    wks s_and_m[3],aa49,\vpp\wiis
    wks s_and_m[4],aa50,\vpp\wiis
    wks s_and_m[5],aa51,\vpp\wiis
    wks s_and_m[6],aa52,\vpp\wiis
    t_s_and_m = (s_and_m[6]) !    wks continuous,aa54..aa60,\vpp\wiis
    wks continuous[1],aa54,\vpp\wiis
    wks continuous[2],aa55,\vpp\wiis
    wks continuous[3],aa56,\vpp\wiis
    wks continuous[4],aa57,\vpp\wiis
    wks continuous[5],aa58,\vpp\wiis
    wks continuous[6],aa59,\vpp\wiis
    wks continuous[7],aa60,\vpp\wiis
    t_contin = (continuous[7])
    wks equip,aa61,\vpp\wiis !    wks direct_costs,aa66..aa72,\vpp\wiis
    wks direct_costs[1],aa66,\vpp\wiis
    wks direct_costs[2],aa67,\vpp\wiis
    wks direct_costs[3],aa68,\vpp\wiis
```

```
wks direct_costs[4],aa69,\vpp\wiis
wks direct_costs[5],aa70,\vpp\wiis
wks direct_costs[6],aa71,\vpp\wiis
wks direct_costs[7],aa72,\vpp\wiis
d_costs_corps = (direct_costs[1])
d_costs_public = (direct_costs[3])
d_costs_s_f_s = (direct_costs[4])
d_costs_interdept = (direct_costs[5])
d_costs_music = (direct_costs[6])
d_costs_state = (direct_costs[7])
wks indirect_costs,aa74,\vpp\wiis !    wks bs_info,b1..b14,\vpp\wiabbs
wks bs_info[1],b1,\vpp\wiabbs
wks bs_info[2],b2,\vpp\wiabbs
wks bs_info[3],b3,\vpp\wiabbs
wks bs_info[4],b4,\vpp\wiabbs
wks bs_info[5],b5,\vpp\wiabbs
wks bs_info[6],b6,\vpp\wiabbs
wks bs_info[7],b7,\vpp\wiabbs
wks bs_info[8],b8,\vpp\wiabbs
wks bs_info[9],b9,\vpp\wiabbs
wks bs_info[10],b10,\vpp\wiabbs
wks bs_info[11],b11,\vpp\wiabbs
wks bs_info[12],b12,\vpp\wiabbs
wks bs_info[13],b13,\vpp\wiabbs
wks bs_info[14],b14,\vpp\wiabbs
wks t_assets_3,d9,\vpp\wiabbs
wks inv_3_ago,d7,\vpp\wiabbs
last_yr_inventory = (bs_info[7])
last_yr_equip_value = (bs_info[8])
last_yr_due_to = (bs_info[12])
last_yr_reserves = (bs_info[13])
wks dth_info,d1..d14,\vpp\wiabbs
pwks dth_info,e1..e14,\vpp\wiabbs
reset dth_info
wks cth_info,c1..c14,\vpp\wiabbs
pwks cth_info,d1..d14,\vpp\wiabbs
wks inv_2_ago,c7,\vpp\wiabbs
wks due_to_2_ago,c12,\vpp\wiabbs
wks equip_2_ago,c8,\vpp\wiabbs
reset cth_info
pwks bs_info,c1..c14,\vpp\wiabbs
reset bs_info
wks dth_info,d1..d85,\vpp\wiabis
pwks dth_info,e1..e85,\vpp\wiabis
reset dth_info
wks cth_info,c1..c85,\vpp\wiabis
pwks cth_info,d1..d85,\vpp\wiabis

wks net_income_2,c65,\vpp\wiabis
wks gross_profit_2,c16,\vpp\wiabis
wks mil_rev_2,c9,\vpp\wiabis
wks cost_uniforms_2,c15,\vpp\wiabis
wks total_oper_exp_2,c64,\vpp\wiabis
wks other_rev_2,c24,\vpp\wiabis
wks corps_e_to_r_2,c79,\vpp\wiabis
wks public_e_to_r_2,c81,\vpp\wiabis
wks s_f_s_e_to_r_2,c82,\vpp\wiabis
wks interdept_e_to_r_2,c83,\vpp\wiabis
wks music_e_to_r_2,c84,\vpp\wiabis
wks state_e_to_r_2,c85,\vpp\wiabis

reset cth_info
wks bth_info,b1..b85,\vpp\wiabis
pwks bth_info,c1..c85,\vpp\wiabis


wks corps_e_to_r_last,b79,\vpp\wiabis
wks public_e_to_r_last,b81,\vpp\wiabis
wks s_f_s_e_to_r_last,b82,\vpp\wiabis
wks interdept_e_to_r_last,b83,\vpp\wiabis
wks music_e_to_r_last,b84,\vpp\wiabis
wks state_e_to_r_last,b85,\vpp\wiabis
wks net_income_last,b65,\vpp\wiabis
wks gross_profit_last,b16,\vpp\wiabis
wks mil_rev_last,b9,\vpp\wiabis
wks cost_uniforms_last,b15,\vpp\wiabis
wks total_oper_exp_last,b64,\vpp\wiabis
wks other_rev_last,b24,\vpp\wiabis
wks personal_last,b36,\vpp\wiabis
```

```
    reset bth_info
    wks cth,c1..c16,\vpp\wica
    pwks cth,d1..d16,\vpp\wica
    wks bth,b1..b16,\vpp\wica
    pwks bth,c1..c16,\vpp\wica
    corps_e_to_r_this = (d_costs_corps / t_mil_rev)
    public_e_to_r_this = (d_costs_public / public_rev)
    s_f_s_e_to_r_this = (d_costs_s_f_s / s_f_s_rev)
    interdept_e_to_r_this = (d_costs_interdept / interdept_rev)
    music_e_to_r_this = (d_costs_music / music_rev)
    state_e_to_r_this = (d_costs_state / state_rev)

    wks ca_weight_last,b13,\vpp\wica
    wks ca_weight_2,c13,\vpp\wica
    wks ca_ave_last,b14,\vpp\wica
    wks ca_ave_2,c14,\vpp\wica
    wks corps_comp_last,b15,\vpp\wica
    wks corps_comp_2,c15,\vpp\wica
    wks t_num_cadets_last,b16,\vpp\wica
    wks t_num_cadets_2,c16,\vpp\wica

    current_year = (date + 1)
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    pwks current_year,b1,\vpp\wiabis
    pwks cuent_year,b1,\vpp\wiabbs
    display "To do this analysis, the value of ending inventory is needed for June (current_year)."
    pdisplay " "
    pdisplay "To do this analysis, the value of ending inventory is needed for June (current_year)."
    pdisplay " "
    find inventory_ques
    pdisplay "Can you separate the value of ending inventory into issued and unissued?"
    pdisplay " "
    pdisplay "yes       no"
    find inventory_value
    find new_equip_value
    find ca_update
    find update_abis
    find new_reserves;

Rule inventory_value_found If inventory_ques = yes Then inventory_value = found
    find issued_inv
    pdisplay " "
    pdisplay "What is the value of issued inventory?"
    pdisplay " "
    find unissued_inv
    pdisplay " "
    pdisplay "What is the value of unissued inventory?"
    pdisplay " "
    put_inventory[1] = (issued_inv)
    put_inventory[2] = (unissued_inv)
    total_inv = (issued_inv + unissued_inv)
    pwks put_inventory, b5..b6,\vpp\wiabbs
    inv_for_is = (issued_inv + unissued_inv)
    pwks total_inv,b14,\vpp\wiabis;


Rule inventory_value_found If inventory_ques = no Then inventory_value = found
    find total_inv
    pdisplay " "
    pdisplay "Then, what is the value of total inventory?"
    pdisplay " "
    pwks total_inv,b7,\vpp\wiabbs
    pwks total_inv,b14,\vpp\wiabis;

Rule equip_purchases_no If equip = 0 Then new_equip_value = found;

Rule equip_purchases_yes If equip > 0 Then new_equip_value = found
    find the_display
    find equip_number
    pdisplay " "
    pdisplay "How many pieces of equipment does this include?"
    pdisplay " "
    z = (equip_number)
    whiletrue z > 0 then
      find equip_name
      pdisplay " "
      pdisplay "Give an appropriate title to a peice, using underscores to connect words."
      pdisplay " "
      new_equip[1] = (equip_name)
```

```
    find cost
    pdisplay " "
    pdisplay "How much did the {equip_name} cost?"
    pdisplay " "
    find purchase_month
    pdisplay " "
    pdisplay "Please enter the number for the month in which the {equip_name} was"
    pdisplay "purchased.  Use 1 for January, 2 for February, ....12 for December."
    pdisplay " "
    find purchase_year
    find useful_life
    pdisplay " "
    pdisplay "How many years is the {equip_name} expected to last?"
    pdisplay " "
    new_equip[2] = (cost)
    new_equip[3] = (purchase_month)
    new_equip[4] = (purchase_year)
    new_equip[5] = (useful_life)
    find to_put
    z = (z - 1)
    reset equip_name
    reset cost
    reset purchase_month
    reset purchase_year
    reset useful_life
    reset to_put
    reset new_equip
  end
  find total_equip_value;

Rule find_the_display If todo = ratio_analysis Then the_display = found
  display "Equipment purchases during the year have totalled ${equip}."
  display " "
  display "After each prompt, please give the applicable information for each piece of"
  display "equipment separately."
  pdisplay " "
  pdisplay "Equipment purchases during the year have totalled ${equip}."
  pdisplay " "
  pdisplay "After each prompt, please give the applicable information for each piece of"
  pdisplay "equipment separately."
  pdisplay " ";


Rule find_current_values If todo = ratio_analysis Then total_equip_value = found
  wks vbl,a4..e25,\vpp\wiequi

  y = 1
  x = (vbl[y])
  total_current_value = 0
  total_depreciation = 0

! this next loop calculates the depreciation and current value for each ! piece of equipment, and assigns those with positive values (i.e., those
! which aren't paid off) to an array to later be summed.
  whiletrue vbl[y] < > unknown then
    reset if_neg
    reset year_to_use
    y2 = (y + 1)
    y3 = (y + 2)
    y4 = (y + 3)
    y5 = (y + 4)
    dep_cost = (vbl[y2])
    month = (vbl[y3])
    yr = (vbl[y4])
    life = (vbl[y5])
    find year_to_use
    depr = (dep_cost / life)
    current_value = (dep_cost - (depr * (current_year + 1 - year_te)))
    find if_neg
    y = (y + 5)
    x = (vbl[y])
  end
  pwks total_current_value,b8,\vpp\wiabbs
  pwks total_depreciation,b63,\vpp\wiabis;

Rule purchase_year_of_equip If purchase_month < = 6 Then purchase_year = (current_year);

Rule purchase_year_of_equip If purchase_month > 6 Then purchase_year = (date);

Rule look_for_empty_equip_rows If todo = ratio_analysis Then wks empty?,a11..a25,\vpp\wiequi
```

```
    to_put = found
    find put_it
    reset put_it;

Rule put_equip_in_empty_row If empty?[1] = unknown Then pwks new_equip,a11..e11,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[2] = unknown Then pwks new_equip,a12..e12,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[3] = unknown Then pwks new_equip,a13..e13,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[4] = unknown Then pwks new_equip,a14..e14,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[5] = unknown Then pwks new_equip,a15..e15,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[6] = unknown Then pwks new_equip,a16..e16,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[7] = unknown Then pwks new_equip,a17..e17,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[8] = unknown Then pwks new_equip,a18..e18,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[9] = unknown Then pwks new_equip,a19..e19,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[10] = unknown Then pwks new_equip,a20..e20,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[11] = unknown Then pwks new_equip,a21..e21,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[12] = unknown Then pwks new_equip,a22..e22,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[13] = unknown Then pwks new_equip,a23..e23,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[14] = unknown Then pwks new_equip,a24..e24,\vpp\wiequi
    put_it = found;

Rule put_equip_in_empty_row If empty?[15] = unknown Then pwks new_equip,a25..e25,\vpp\wiequi
    put_it = found;

Rule year_to_use If month < = 6 Then year_to_use = (yr);

Rule year_to_use If month > 6 Then year_to_use = (yr + 1);

Rule if_neg If current_value < = 0 Then if_neg = found;

 Rule if_neg If current_value > 0 Then total_current_value = (total_current_value + current_value)
    total_depreciation = (total_depreciation + depr)
    if_neg = found;

Rule ca_update If todo = ratio_analysis Then ca_update = found
    display "Now a little information regarding the number of members in the corps and" display "commutation allowances is needed.
Please answer the questions after the prompts." display " "
    display "How many freshmen were enrolled in the corps of cadets during the year ending"

    pdisplay "Now a little information regarding the number of members in the corps and" pdisplay "commutation allowances is needed.
Please answer the questions after the prompts." pdisplay " "
    pdisplay "How many freshmen were enrolled in the corps of cadets during the year ending"
    pdisplay "June {current_year}?"
    pdisplay " "
    pdisplay "How many sophomores?"
    pdisplay " "
    pdisplay "How many juniors?"
    pdisplay " "
    pdisplay "How many seniors?"
    find num_fresh
    find num_soph
    find num_jun
    find num_sen
    corps_num[1] = (num_fresh)
    corps_num[2] = (num_soph)
```

```
    corps_num[3] = (num_jun)
    corps_num[4] = (num_sen)
    display "How much was the commutation allowance for freshmen during the year ending"
    pdisplay " "
    pdisplay "How much was the commutation allowance for freshmen during the year ending"
    pdisplay "June {current_year)?"
    pdisplay " "
    pdisplay "How much was it for sophomores?"
    pdisplay " "
    pdisplay "How much was it for juniors?"
    pdisplay " "
    pdisplay "How much was it for seniors?"
    pdisplay " "
    find ca_fresh
    find ca_soph
    find ca_jun
    find ca_sen
    corps_ca[1] = (ca_fresh)
    corps_ca[2] = (ca_soph)
    corps_ca[3] = (ca_jun)
    corps_ca[4] = (ca_sen)
    corps_comp_this1 = ((num_fresh*1) + (num_soph*2) + (num_jun*3) + (num_sen * 4))
    t_num_cadets_this = (num_fresh + num_soph + num_jun + num_sen)
    corps_comp_this = (corps_comp_this1 / t_num_cadets_this)
    pwks current_year,b1,\vpp\wica
    pwks corps_num,b8..b11,\vpp\wica
    pwks corps_ca,b3..b6,\vpp\wica
    ca_weight_this1 = ((num_fresh * ca_fresh) + (num_soph * ca_soph) + (num_jun * ca_jun) + (num_sen * ca_sen))
    ca_weight_this = (ca_weight_this1 / (num_fresh + num_soph + num_jun + num_sen))
    ca_ave_this = ((ca_fresh + ca_soph + ca_jun + ca_sen) / 4);

Rule update_abis If todo = ratio_analysis Then update_abis = found
    pwks mil_rev,b4..b8,\vpp\wiabis
    pwks last_yr_inventory,b12,\vpp\wiabis
    pwks cgs,b13,\vpp\wiabis
    pwks inv_for_is,b14,\vpp\wiabis
    pwks other_rev,b19..b24,\vpp\wiabis
    pwks personal,b28..b36,\vpp\wiabis
    pwks contractual,b38..b47,\vpp\wiabis
    pwks s_and_m,b49..b54,\vpp\wiabis
    pwks continuous,b56..b62,\vpp\wiabis
    pwks direct_costs,b68..b74,\vpp\wiabis
    pwks indirect_costs,b76,\vpp\wiabis;

Rule find_reserves If todo = ratio_analysis Then net_income_1 = (t_mil_rev - last_yr_inventory - cgs + total_inv + t_other_rev)
    net_income = (net_income_1 - t_personal - t_contract - t_s_and_m - t_contin - total_depreciation)
    gross_profit = (t_mil_rev - last_yr_inventory - cgs + total_inv)
    t_expenses1 = (last_yr_inventory + cgs - total_inv + t_personal + t_contract)
    t_expenses = (t_expenses1 + t_s_and_m + t_contin + total_depreciation)
    cost_uniforms_this = (last_yr_inventory + cgs - total_inv)
    wks equip,aa61,\vpp\wiis
    new_reserves = (last_yr_reserves + net_income)
    new_due_to = (total_inv + total_current_value - new_reserves)
    pwks new_reserves,b13,\vpp\wiabbs;

Rule calculate_current_ratios If todo = ratio_analysis Then current_ratio = (total_inv / new_due_to)
    current_ratio_last = (last_yr_inventory / last_yr_due_to)
    current_ratio_2 = (inv_2_ago / due_to_2_ago);

Rule calculate_ROAs If todo = ratio_analysis Then ROA = (net_income / ((total_inv + total_current_value + last_yr_inventory +
last_yr_equip_value)/2))
    ROA_last = (net_income_last / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago)/2))
    ROA_2 = (net_income_2 / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_gross_profit_ratios If todo = ratio_analysis Then gross_profit_ratio = (gross_profit / t_mil_rev)
    gross_profit_ratio_last = (gross_profit_last / mil_rev_last)
    gross_profit_ratio_2 = (gross_profit_2 / mil_rev_2);

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios If todo = ratio_analysis Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2))
    t_asset_turn_display = found;

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
```

```
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2))
    inv_turn_display = found;

Rule display_for_current_ratio If current_ratio < > unknown Then cls
    color = 11
    locate 2,30
    display "CURRENT RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,45
    format current_ratio, 5.3
    display "{current_ratio}"
    locate 8,35
    format current_ratio_last, 5.3
    display "{current_ratio_last}"
    locate 8,25
    format current_ratio_2, 5.3
    display "{current_ratio_2}"
    pdisplay " "
    pdisplay " "
    pdisplay "                    CURRENT RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                {c}      {b}      {a}"
    pdisplay " "
    pdisplay " "
    a = (current_ratio)
    b = (current_ratio_last)
    c = (current_ratio_2)
    pdisplay "                {c}      {b}      {a}"

    current_ratio_display = found
    find current_ratio_analysis;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio is a measure of the organization's ability to" display "meet its short_term financial obligations
as they fall due. A ratio " display "of 1.25 or better is considered 'acceptable' for the Tailor Shop. " locate 15,6 display "As can be seen
above, the current situation is not good. The" display "ratio is below its acceptable level for the most recent year, and also," display "is has
been declining for the past several years. This means that" display "other auxiliary enterprises are financing an increasing proportion of"
display "the Tailor Shop's operating expenses. ¬" pdisplay " " pdisplay " " pdisplay "    The current ratio is a measure of the organization's
ability to" pdisplay "meet its short_term financial obligations as they fall due. A ratio " pdisplay "of 1.25 or better is considered 'acceptable'
for the Tailor Shop. " pdisplay " " pdisplay "    As can be seen above, the current situation is not good. The" pdisplay "ratio is below its
acceptable level for the most recent year, and also," pdisplay "is has been declining for the past several years. This means that" pdisplay
"other auxiliary enterprises are financing an increasing proportion of" pdisplay "the Tailor Shop's operating expenses."
current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to
be satisfactory. However," display "it is declining over time which indicates that the other auxiliary " display "enterprises are financing an
increasing proportion of the Tailor " display "Shop's operating expenses. ¬" pdisplay " " pdisplay " " pdisplay "The current ratio was de-
signed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For "
pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present
current ratio exceeds the predefined" pdisplay "acceptable level, and thus is considered to be satisfactory. However," pdisplay "it is de-
clining over time which indicates that the other auxiliary " pdisplay "enterprises are financing an increasing proportion of the Tailor "
pdisplay "Shop's operating expenses."

    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > = 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the current situation looks very good. Not only" display "does the current ratio exceed the acceptable
level, but is is also " display "increasing over time. ¬" pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an or-
ganization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a
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ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the current situation looks very good. Not
only" pdisplay "does the current ratio exceed the acceptable level, but is is also " pdisplay "increasing over time."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present situation appears promising. " display "Although the current ratio has not yet reached its
acceptable level," display "it is moving in the right direction. Therefore, there is no need" display "for concern. ¬ " pdisplay " " pdisplay "
" pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when,
and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can
be seen above, the present situation appears promising. " pdisplay "Although the current ratio has not yet reached its acceptable level,"
pdisplay "it is moving in the right direction. Therefore, there is no need" pdisplay "for concern."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 12 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "The figures above show cause for concern. Not only is the current" display "ratio below its acceptable level, but it has also
decreased over the" display "past year. This decrease however, does not exhibit a trend over time. ¬ " pdisplay " " pdisplay " " pdisplay "The
current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall
due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "The figures above show
cause for concern. Not only is the current" pdisplay "ratio below its acceptable level, but it has also decreased over the" pdisplay "past year.
This decrease however, does not exhibit a trend over time."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio < = (current_ratio_last) and
  current_ratio_last > = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to
be satisfactory. There has" display "been a decline in the ratio over the past year, however, there appears" display "to be no trend in this
direction. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its
short_term financial obligations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'ac-
ceptable.' " pdisplay " " pdisplay "As can be seen above, the present current ratio exceeds the predefined" pdisplay "acceptable level, and
thus is considered to be satisfactory. There has" pdisplay "been a decline in the ratio over the past year, however, there appears" pdisplay
"to be no trend in this direction."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio < 1.25 Then locate 11,6
    color = 14 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio falls below the " display "predefined acceptable level, which is generally con-
sidered to be" display "unsatisfactory. However, it has improved over the past year. " display "Therefore, the situation should be closely
monitored to make " display "certain that it continues to move in the right direction. ¬ " pdisplay " " pdisplay " " pdisplay "The current ratio
was designed to measure an organization's ability to" pdisplay "meet its short_term financial obligations when, and as they fall due. For "
pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " " pdisplay "As can be seen above, the present
current ratio falls below the " pdisplay "predefined acceptable level, which is generally considered to be" pdisplay "unsatisfactory. How-
ever, it has improved over the past year. " pdisplay "Therefore, the situation should be closely monitored to make " pdisplay "certain that
it continues to move in the right direction."
    current_ratio_analysis = found;

Rule analyze_current_ratio If current_ratio > = (current_ratio_last) and
  current_ratio_last < = (current_ratio_2) and
  current_ratio > 1.25 Then locate 11,6
    color = 10 display "The current ratio was designed to measure an organization's ability to" display "meet its short_term financial ob-
ligations when, and as they fall due. For " display "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " display " " locate
15,6 display "As can be seen above, the present current ratio exceeds the predefined" display "acceptable level, and thus is considered to
be satisfactory. " display "Furthermore, it has increased over the past year leaving little " display "cause for concern. ¬ " pdisplay " "
pdisplay " " pdisplay "The current ratio was designed to measure an organization's ability to" pdisplay "meet its short_term financial obli-
gations when, and as they fall due. For " pdisplay "the Tailor Shop, a ratio of 1.25 or better is considered 'acceptable.' " pdisplay " "
pdisplay "As can be seen above, the present current ratio exceeds the predefined" pdisplay "acceptable level, and thus is considered to be
satisfactory. " pdisplay "Furthermore, it has increased over the past year leaving little " pdisplay "cause for concern."
    current_ratio_analysis = found;



! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;
```

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv: "Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for February, ...12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year}?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask ca_sen: "How much was it for seniors?";

plural: ca,put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num,bl_this,bs_last,bs_2_ago,is_this,is_last,is_2_ago; plural: mil_rev,other_rev,personal,s_and_m,contractual,continuous,direct_costs; plural: bs_info; bkcolor = 1;

```
execute; runtime; endoff; actions

color = 15 display "The system has just chained to a new knowledge base and files must be" display "loaded. Please be patient. You will be instructed when to continue." display " " loadfacts ratdata display "Press any key to examine the return on assets ratios.¬" find ROA_display savefacts ratdata chain pwirat4

;

!Rules Block

Rule calculate_ROAs If todo = ratio_analysis Then ROA = (net_income / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value)/2))
    ROA_last = (net_income_last / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago)/2))
    ROA_2 = (net_income_2 / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule ROA_display IF ROA < > unknown Then ROA_display = found
    cls
    color = 11
    locate 2,27
    display "RETURN ON ASSETS"
    locate 5,6 display "The Return on Assets ratio (ROA) is designed to measure how much" display "income is produced for each dollar of total assets held. In a profit" display "oriented organization, a high ROA is desirable. Since the primary" display "responsibility of the Tailor Shop is to provide a service, rather than" display "produce a profit, it does not necessarily strive for a high ROA. Rather," display "it should target a specific ROA. If net income is to be used only to" display "replace old equipment, than an ROA of around .004 is desirable. On the" display "other hand, if net income is also used to repay the amount borrowed from" display "other auxiliaries (say over a 10 year period), then an ROA of around .08" display "is desirable. In any case, the ROA should not be negative as a negative" display "ROA indicates a net loss on the operations."
    locate 18,20 display "Press any key to see the ROA analysis¬"

    locate 2,27
    pdisplay " "
    pdisplay " "
    pdisplay "                    RETURN ON ASSETS"
    pdisplay " "
    pdisplay " " pdisplay "    The Return on Assets ratio (ROA) is designed to measure how much" pdisplay "income is produced for each dollar of total assets held. In a profit" pdisplay "oriented organization, a high ROA is desirable. Since the primary" pdisplay "responsibility of the Tailor Shop is to provide a service, rather than" pdisplay "produce a profit, it does not necessarily strive for a high ROA. Rather," pdisplay "it should target a specific ROA. If net income is to be used only to" pdisplay "replace old equipment, than an ROA of around .004 is desirable. On the" pdisplay "other hand, if net income is also used to repay the amount borrowed from" pdisplay "other auxiliaries (say over a 10 year period), then an ROA of around .08" pdisplay "is desirable. In any case, the ROA should not be negative as a negative" pdisplay "ROA indicates a net loss on the operations." pdisplay " " display "                    Press any key to see the ROA analysis"
    find rest_of_display_ROA;

Rule display_for_ROA If ROA < > unknown Then rest_of_display_ROA = found
    cls
    color = 11
    locate 2,29
    display "RETURN ON ASSETS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format ROA, 5.3
    display "{ROA}"
    locate 8,34
    format ROA_last, 5.3
    display "{ROA_last}"
    locate 8,24
    format ROA_2, 5.3
    display "{ROA_2}"
    pdisplay " "
    pdisplay " "
    pdisplay "                    RETURN ON ASSETS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                {c}      {b}      {a}"
    pdisplay " "
    pdisplay " "
    a = (ROA)
    b = (ROA_last)
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```
    c = (ROA_2)
    pdisplay "                    (c)      (b)      (a)"
    find ROA_analysis;

Rule analyze_ROA_0_a If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The ROA" display "is negative and doesn't apear to be
improving. Thus, the Tailor Shop is" display "operating in the red and has to depend on other auxiliary enterprises to" display "help pay
its operating expenses.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. The ROA" pdisplay
"is negative and doesn't apear to be improving. Thus, the Tailor Shop is" pdisplay "operating in the red and has to depend on other aux-
iliary enterprises to" pdisplay "help pay its operating expenses.";


Rule analyze_ROA_0_b If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.004 and
  ROA > = 0 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The small" display "size of the ROA indicates that al-
though income is positive, it is not large" display "enough to cover expected demand for equipment replacements. Furthermore," display
"the situation does not appear to be improving.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not
good. The small" pdisplay "size of the ROA indicates that although income is positive, it is not large" pdisplay "enough to cover expected
demand for equipment replacements. Furthermore," pdisplay "the situation does not appear to be improving.";

Rule analyze_ROA_0_c If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA < = 0.09 and
  ROA > = .004 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level. This indicates
that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display "being de-
creased.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an ac-
ceptable level. This indicates that reserves for future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries
are" pdisplay "being decreased.";

Rule analyze_ROA_0_d If ROA < = (ROA_last * 1.02) and
  ROA > = (ROA_last * .98) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only
high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display
"the amount owed to other auxiliary enterprises. It should be noted however," display "that it is possible that the the Tailor Shop will be
accused of gouging " display "its customers since the ROA is so high." pdisplay " " pdisplay " " pdisplay "As can be seen above, the present
situation is quite good. The ROA" pdisplay "indicates that income is not only high enough to cover expected demand for" pdisplay
"equipment replacement, but can also contribute substantially to decreasing" pdisplay "the amount owed to other auxiliary enterprises. It
should be noted however," pdisplay "that it is possible that the the Tailor Shop will be accused of gouging " pdisplay "its customers since
the ROA is so high.";

Rule analyze_ROA_1_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue"
display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by {mil_dec}% over the past
year. Meanwhile, costs incurred for" display "salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by {personal_inc}% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is
quite bad. Not only" pdisplay "is the ROA negative, but it is decreasing over time. A glance at the income" pdisplay "statements will give
a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total re-
venue)" pdisplay "has decreased by {mil_dec}% over the past year. Meanwhile, costs incurred for" pdisplay "salaries and fringe benefits
(which generally make up around 60% of total" pdisplay "costs) have increased by {personal_inc}% over the past year.";

Rule analyze_ROA_1_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
```

format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by {mil_dec}% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the ROA negative, but it is decreasing over time. A glance at the income" pdisplay "statements will give a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has decreased by {mil_dec}% over the past year.";

```
Rule analyze_ROA_1_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
```

format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but it is decreasing over time. A glance at the income" display "statements will give a good indication of why this is happening. Costs" display "incurred for salaries and fringe benefits (which generally make up around" display "60 % of total costs) have increased by {personal_inc}% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the ROA negative, but it is decreasing over time. A glance at the income" pdisplay "statements will give a good indication of why this is happening. Costs" pdisplay "incurred for salaries and fringe benefits (which generally make up around" pdisplay "60 % of total costs) have increased by {personal_inc}% over the past year.";

```
Rule analyze_ROA_2_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
```

format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected" display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is happening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display "{mil_dec}% over the past year. Meanwhile, costs incurred for salaries and" display "fringe benefits (which generally make up around 60% of total costs) have" display "increased by {personal_inc}% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although" pdisplay "the ROA is positive, it is decreasing over time. Furthermore, its small size" pdisplay "indicates that the present rate of income is not enough to cover expected" pdisplay "demand for equipment replacements. A glance at the income statements will" pdisplay "give a good indication of why this is happening. Revenue from the corps" pdisplay "(which typically constitutes more than 75% of total revenue) has decreased by" pdisplay "{mil_dec}% over the past year. Meanwhile, costs incurred for salaries and" pdisplay "fringe benefits (which generally make up around 60% of total costs) have" pdisplay "increased by {personal_inc}% over the past year.";

```
Rule analyze_ROA_2_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
```

format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected" display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is happening. Revenue from the corps" display "(which typically constitutes more than 75% of total revenue) has decreased by" display "{mil_dec}% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although" pdisplay "the ROA is positive, it is decreasing over time. Furthermore, its small size" pdisplay "indicates that the present rate of income is not enough to cover expected" pdisplay "demand for equipment replacements. A glance at the income statements will" pdisplay "give a good indication of why this is happening. Revenue from the corps" pdisplay "(which typically constitutes more than 75% of total revenue) has decreased by" pdisplay "{mil_dec}% over the past year.";

```
Rule analyze_ROA_2_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
```

```
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the ROA positive, it
is decreasing over time. Furthermore, its small size" display "indicates that the present rate of income is not enough to cover expected"
display "demand for equipment replacements. A glance at the income statements will" display "give a good indication of why this is hap-
pening. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around 60% of total" display "costs)
have increased by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is
not good. Although" pdisplay "is the ROA positive, it is decreasing over time. Furthermore, its small size" pdisplay "indicates that the
present rate of income is not enough to cover expected" pdisplay "demand for equipment replacements. A glance at the income statements
will" pdisplay "give a good indication of why this is happening. Meanwhile, costs incurred" pdisplay "for salaries and fringe benefits (which
generally make up around 60% of total" pdisplay "costs) have increased by (personal_inc)% over the past year.";

Rule analyze_ROA_3_a If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically" display "constitutes 75% of total re-
venue) has decreased by (mil_dec)% over the past" display "year. Meanwhile, costs incurred for salaries and fringe benefits (which" dis-
play "generally make up around 60% of total costs) have increased by (personal_inc)%" display " over the past year.¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates
that reserves for future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being de-
creased. A word of caution however is in order. Note that the" pdisplay "ratio is decreasing over time. A glance at the income statements
will show" pdisplay "why this is happening. The revenue from the corps (which typically" pdisplay "constitutes 75% of total revenue) has
decreased by (mil_dec)% over the past" pdisplay "year. Meanwhile, costs incurred for salaries and fringe benefits (which" pdisplay "gen-
erally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay " over the past year.";

Rule analyze_ROA_3_b If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. The revenue from the corps (which typically " display "constitutes 75% of total re-
venue) has decreased by (mil_dec)% over ths past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation
is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for future equipment" pdisplay "purchases are being
built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of caution however is in order. Note that the" pdisplay
"ratio is decreasing over time. A glance at the income statements will show" pdisplay "why this is happening. The revenue from the corps
(which typically " pdisplay "constitutes 75% of total revenue) has decreased by (mil_dec)% over ths past year.";


Rule analyze_ROA_3_c If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio is decreasing over time. A glance at the income
statements will show" display "why this is happening. Costs incurred for salaries and fringe benefits " display "(which generally make up
around 60% of total costs) have increased by (personal_inc)%" display "over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can
be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for future
equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of caution
however, is in order. Note that the" pdisplay "ratio is decreasing over time. A glance at the income statements will show" pdisplay "why
this is happening. Costs incurred for salaries and fringe benefits " pdisplay "(which generally make up around 60% of total costs) have
increased by (personal_inc)%" pdisplay "over the past year.";
```

```
Rule analyze_ROA_4 If ROA < (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0.09 Then ROA_analysis = found
   locate 11,6
   color = 10 display "As can be seen above, the present situation is quite good. The ROA" display "indicates that income is not only
high enough to cover expected demand for" display "equipment replacement, but can also contribute substantially to decreasing" display
"the amount owed to other auxiliary enterprises. There are a couple of things" display "to note here however. First, the ROA is so high
that the Tailor Shop might" display "be accused of gouging its customers. And second, the ROA is decreasing" display "over time . This
may signal that income is decreasing, or it may signal" display "a concerted effort on the part of management to bring down prices to an"
display "'acceptable' level. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite good. The ROA"
pdisplay "indicates that income is not only high enough to cover expected demand for" pdisplay "equipment replacement, but can also
contribute substantially to decreasing" pdisplay "the amount owed to other auxiliary enterprises. There are a couple of things" pdisplay "to
note here however. First, the ROA is so high that the Tailor Shop might" pdisplay "be accused of gouging its customers. And second, the
ROA is decreasing" pdisplay "over time . This may signal that income is decreasing, or it may signal" pdisplay "a concerted effort on the
part of management to bring down prices to an" pdisplay "'acceptable' level.";


Rule analyze_ROA_5 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 Then ROA_analysis = found
   locate 11,6
   color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that ex-
penses exceed income. This means that the" display "Tailor Shop has to depend on the other auxiliaries to cover its operating" display
"expenses. On a positive note, the ROA is increasing over time, indicating " display "that improvements are being made. ¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the present situation is not good. The ROA is" pdisplay "negative which indicates that ex-
penses exceed income. This means that the" pdisplay "Tailor Shop has to depend on the other auxiliaries to cover its operating" pdisplay
"expenses. On a positive note, the ROA is increasing over time, indicating " pdisplay "that improvements are being made.";

Rule analyze_ROA_6 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = 0 and
  ROA <.004 Then ROA_analysis = found
   locate 11,6
   color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it is improving over time. At this point, it" display "is not earning enough to cover all of expected demand for equipment" display "re-
placement. However, if the current trend continues, they should be " display "able to do so in the future. ¬" pdisplay " " pdisplay " "
pdisplay "As can be seen above, the situation at the Tailor Shop is improving. " pdisplay "Although the ROA is quite low, it is improving
over time. At this point, it" pdisplay "is not earning enough to cover all of expected demand for equipment" pdisplay "replacement.
However, if the current trend continues, they should be " pdisplay "able to do so in the future.";

Rule analyze_ROA_7 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .004 and
  ROA <.09 Then ROA_analysis = found
   locate 11,6
   color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving
over time, but it falls in a very good region." display "An ROA in this region indicates that net income is sufficient to cover" display "ex-
pected demand for equipment replacement, and also to pay back some of the" display "debt owed to the other auxiliary enterprises. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is the ROA
improving over time, but it falls in a very good region." pdisplay "An ROA in this region indicates that net income is sufficient to cover"
pdisplay "expected demand for equipment replacement, and also to pay back some of the" pdisplay "debt owed to the other auxiliary en-
terprises.";

Rule analyze_ROA_8 If ROA > (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
   locate 11,6
   color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the ROA improving
over time, but it indicates that a substantial " display "dent can be made in its debt to other auxiliary enterprices. On the" display "negative
side, an ROA of this magnitude indicates that revenues greatly" display "exceed expenses which could be considered price gouging. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is the ROA
improving over time, but it indicates that a substantial " pdisplay "dent can be made in its debt to other auxiliary enterprices. On the"
pdisplay "negative side, an ROA of this magnitude indicates that revenues greatly" pdisplay "exceed expenses which could be considered
price gouging.";


Rule analyze_ROA_9_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
```

```
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
has decreased over the past year. A glance at the" display "income statements will give a good indication of why this is happening." display
"Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by (mil_dec)%. Meanwhile,
costs incurred for salaries" display "and fringe benefits (which generally make up around 60% of total costs) have" display "increased by
(personal_inc)%. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the
ROA negative, but has decreased over the past year. A glance at the" pdisplay "income statements will give a good indication of why this
is happening." pdisplay "Revenue from the corps (which typically constutes more than 75% of total" pdisplay "revenue) has decreased
by (mil_dec)%. Meanwhile, costs incurred for salaries" pdisplay "and fringe benefits (which generally make up around 60% of total costs)
have" pdisplay "increased by (personal_inc)%.";


Rule analyze_ROA_9_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has decreased by (mil_dec)%. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the ROA negative, but
it has decreased over the past year. A glance at" pdisplay "the income statements will give a good indication of why this is happening."
pdisplay "Revenue from the corps (which typically constututes more than 75% of total" pdisplay "revenue) has decreased by (mil_dec)%.";

Rule analyze_ROA_9_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the ROA negative, but
it has decreased over the past year. A glance at" display "the income statements will give a good indication of why this is happening."
display "Costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of total costs) have increased by
(personal_inc)% over the past" display "year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad.
Not only" pdisplay "is the ROA negative, but it has decreased over the past year. A glance at" pdisplay "the income statements will give
a good indication of why this is happening." pdisplay "Costs incurred for salaries and fringe benefits (which generally make up" pdisplay
"around 60% of total costs) have increased by (personal_inc)% over the past" pdisplay "year.";


Rule analyze_ROA_10_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%. Meanwhile, costs incurred for salaries and" display "fringe benefits (whidh generally make up around 60% of total costs)
have" display "increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present
situation is not good. Although" pdisplay "the ROA is positive, it has decreased over the past year. Furthermore, its" pdisplay "small size
indicates that the present rate of income is not enough to cover" pdisplay "expected demand for equipment replacements. A glance at the
income" pdisplay "statements will give a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically
constitutes more than 75% of total revenue)" pdisplay "has decreased by (mil_dec)%. Meanwhile, costs incurred for salaries and" pdisplay
"fringe benefits (whidh generally make up around 60% of total costs) have" pdisplay "increased by (personal_inc)% over the past year.";


Rule analyze_ROA_10_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
   locate 11,6
   color = 12
```

```
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by
(mil_dec)%. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although" pdisplay "the ROA
is positive, it has decreased over the past year. Furthermore, its" pdisplay "small size indicates that the present rate of income is not enough
to cover" pdisplay "expected demand for equipment replacements. A glance at the income" pdisplay "statements will give a good indication
of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has
decreased by (mil_dec)%.";


Rule analyze_ROA_10_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.004 and
  ROA > = 0 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the ROA is positive, it
has decreased over the past year. Furthermore, its" display "small size indicates that the present rate of income is not enough to cover"
display "expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this
is happening. Costs " display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of total costs) have
increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not
good. Although" pdisplay "the ROA is positive, it has decreased over the past year. Furthermore, its" pdisplay "small size indicates that
the present rate of income is not enough to cover" pdisplay "expected demand for equipment replacements. A glance at the income"
pdisplay "statements will give a good indication of why this is happening. Costs " pdisplay "incurred for salaries and fringe benefits (which
generally make up around 60%" pdisplay "of total costs) have increased by (personal_inc)% over the past year.";


Rule analyze_ROA_11_a If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically constitues 75% of total
revenue) has decreased by (mil_dec)% over" display "the past year. Meanwhile, costs incurred for salaries and fringe benefits" display
"(which generally make up around 60% of total costs) have increased by (personal_inc)%" display "over the past year. ¬" pdisplay " "
pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates
that reserves for future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being de-
creased. A word of caution however is in order. Note that the" pdisplay "ratio has decreased over the past year. A glance at the income
statements" pdisplay "will show why this is happening. The revenue from the corps (which" pdisplay "typically constitues 75% of total re-
venue) has decreased by (mil_dec)% over" pdisplay "the past year. Meanwhile, costs incurred for salaries and fringe benefits" pdisplay
"(which generally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";


Rule analyze_ROA_11_b If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however, is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. The revenue from the corps (which" display "typically constitues 75% of
total revenue) has decreased by (mil_dec)% over" display "the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the
present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for future equipment" pdisplay
"purchases are being built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of caution however, is in order.
Note that the" pdisplay "ratio has decreased over the past year. A glance at the income statements" pdisplay "will show why this is hap-
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pening. The revenue from the corps (which" pdisplay "typically consititues 75% of total revenue) has decreased by (mil_dec)% over"
pdisplay "the past year.";


Rule analyze_ROA_11_c If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA < = 0.09 and
  ROA > = .004 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then ROA_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The ROA is" display "at an acceptable level.
This indicates that reserves for future equipment" display "purchases are being built, while the loans from other auxiliaries are" display
"being decreased. A word of caution however is in order. Note that the" display "ratio has decreased over the past year. A glance at the
income statements" display "will show why this is happening. Costs incurred for salaries and fringe" display "benefits (which generally
make up around 60% of total costs), have increased" display "by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay
"As can be seen above, the present situation is not bad. The ROA is" pdisplay "at an acceptable level. This indicates that reserves for
future equipment" pdisplay "purchases are being built, while the loans from other auxiliaries are" pdisplay "being decreased. A word of
caution however is in order. Note that the" pdisplay "ratio has decreased over the past year. A glance at the income statements" pdisplay
"will show why this is happening. Costs incurred for salaries and fringe" pdisplay "benefits (which generally make up around 60% of total
costs), have increased" pdisplay "by (personal_inc)% over the past year.";


Rule analyze_ROA_12 If ROA < (ROA_last) and
  ROA_last > (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The ROA is very high, which in-
dicates that a substantial dent can be made" display "in its debt to other auxiliary enterprises. Notice that the ROA has" display "decreased
over the past year. This may indicate a decline in income, or" display "it may indicate a concerted effort on the part of management to
bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into. ¬" pdisplay " " pdisplay " "
pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "The ROA is very high, which indicates that a
substantial dent can be made" pdisplay "in its debt to other auxiliary enterprises. Notice that the ROA has" pdisplay "decreased over the
past year. This may indicate a decline in income, or" pdisplay "it may indicate a concerted effort on the part of management to bring"
pdisplay "prices more in line with costs. If the former case is true, it should be" pdisplay "looked into.";


Rule analyze_ROA_13 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA < 0 Then ROA_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The ROA is" display "negative which indicates that net
income is also negative. This means that" display "the Tailor Shop is depending on the other auxiliaries to cover some of" display "its op-
erating expenses. On a positive note, the ROA has improved over the" display "past year indicating that improvements are being made. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The ROA is" pdisplay "negative which indicates
that net income is also negative. This means that" pdisplay "the Tailor Shop is depending on the other auxiliaries to cover some of"
pdisplay "its operating expenses. On a positive note, the ROA has improved over the" pdisplay "past year indicating that improvements
are being made.";


Rule analyze_ROA_14 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = 0 and
  ROA <.004 Then ROA_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the ROA is quite low,
it has improved over the past year. At this" display "point, it is not earning enough to cover all of expected demand for equipment" display
"replacement. However, if the current trend continues, they should be able to" display "do so in the future. ¬" pdisplay " " pdisplay " "
pdisplay "As can be seen above, the situation at the Tailor Shop is improving. " pdisplay "Although the ROA is quite low, it has improved
over the past year. At this" pdisplay "point, it is not earning enough to cover all of expected demand for equipment" pdisplay "replacement.
However, if the current trend continues, they should be able to" pdisplay "do so in the future.";


Rule analyze_ROA_15 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .004 and
  ROA <.09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The ROA falls within a very good
region indicating that net income is" display "sufficient to cover expected demand and also pay back some of the debt owed" display "to
other auxiliary enterprises. It should be noted however, that the ROA" display "has fallen over the past year. This indicates decreasing
earnings, and should" display "be checked into. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop
is not bad. " pdisplay "The ROA falls within a very good region indicating that net income is" pdisplay "sufficient to cover expected de-
mand and also pay back some of the debt owed" pdisplay "to other auxiliary enterprises. It should be noted however, that the ROA"
pdisplay "has fallen over the past year. This indicates decreasing earnings, and should" pdisplay "be checked into.";
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Rule analyze_ROA_16 If ROA > (ROA_last) and
  ROA_last < (ROA_2) and
  ROA > = .09 Then ROA_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the ROA improved
over the past year, but it also indicates that" display "a substantial dent can be made in their debt to other auxiliary enterprices." display
"On the negative side, an ROA of this magnitude indicates that revenues" display "greatly exceed expenses which could be considered price
gouging.¬ " pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only
has the ROA improved over the past year, but it also indicates that" pdisplay "a substantial dent can be made in their debt to other auxiliary
enterprices." pdisplay "On the negative side, an ROA of this magnitude indicates that revenues" pdisplay "greatly exceed expenses which
could be considered price gouging.";

Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule gross_profit_display IF gross_profit_ratio < > unknown Then cls
    color = 11
    locate 4,17
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 7,6 display "The Gross Profit Ratio was designed to measure the percentage of" display "each sales dollar remaining after the
cost of goods sold (cost of uniforms" display "issued) has been covered. In other words, this ratio indicates how much of" display "each
sales dollar is available to cover operating expenses. If operating" display "expenses are not being met, prices can be raised, or expenses
lowered, and" display "an increased gross profit ratio will result. For the Tailor Shop, this is" display "a good figure to watch to determine
what is happening with commutation" display "allowances, inventory, and 'bags' issued to cadets.¬ " cls locate 3,1 display "In the Tailor
Shop's situation, a change in the gross profit could" display "indicate;" locate 6,6 display "- a change in commutation allowances," locate
7,6 display "- a change in the 'mix' of cadets (i.e., freshmen vs." locate 8,8 display "sophomores vs. juniors vs. seniors)," locate 9,6 display
"- a change in the cost of uniforms," locate 10,6 display "- a change in the number of uniform items per 'bag' or" locate 11,8 display "in
their quality, or" locate 12,6 display "- an undervaluation or overvaluation in inventory." display " " display "With the above in mind, our
'expert' will perform its analysis. However," display "determining changes in the cost of individual uniform items or in their" display
"quality is beyond the scope of this system. Therefore, if one of these" display "has changed significantly, it should be taken into consid-
eration while " display "viewing the following analysis."
    locate 20,8 display "Press any key to see the Gross Profit Ratio analysis¬ "
    gross_profit_ratio_display = found
    find rest_of_display_gross_profit;

Rule display_for_GPR If gross_profit_ratio < > unknown Then rest_of_display_gross_profit = found
    cls
    color = 11
    locate 2,18
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format gross_profit_ratio, 5.3
    display "{gross_profit_ratio}"
    locate 8,34
    format gross_profit_ratio_last, 5.3
    display "{gross_profit_ratio_last}"
    locate 8,24
    format gross_profit_ratio_2, 5.3
    display "{gross_profit_ratio_2}"
    gpr_2_% = (.05 * gross_profit_ratio_2)
    gpr_last_% = (.05 * gross_profit_ratio_last)
    inc_weight_this = ((ca_weight_this - ca_weight_last) / ca_weight_last)
    inc_weight_last = ((ca_weight_last - ca_weight_2) / ca_weight_2)
    inc_ave_this = ((ca_ave_this - ca_ave_last) / ca_ave_last)
    inc_ave_last = ((ca_ave_last - ca_ave_2) / ca_ave_2)
    dec_weight_this = ((ca_weight_last - ca_weight_this) / ca_weight_last)
    dec_weight_last = ((ca_weight_2 - ca_weight_last) / ca_weight_2)
    dec_ave_this = ((ca_ave_last - ca_ave_this) / ca_ave_last)
    dec_ave_last = ((ca_ave_2 - ca_ave_last) / ca_ave_2)
    inc_corps_comp_this = ((corps_comp_this - corps_comp_last) / corps_comp_last)
    inc_corps_comp_last = ((corps_comp_last - corps_comp_2) / corps_comp_2)
    inc_t_num_cadets_this = ((t_num_cadets_this - t_num_cadets_last) / t_num_cadets_last)
    inc_t_num_cadets_last = ((t_num_cadets_last - t_num_cadets_2) / t_num_cadets_2)
    dec_corps_comp_this = ((corps_comp_last - corps_comp_this) / corps_comp_last)
    dec_corps_comp_last = ((corps_comp_2 - corps_comp_last) / corps_comp_2)
    dec_t_num_cadets_this = ((t_num_cadets_last - t_num_cadets_this) / t_num_cadets_last)
    dec_t_num_cadets_last = ((t_num_cadets_2 - t_num_cadets_last) / t_num_cadets_2)
    uniform_cost_per_cadet_this = (cost_uniforms_this / t_num_cadets_this)
    uniform_cost_per_cadet_last = (cost_uniforms_last / t_num_cadets_last)
    find gross_profit_ratio_analysis;
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Rule gross_profit_analysis_1 If gross_profit_ratio_last < (gross_profit_ratio_2 + gpr_2_%) and
  gross_profit_ratio_last > = (gross_profit_ratio_2 - gpr_2_%) and
  gross_profit_ratio < (gross_profit_ratio_last + gpr_last_%) and
  gross_profit_ratio > = (gross_profit_ratio_last - gpr_last_%) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6 display "As can be seen above, the gross profit ratio is not changing" display "significantly.  Unless management is intentionally trying to change it," display "this situation appears optimal."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend.  A determination of the cause reveals that several different" display "factors are causing this situation.  Average commutation allowances have" display "increased over the past year by (inc_ave_%)%.  Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased.  Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05

Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend.  A determination of the cause reveals that a couple of" display "different factors are causing this situation.  Average commutation allowances" display "have increased over the past year by (inc_ave_%)%.  Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend.  A determination of the cause reveals that a couple of" display "different factors are causing this situation.  Average commutation" display "allowances have increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend.  A determination of the cause reveals that a couple of" display "different factors are causing this situation.  The mix of cadets has become" display "more favorable, i.e., the proportion of upperclassmen in the corps has" display "increased.  Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend.  A determination of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
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    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_2_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downard trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "de-
creased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of
underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 *. 95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "dowwnard trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less fa-
vorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that average" display "commutation allowances have decreased over the past year by (dec_ave_%)%."
    locate 16,26 display "Press any key to continue¬";
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Rule gross_profit_analysis_3_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display
"beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "in-
creased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of
upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued."
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
```

```
    locate 16,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_4_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display
"decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display
"have decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the pro-
portion of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances
have decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display
"ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less
favorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in in-
ventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬";

Rule gross_profit_analysis_5_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that average" display "commutation allowances have decreased over the past year by (dec_ave_%)%."
    locate 16,26 display "Press any key to continue¬";
```

```
Rule gross_profit_analysis_5_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display
"corps has increased."
    locate 17,26 display "Press any key to continue¬";

Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or"
display "beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue¬";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June {current_year)?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; runtime; endoff; actions

color = 15 todo = ratio_analysis display "The system has just chained to a new knowledge base and files must be" display "loaded. Please
be patient. You will be instructed when to continue." display " " loadfacts ratdata display "Press any key to examine the gross profit ra-
tios.¬" find gross_profit_ratio_display chain pwirat3 ;

!rules block

Rule calculate_gross_profit_ratios If todo = ratio_analysis Then gross_profit_ratio = (gross_profit / t_mil_rev)
    gross_profit_ratio_last = (gross_profit_last / mil_rev_last)
    gross_profit_ratio_2 = (gross_profit_2 / mil_rev_2);


Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule gross_profit_display IF gross_profit_ratio < > unknown Then cls
    color = 11
    locate 4,17
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 7,6 display "The Gross Profit Ratio was designed to measure the percentage of" display "each sales dollar remaining after the
cost of goods sold (cost of uniforms" display "issued) has been covered. In other words, this ratio indicates how much of" display "each
sales dollar is available to cover operating expenses. If operating" display "expenses are not being met, prices can be raised, or expenses
lowered, and" display "an increased gross profit ratio will result. For the Tailor Shop, this is" display "a good figure to watch to determine
what is happening with commutation" display "allowances, inventory, and 'bags' issued to cadets.¬" cls locate 3,1 display "In the Tailor
Shop's situation, a change in the gross profit could" display "indicate;" locate 6,6 display "- a change in commutation allowances," locate
7,6 display "- a change in the 'mix' of cadets (i.e., freshmen vs." locate 8,8 display "sophomores vs. juniors vs. seniors)," locate 9,6 display
"- a change in the cost of uniforms," locate 10,6 display "- a change in the number of uniform items per 'bag' or" locate 11,8 display "in
their quality, or" locate 12,6 display "- an undervaluation or overvaluation in inventory." display " " display "With the above in mind, our
'expert' will perform its analysis. However," display "determining changes in the cost of individual uniform items or in their" display
"quality is beyond the scope of this system. Therefore, if one of these" display "has changed significantly, it should be taken into consid-
eration while " display "viewing the following analysis."
    locate 20,8 display "Press any key to see the Gross Profit Ratio analysis¬"


    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "                    GROSS PROFIT RATIO ON CADET UNIFORMS"
    pdisplay " "
    pdisplay " " pdisplay "      The Gross Profit Ratio was designed to measure the percentage of" pdisplay "each sales dollar remaining
after the cost of goods sold (cost of uniforms" pdisplay "issued) has been covered. In other words, this ratio indicates how much of"
pdisplay "each sales dollar is available to cover operating expenses. If operating" pdisplay "expenses are not being met, prices can be
raised, or expenses lowered, and" pdisplay "an increased gross profit ratio will result. For the Tailor Shop, this is" pdisplay "a good figure
to watch to determine what is happening with commutation" pdisplay "allowances, inventory, and 'bags' issued to cadets." pdisplay " "
pdisplay " " pdisplay " " pdisplay "In the Tailor Shop's situation, a change in the gross profit could" pdisplay "indicate;" pdisplay " "
pdisplay "      - a change in commutation allowances," pdisplay "      - a change in the 'mix' of cadets (i.e., freshmen vs." pdisplay "
sophomores vs. juniors vs. seniors)," pdisplay "      - a change in the cost of uniforms," pdisplay "      - a change in the number of uniform
items per 'bag' or" pdisplay "          in their quality, or" pdisplay "      - an undervaluation or overvaluation in inventory." pdisplay " "
pdisplay "With the above in mind, our 'expert' will perform its analysis. However," pdisplay "determining changes in the cost of individual
uniform items or in their" pdisplay "quality is beyond the scope of this system. Therefore, if one of these" pdisplay "has changed signif-
icantly, it should be taken into consideration while " pdisplay "viewing the following analysis." pdisplay " " pdisplay "      Press any key
to see the Gross Profit Ratio analysis"

    gross_profit_ratio_display = found
    find rest_of_display_gross_profit;

Rule display_for_GPR If gross_profit_ratio < > unknown Then rest_of_display_gross_profit = found
    cls
    color = 11
    locate 2,18
    display "GROSS PROFIT RATIO ON CADET UNIFORMS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format gross_profit_ratio, 5.3
    display "{gross_profit_ratio}"
    locate 8,34
    format gross_profit_ratio_last, 5.3
    display "{gross_profit_ratio_last}"
    locate 8,24
    format gross_profit_ratio_2, 5.3
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```
display "(gross_profit_ratio_2)"

pdisplay " "
pdisplay " "
pdisplay " "
locate 2,18
pdisplay "                    GROSS PROFIT RATIO ON CADET UNIFORMS"
pdisplay " "
pdisplay " "
locate 5,45
a = (current_year)
locate 5,35
b = (last_year)
locate 5,25
c = (year_2_ago)
pdisplay "                    (c)       (b)       (a)"
pdisplay " "
pdisplay " "
a = (gross_profit_ratio)
b = (gross_profit_ratio_last)
c = (gross_profit_ratio_2)
pdisplay "                    (c)       (b)       (a)"

gpr_2_% = (.05 * gross_profit_ratio_2)
gpr_last_% = (.05 * gross_profit_ratio_last)
inc_weight_this = ((ca_weight_this - ca_weight_last) / ca_weight_last)
inc_weight_last = ((ca_weight_last - ca_weight_2) / ca_weight_2)
inc_ave_this = ((ca_ave_this - ca_ave_last) / ca_ave_last)
inc_ave_last = ((ca_ave_last - ca_ave_2) / ca_ave_2)
dec_weight_this = ((ca_weight_last - ca_weight_this) / ca_weight_last)
dec_weight_last = ((ca_weight_2 - ca_weight_last) / ca_weight_2)
dec_ave_this = ((ca_ave_last - ca_ave_this) / ca_ave_last)
dec_ave_last = ((ca_ave_2 - ca_ave_last) / ca_ave_2)
inc_corps_comp_this = ((corps_comp_this - corps_comp_last) / corps_comp_last)
inc_corps_comp_last = ((corps_comp_last - corps_comp_2) / corps_comp_2)
inc_t_num_cadets_this = ((t_num_cadets_this - t_num_cadets_last) / t_num_cadets_last)
inc_t_num_cadets_last = ((t_num_cadets_last - t_num_cadets_2) / t_num_cadets_2)
dec_corps_comp_this = ((corps_comp_last - corps_comp_this) / corps_comp_last)
dec_corps_comp_last = ((corps_comp_2 - corps_comp_last) / corps_comp_2)
dec_t_num_cadets_this = ((t_num_cadets_last - t_num_cadets_this) / t_num_cadets_last)
dec_t_num_cadets_last = ((t_num_cadets_2 - t_num_cadets_last) / t_num_cadets_2)
uniform_cost_per_cadet_this = (cost_uniforms_this / t_num_cadets_this)
uniform_cost_per_cadet_last = (cost_uniforms_last / t_num_cadets_last)
find gross_profit_ratio_analysis;

Rule gross_profit_analysis_1 If gross_profit_ratio_last < (gross_profit_ratio_2 + gpr_2_%) and
  gross_profit_ratio_last > = (gross_profit_ratio_2 - gpr_2_%) and
  gross_profit_ratio < (gross_profit_ratio_last + gpr_last_%) and
  gross_profit_ratio > = (gross_profit_ratio_last - gpr_last_%) Then gross_profit_ratio_analysis = found
    color = 10
    locate 11,6 display "As can be seen above, the gross profit ratio is not changing" display "significantly. Unless management is intentionally trying to change it," display "this situation appears optimal."
    locate 16,26 display "Press any key to continue→" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is not changing" pdisplay "significantly. Unless management is intentionally trying to change it," pdisplay "this situation appears optimal."
pdisplay " " display "                    Press any key to continue";

Rule gross_profit_analysis_2_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 20,26 display "Press any key to continue→" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on a definite" pdisplay "upward trend. A determination of the cause reveals that several different" pdisplay "factors are causing this situation. Average commutation allowances have" pdisplay "increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased. Furthermore, there has been a misvaluation in inventory" pdisplay "(either ending inventory has been overvalued or beginning inventory has been" pdisplay "undervalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_2_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
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```
  inc_corps_comp_this > 0.05

Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion
of upperclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situ-
ation. Average commutation allowances" pdisplay "have increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets"
pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_2_c If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situ-
ation. Average commutation" pdisplay "allowances have increased over the past year by (inc_ave_%)%." pdisplay "Furthermore, there
has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory has been" pdisplay
"undervalued.)" pdisplay " " pdisplay "                    Press any key to continue";

Rule gross_profit_analysis_2_d If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more fa-
vorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situ-
ation. The mix of cadets has become" pdisplay "more favorable, i.e., the proportion of upperclassmen in the corps has" pdisplay "increased.
Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory
has been" pdisplay "undervalued.)" pdisplay " " pdisplay "                    Press any key to continue¬";


Rule gross_profit_analysis_2_e If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
    locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is
on a definite" pdisplay "upward trend. A determination of the cause reveals that average" pdisplay "commutation allowances have in-
creased over the past year by (inc_ave_%)%." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_2_f If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
  inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps
has increased."
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that the mix of cadets" pdisplay "has become more favorable, i.e.,
the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "                    Press any key to continue";

Rule gross_profit_analysis_2_g If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
  gross_profit_ratio_last > (gross_profit_ratio_2 *1.05) and
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  uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    inc_ave_% = (inc_ave_this * 100)
    format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "upward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display
"beginning inventory has been undervalued.)"
    locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "upward trend. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory (either
ending inventory has been overvalued or" pdisplay "beginning inventory has been undervalued.)" pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_3_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downard trend. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "de-
creased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion of
underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downard trend. A determination of the cause reveals that several different" pdisplay "factors are causing this situation.
Average commutation allowances have" pdisplay "decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" pdisplay
"has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased. Furthermore, there has been a
misvaluation in inventory" pdisplay "(either ending inventory has been undervalued or beginning inventory has been" pdisplay "overval-
ued.)" pdisplay " " pdisplay "                    Press any key to continue";

Rule gross_profit_analysis_3_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 *. 95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation allowances" pdisplay "have decreased over the past year by (dec_ave_%)%. Meanwhile, the mix of
cadets" pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " "
pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_3_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have
decreased over the past year by (dec_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation" pdisplay "allowances have decreased over the past year by (dec_ave_%)%." pdisplay "Furthermore,
there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning inventory has been"
pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_3_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less fa-
vorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inven-
tory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
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    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "dowwnard trend. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. The mix of cadets has become" pdisplay "less favorable, i.e., the proportion of underclassmen in the corps has" pdisplay "in-
creased. Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning
inventory has been" pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_3_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
   gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
   dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
     color = 12
     locate 11,6
     dec_ave_% = (dec_ave_this * 100)
     format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that average" display "commutation allowances have decreased over the past year by (dec_ave_%)%."
     locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that average" pdisplay "commutation allowances have de-
creased over the past year by (dec_ave_%)%." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_3_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
   gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
   dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
     color = 12
     locate 11,6
     dec_ave_% = (dec_ave_this * 100)
     format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display "corps
has increased."
     locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that the mix of cadets" pdisplay "has become less favorable,
i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "                    Press any key to
continue";


Rule gross_profit_analysis_3_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
   gross_profit_ratio_last < (gross_profit_ratio_2 * .95) and
   uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
     color = 12
     locate 11,6
     dec_ave_% = (dec_ave_this * 100)
     format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio is on a definite" display "downward trend. A determination
of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or" display
"beginning inventory has been overvalued.)"
     locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio is on
a definite" pdisplay "downward trend. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory (ei-
ther ending inventory has been undervalued or" pdisplay "beginning inventory has been overvalued.)" pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_4_a If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
   inc_ave_this > 0.05 and
   inc_corps_comp_this > 0.05 and
   uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) Then gross_profit_ratio_analysis = found
     color = 12
     locate 11,6
     inc_ave_% = (inc_ave_this * 100)
     format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display "in-
creased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of
upperclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending in-
ventory has been overvalued or beginning inventory has been" display "undervalued.)"
     locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
increased over" pdisplay "the past year. A determination of the cause reveals that several different" pdisplay "factors are causing this situ-
ation. Average commutation allowances have" pdisplay "increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets"
pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased. Furthermore, there has
been a misvaluation in inventory" pdisplay "(either ending inventory has been overvalued or beginning inventory has been" pdisplay
"undervalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_4_b If gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
   inc_ave_this > 0.05 and
   inc_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
     color = 12
     locate 11,6
     inc_ave_% = (inc_ave_this * 100)
     format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination
of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display "have
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increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased."
locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situation. Average commutation allowances" pdisplay "have increased over the past year by (inc_ave_%)%. Meanwhile, the mix of cadets" pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_c **If** gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
inc_ave_this > 0.05 and
uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) **Then** gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances have increased over the past year by (inc_ave_%)%." display "Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued."
locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situation. Average commutation" pdisplay "allowances have increased over the past year by (inc_ave_%)%." pdisplay "Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory has been" pdisplay "undervalued." pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_d **If** gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
inc_corps_comp_this > 0.05 and
uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) **Then** gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "more favorable, i.e., the proportion of upperclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in inventory (either" display "ending inventory has been overvalued or beginning inventory has been" display "undervalued.)"
locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this situation. The mix of cadets has become" pdisplay "more favorable, i.e., the proportion of upperclassmen in the corps has" pdisplay "increased. Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been overvalued or beginning inventory has been" pdisplay "undervalued.)" pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_e **If** gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
inc_ave_this > 0.05 **Then** gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that average" display "commutation allowances have increased over the past year by (inc_ave_%)%."
locate 16,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that average" pdisplay "commutation allowances have increased over the past year by (inc_ave_%)%." pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_f **If** gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
inc_corps_comp_this > 0.05 **Then** gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that the mix of cadets" display "has become more favorable, i.e., the proportion of upperclassmen in the" display "corps has increased."
locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that the mix of cadets" pdisplay "has become more favorable, i.e., the proportion of upperclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay " Press any key to continue";

Rule gross_profit_analysis_4_g **If** gross_profit_ratio > (gross_profit_ratio_last * 1.05) and
uniform_cost_per_cadet_this < (uniform_cost_per_cadet_last * .95) **Then** gross_profit_ratio_analysis = found
color = 12
locate 11,6
inc_ave_% = (inc_ave_this * 100)
format inc_ave_%, 5.2 display "As can be seen above, the gross profit ratio has increased over" display "the past year. A determination of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been overvalued or" display "beginning inventory has been undervalued.)"
locate 17,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has increased over" pdisplay "the past year. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory

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(either ending inventory has been overvalued or" pdisplay "beginning inventory has been undervalued.)" pdisplay " " pdisplay "
Press any key to continue";


Rule gross_profit_analysis_5_a If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that several different" display "factors are causing this situation. Average commutation allowances have" display
"decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the proportion
of underclassmen in the" display "corps has increased. Furthermore, there has been a misvaluation in inventory" display "(either ending
inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 20,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that several different" pdisplay "factors are causing this situ-
ation. Average commutation allowances have" pdisplay "decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets"
pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased. Furthermore, there has
been a misvaluation in inventory" pdisplay "(either ending inventory has been undervalued or beginning inventory has been" pdisplay
"overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_b If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation allowances" display
"have decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of cadets" display "has become less favorable, i.e., the pro-
portion of underclassmen in the" display "corps has increased."
    locate 18,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation allowances" pdisplay "have decreased over the past year by {dec_ave_%}%. Meanwhile, the mix of
cadets" pdisplay "has become less favorable, i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " "
pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_c If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. Average commutation" display "allowances
have decreased over the past year by {dec_ave_%}%." display "Furthermore, there has been a misvaluation in inventory (either" display
"ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. Average commutation" pdisplay "allowances have decreased over the past year by {dec_ave_%}%." pdisplay "Furthermore,
there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning inventory has been"
pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_d If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that a couple of" display "different factors are causing this situation. The mix of cadets has become" display "less
favorable, i.e., the proportion of underclassmen in the corps has" display "increased. Furthermore, there has been a misvaluation in in-
ventory (either" display "ending inventory has been undervalued or beginning inventory has been" display "overvalued.)"
    locate 19,26 display "Press any key to continue¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that a couple of" pdisplay "different factors are causing this
situation. The mix of cadets has become" pdisplay "less favorable, i.e., the proportion of underclassmen in the corps has" pdisplay "in-
creased. Furthermore, there has been a misvaluation in inventory (either" pdisplay "ending inventory has been undervalued or beginning
inventory has been" pdisplay "overvalued.)" pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_e If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_ave_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
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```
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that average" display "commutation allowances have decreased over the past year by {dec_ave_%}%."
    locate 16,26 display "Press any key to continue→" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that average" pdisplay "commutation allowances have de-
creased over the past year by {dec_ave_%}%." pdisplay " " pdisplay "                    Press any key to continue";


Rule gross_profit_analysis_5_f If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  dec_corps_comp_this > 0.05 Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that the mix of cadets" display "has become less favorable, i.e., the proportion of underclassmen in the" display
"corps has increased."
    locate 17,26 display "Press any key to continue→" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that the mix of cadets" pdisplay "has become less favorable,
i.e., the proportion of underclassmen in the" pdisplay "corps has increased." pdisplay " " pdisplay "                    Press any key to
continue";

Rule gross_profit_analysis_5_g If gross_profit_ratio < (gross_profit_ratio_last * .95) and
  uniform_cost_per_cadet_this > (uniform_cost_per_cadet_last * 1.05) Then gross_profit_ratio_analysis = found
    color = 12
    locate 11,6
    dec_ave_% = (dec_ave_this * 100)
    format dec_ave_%, 5.2 display "As can be seen above, the gross profit ratio has decreased over" display "the past year. A determi-
nation of the cause reveals that there has been a" display "misvaluation in inventory (either ending inventory has been undervalued or"
display "beginning inventory has been overvalued.)"
    locate 17,26 display "Press any key to continue→" pdisplay " " pdisplay " " pdisplay "As can be seen above, the gross profit ratio has
decreased over" pdisplay "the past year. A determination of the cause reveals that there has been a" pdisplay "misvaluation in inventory
(either ending inventory has been undervalued or" pdisplay "beginning inventory has been overvalued.)" pdisplay " " pdisplay "
Press any key to continue";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June {current_year}?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
```

```
execute; runtime;

actions

color = 15 todo = ratio_analysis display "The system has just chained to a new knowledge base and files must be" display "loaded. Please
be patient. You will be instructed when to continue." display " " find get_data display "Press any key to examine the expense to revenue
ratios. ¬" find exp_to_rev_display find exp_to_rev_mkt_seg_display savefacts ratdata chain pwirat2 ;


Rule get_necessary_data If get_data = unknown Then get_data = found !    wks ca,b13..d16,\vpp\wica
    wks ca[1],b13,\vpp\wica
    wks ca[2],c13,\vpp\wica
    wks ca[3],d13,\vpp\wica
    wks ca[4],b14,\vpp\wica
    wks ca[5],c14,\vpp\wica
    wks ca[6],d14,\vpp\wica
    wks ca[7],b15,\vpp\wica
    wks ca[8],c15,\vpp\wica
    wks ca[9],d15,\vpp\wica
    wks ca[10],b16,\vpp\wica
    wks ca[11],c16,\vpp\wica
    wks ca[12],d16,\vpp\wica
    ca_weight_this = (ca[1])
    ca_weight_last = (ca[2])
    ca_weight_2 = (ca[3])
    ca_ave_this = (ca[4])
    ca_ave_last = (ca[5])
    ca_ave_2 = (ca[6])
    corps_comp_this = (ca[7])
    corps_comp_last = (ca[8])
    corps_comp_2 = (ca[9])
    t_num_cadets_this = (ca[10])
    t_num_cadets_last = (ca[11])
    t_num_cadets_2 = (ca[12])
    reset ca !    wks bs_this,b1..b14,\vpp\wiabbs
    wks bs_this[1],b1,\vpp\wiabbs
    wks bs_this[2],b2,\vpp\wiabbs
    wks bs_this[3],b3,\vpp\wiabbs
    wks bs_this[4],b4,\vpp\wiabbs
    wks bs_this[5],b5,\vpp\wiabbs
    wks bs_this[6],b6,\vpp\wiabbs
    wks bs_this[7],b7,\vpp\wiabbs
    wks bs_this[8],b8,\vpp\wiabbs
    wks bs_this[9],b9,\vpp\wiabbs
    wks bs_this[10],b10,\vpp\wiabbs
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    wks bs_last[1],c1,\vpp\wiabbs
    wks bs_last[2],c2,\vpp\wiabbs
    wks bs_last[3],c3,\vpp\wiabbs
    wks bs_last[4],c4,\vpp\wiabbs
    wks bs_last[5],c5,\vpp\wiabbs
    wks bs_last[6],c6,\vpp\wiabbs
    wks bs_last[7],c7,\vpp\wiabbs
    wks bs_last[8],c8,\vpp\wiabbs
    wks bs_last[9],c9,\vpp\wiabbs
    wks bs_last[10],c10,\vpp\wiabbs
    wks bs_last[11],c11,\vpp\wiabbs
    wks bs_last[12],c12,\vpp\wiabbs
    wks bs_last[13],c13,\vpp\wiabbs
    wks bs_last[14],c14,\vpp\wiabbs !    wks bs_2_ago,d1..d14,\vpp\wiabbs
    wks bs_2_ago[1],d1,\vpp\wiabbs
    wks bs_2_ago[2],d2,\vpp\wiabbs
    wks bs_2_ago[3],d3,\vpp\wiabbs
    wks bs_2_ago[4],d4,\vpp\wiabbs
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    wks bs_2_ago[10],d10,\vpp\wiabbs
    wks bs_2_ago[11],d11,\vpp\wiabbs
    wks bs_2_ago[12],d12,\vpp\wiabbs
    wks bs_2_ago[13],d13,\vpp\wiabbs
    wks bs_2_ago[14],d14,\vpp\wiabbs
```

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wks t_assets_3,e9,\vpp\wiabbs
wks inv_3_ago,e7,\vpp\wiabbs !    wks is_this,b1..b85,\vpp\wiabis
 wks is_this[1],b1,\vpp\wiabis
 wks is_this[2],b2,\vpp\wiabis
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!  wks is_2_ago_a,d79..d85,\vpp\wiabis
wks is_2_ago_a[1],d79,\vpp\wiabis
wks is_2_ago_a[2],d80,\vpp\wiabis
wks is_2_ago_a[3],d81,\vpp\wiabis
wks is_2_ago_a[4],d82,\vpp\wiabis
wks is_2_ago_a[5],d83,\vpp\wiabis
wks is_2_ago_a[6],d84,\vpp\wiabis
wks is_2_ago_a[7],d85,\vpp\wiabis
current_year = (bs_this[1])
last_year = (current_year - 1)
year_2_ago = (current_year - 2)
total_inv = (bs_this[7])
last_yr_inventory = (bs_last[7])
inv_2_ago = (bs_2_ago[7])
new_due_to = (bs_this[12])
last_yr_due_to = (bs_last[12])
due_to_2_ago = (bs_2_ago[12])
net_income = (is_this[65])
net_income_last = (is_last[65])
net_income_2 = (is_2_ago[65])
total_current_value = (bs_this[8])
last_yr_equip_value = (bs_last[8])
equip_2_ago = (bs_2_ago[8])
gross_profit = (is_this[16])
gross_profit_last = (is_last[16])
gross_profit_2 = (is_2_ago[16])
t_mil_rev = (is_this[9])
mil_rev_last = (is_last[9])
mil_rev_2 = (is_2_ago[9])
t_expenses = (is_this[15] + is_this[64])
cost_uniforms_this = (is_this[15])
cost_uniforms_last = (is_last[15])
cost_uniforms_2 = (is_2_ago[15])
total_oper_exp_last = (is_last[64])
total_oper_exp_2 = (is_2_ago[64])
t_other_rev = (is_this[24])
other_rev_last = (is_last[24])
other_rev_2 = (is_2_ago[24])
t_personal = (is_this[36])
personal_last = (is_last[36])
corps_e_to_r_this = (is_this[79])
public_e_to_r_this = (is_this[81])
s_f_s_e_to_r_this = (is_this[82])
interdept_e_to_r_this = (is_this[83])
music_e_to_r_this = (is_this[84])
state_e_to_r_this = (is_this[85])
corps_e_to_r_last = (is_last[79])
public_e_to_r_last = (is_last[81])
s_f_s_e_to_r_last = (is_last[82])
interdept_e_to_r_last = (is_last[83])
music_e_to_r_last = (is_last[84])
state_e_to_r_last = (is_last[85])
corps_e_to_r_2 = (is_2_ago_a[1])
public_e_to_r_2 = (is_2_ago_a[3])
s_f_s_e_to_r_2 = (is_2_ago_a[4])
interdept_e_to_r_2 = (is_2_ago_a[5])
music_e_to_r_2 = (is_2_ago_a[6])
state_e_to_r_2 = (is_2_ago_a[7])
reset bs_this
reset bs_last
reset bs_2_ago
reset is_this
reset is_last
```

```
    reset is_2_ago;

Rule calculate_exp_to_rev_ratios If todo = ratio_analysis Then exp_to_rev_ratio = (t_expenses / (t_mil_rev + t_other_rev))
    exp_to_rev_ratio_last = ((cost_uniforms_last + total_oper_exp_last) / (mil_rev_last + other_rev_last))
    exp_to_rev_ratio_2 = ((cost_uniforms_2 + total_oper_exp_2) / (mil_rev_2 + other_rev_2));

Rule calculate_t_asset_turn_ratios

If todo = ratio_analysis

Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2));

Rule exp_to_rev_display IF exp_to_rev_ratio < > unknown Then exp_to_rev_display = found
    cls
    color = 11
    locate 2,27
    display "EXPENSE TO REVENUE RATIO"
    locate 4,6 display "The expense to revenue ratio was designed to measure how much of each" display "revenue dollar is consumed by
expenses. The primary responsibility of" display "the Tailor Shop is to provide a service, rather than to produce a" display "profit. How-
ever, given the level of service provided and the prices" display "charged, it should strive for a low expense to revenue ratio. If net" display
"income is to be used only to replace old equipment, then an expense to " display "revenue ratio of around .995 is desirable. On the other
hand, if net" display "income is also to be used to repay the amount borrowed from other" display "auxiliaries (say over a 10 year period),
then a ratio of around .93 is" display "desirable. In any case, the expense to revenue ratio should be less than" display "1, since a ratio
greater than 1 indicates that expenses exceed revenues."
    locate 19,13 display "Press any key to see the Expense to Revenue analysis ¬ "

    pdisplay " "
    pdisplay " "
    locate 2,27
    pdisplay "                    EXPENSE TO REVENUE RATIO"
    pdisplay " "
    locate 4,6 pdisplay "    The expense to revenue ratio was designed to measure how much of each" pdisplay "revenue dollar is consumed
by expenses. The primary responsibility of" pdisplay "the Tailor Shop is to provide a service, rather than to produce a" pdisplay "profit.
However, given the level of service provided and the prices" pdisplay "charged, it should strive for a low expense to revenue ratio. If net"
pdisplay "income is to be used only to replace old equipment, then an expense to " pdisplay "revenue ratio of around .995 is desirable.
On the other hand, if net" pdisplay "income is also to be used to repay the amount borrowed from other" pdisplay "auxiliaries (say over a
10 year period), then a ratio of around .93 is" pdisplay "desirable. In any case, the expense to revenue ratio should be less than" pdisplay
"1, since a ratio greater than 1 indicates that expenses exceed revenues." pdisplay " " pdisplay "          Press any key to see the Expense
to Revenue analysis"

    find rest_of_display_e_to_r;

Rule display_for_exp_to_rev If exp_to_rev_ratio < > unknown Then rest_of_display_e_to_r = found
    cls
    color = 11
    locate 2,25
    display "EXPENSE TO REVENUE RATIOS"
    locate 5,45
    display "{current_year}"
    locate 5,35
    display "{last_year}"
    locate 5,25
    display "{year_2_ago}"
    locate 8,44
    format exp_to_rev_ratio, 5.3
    display "{exp_to_rev_ratio}"
    locate 8,34
    format exp_to_rev_ratio_last, 5.3
    display "{exp_to_rev_ratio_last}"
    locate 8,24
    format exp_to_rev_ratio_2, 5.3
    display "{exp_to_rev_ratio_2}"


    pdisplay " "
    pdisplay " "
    locate 2,25
    pdisplay "                    EXPENSE TO REVENUE RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
```

```
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                    (c)      (b)      (a)"
    pdisplay " "
    pdisplay " "
    a = (exp_to_rev_ratio)
    b = (exp_to_rev_ratio_last)
    c = (exp_to_rev_ratio_2)
    pdisplay "                    (c)      (b)      (a)"

    find e_to_r_analysis;

Rule analyze_exp_to_rev_0_a If exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is quite bad. The expense" display "to revenue ratio is greater than 1
and does not apear to be improving. Thus," display "the Tailor Shop is operating in the red and counting on other auxiliary" display "en-
terprises to help pay its operating expenses. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad.
The expense" pdisplay "to revenue ratio is greater than 1 and does not apear to be improving. Thus," pdisplay "the Tailor Shop is operating
in the red and counting on other auxiliary" pdisplay "enterprises to help pay its operating expenses.";


Rule analyze_exp_to_rev_0_b If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last * .999) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the present situation is not good. The size" display "size of the expense to revenue ratio
indicates that although income is" display "positive, it is not large enough to cover expected demand for equipment" display "replacements.
Futhermore, the situation does not appear to be improving. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situ-
ation is not good. The size" pdisplay "size of the expense to revenue ratio indicates that although income is" pdisplay "positive, it is not
large enough to cover expected demand for equipment" pdisplay "replacements. Futhermore, the situation does not appear to be improv-
ing.";

Rule analyze_exp_to_rev_0_c If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_last * .999) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable
level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from" display "other auxiliaries
are being decreased. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay
"to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the
loans from" pdisplay "other auxiliaries are being decreased.";


Rule analyze_exp_to_rev_0_d If exp_to_rev_ratio < = (exp_to_rev_ratio_last * 1.001) and
  exp_to_rev_ratio > = (exp_to_rev_ratio_last_last * .999) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "It should be noted however, that it is possible that the the
Tailor Shop will" display "be accused of gouging its customers since the ratio is so low. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen
above, the present situation is quite good. The expense" pdisplay "to revenue ratio indicates that income is not only high enough to cover"
pdisplay "expected demand for equipment replacement, but can also contribute" pdisplay "substantially to decreasing the amount owed to
other auxiliary enterprises." pdisplay "It should be noted however, that it is possible that the the Tailor Shop will" pdisplay "be accused
of gouging its customers since the ratio is so low.";


Rule analyze_exp_to_rev_ratio_1_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year." display "Meanwhile, costs incurred for salaries and fringe benefits (which generally" display "make up
around 60% of total costs) have increased by (personal_inc)% over" display "the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can
be seen above, the present situation is quite bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but it is increasing
over" pdisplay "time. A glance at the income statements will give a good indication of why" pdisplay "this is happening. Revenue from
the corps (which typically constitutes more" pdisplay "than 75% of total revenue) has decreased by (mil_dec)% over the past year."
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pdisplay "Meanwhile, costs incurred for salaries and fringe benefits (which generally" pdisplay "make up around 60% of total costs) have
increased by (personal_inc)% over" pdisplay "the past year.";


Rule analyze_exp_to_rev_ratio_1_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Revenue from the corps (which typically constitutes more" display "than 75% of total revenue) has decreased by
(mil_dec)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only"
pdisplay "is the expense to revenue ratio greater than 1, but it is increasing over" pdisplay "time. A glance at the income statements will
give a good indication of why" pdisplay "this is happening. Revenue from the corps (which typically constitutes more" pdisplay "than 75%
of total revenue) has decreased by (mil_dec)% over the past year.";


Rule analyze_exp_to_rev_ratio_1_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it is increasing over" display "time. A glance at the income statements will give a good indication of why" display
"this is happening. Costs incurred for salaries and fringe benefits (which" display "generally make up around 60 % of total costs) have in-
creased by (personal_inc)%" display "over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation
is quite bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but it is increasing over" pdisplay "time. A glance at the
income statements will give a good indication of why" pdisplay "this is happening. Costs incurred for salaries and fringe benefits (which"
pdisplay "generally make up around 60 % of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";


Rule analyze_exp_to_rev_ratio_2_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why
this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased
by (mil_dec)% over the past year. Meanwhile, costs incurred" display "for salaries and fringe benefits (which generally make up around
60% of total" display "costs) have increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen
above, the present situation is not good. Although" pdisplay "the expense to revenue ratio is less than 1, it is increasing over time."
pdisplay "Furthermore, its size indicates that the present rate of income is not enough" pdisplay "to cover expected demand for equipment
replacements. A glance at the income" pdisplay "statements will give a good indication of why this is happening. Revenue" pdisplay "from
the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has decreased by (mil_dec)% over the past year.
Meanwhile, costs incurred" pdisplay "for salaries and fringe benefits (which generally make up around 60% of total" pdisplay "costs) have
increased by (personal_inc)% over the past year.";


Rule analyze_exp_to_rev_ratio_2_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display
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"to cover expected demand for equipment replacements. A glance at the income" display "statements will give a good indication of why this is happening. Revenue" display "from the corps (which typically constitutes more than 75% of total revenue)" display "has decreased by (mil_dec)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although" pdisplay "the expense to revenue ratio is less than 1, it is increasing over time." pdisplay "Furthermore, its size indicates that the present rate of income is not enough" pdisplay "to cover expected demand for equipment replacements. A glance at the income" pdisplay "statements will give a good indication of why this is happening. Revenue" pdisplay "from the corps (which typically constitutes more than 75% of total revenue)" pdisplay "has decreased by (mil_dec)% over the past year.";

Rule analyze_exp_to_rev_ratio_2_c **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
exp_to_rev_ratio > = 0.995 and
exp_to_rev_ratio < = 1 and
t_mil_rev > = (mil_rev_last) and
t_personal > (personal_last) **Then** e_to_r_analysis = found
locate 11,6
color = 12
find mil_dec
find personal_inc
format mil_dec, 4.1
format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "is the expense to revenue ratio is less than 1, it is increasing over time." display "Furthermore, its size indicates that the present rate of income is not enough" display "to cover expected demand for equipment replacements. A glance at the income" display "statementw will give a good indication of why this is happening. Meanwhile," display "costs incurred for salaries and fringe benefits (which generally make up" display "around 60% of total costs) have increased by (personal_inc)% over the past" display "year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although" pdisplay "is the expense to revenue ratio is less than 1, it is increasing over time." pdisplay "Furthermore, its size indicates that the present rate of income is not enough" pdisplay "to cover expected demand for equipment replacements. A glance at the income" pdisplay "statementw will give a good indication of why this is happening. Meanwhile," pdisplay "costs incurred for salaries and fringe benefits (which generally make up" pdisplay "around 60% of total costs) have increased by (personal_inc)% over the past" pdisplay "year.";

Rule analyze_exp_to_rev_ratio_3_a **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
exp_to_rev_ratio > = 0.93 and
exp_to_rev_ratio < = .995 and
t_mil_rev < (mil_rev_last) and
t_personal > (personal_last) **Then** e_to_r_analysis = found
locate 11,6
color = 14
find mil_dec
find personal_inc
format mil_dec, 4.1
format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" display "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is increasing over time. A glance at the income" display "statements will show why this is happening. The revenue from the corps" display "(which typically constitutes 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. Meanwhile, costs incurred for salaries and fringe" display "benefits (which generally make up around 60% of total costs) have increased" display "by (personal_inc)% over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio is increasing over time. A glance at the income" pdisplay "statements will show why this is happening. The revenue from the corps" pdisplay "(which typically constitutes 75% of total revenue) has decreased by (mil_dec)%" pdisplay "over the past year. Meanwhile, costs incurred for salaries and fringe" pdisplay "benefits (which generally make up around 60% of total costs) have increased" pdisplay "by (personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_3_b **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
exp_to_rev_ratio > = 0.93 and
exp_to_rev_ratio < = .995 and
t_mil_rev < (mil_rev_last) and
t_personal < (personal_last) **Then** e_to_r_analysis = found
locate 11,6
color = 14
find mil_dec
find personal_inc
format mil_dec, 4.1
format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" display "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio is decreasing over time. A glance at the income " display "statements will show why this is happening. The revenue from the corps" display "(which typically constitures 75% of total revenue) has decreased by (mil_dec)%" display "over the past year.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio is decreasing over time. A glance at the income " pdisplay "statements will show why this is happening. The revenue from the corps" pdisplay "(which typically constitures 75% of total revenue) has decreased by (mil_dec)%" pdisplay "over the past year.";

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Rule analyze_exp_to_rev_ratio_3_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio. > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio is decreasing over time. A
glance at the income" display "statements will show why this is happening. Costs incurred for salaries and" display "fringe benefits (which
generally make up around 60% of total costs) have" display "increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay "
" pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This
indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being
decreased. A word of caution however, is in order." pdisplay "Note that the ratio is decreasing over time. A glance at the income"
pdisplay "statements will show why this is happening. Costs incurred for salaries and" pdisplay "fringe benefits (which generally make up
around 60% of total costs) have" pdisplay "increased by (personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_4 If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 0.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the present situation is quite good. The expense" display "to revenue ratio indicates that
income is not only high enough to cover" display "expected demand for equipment replacement, but can also contribute" display "substan-
tially to decreasing the amount owed to other auxiliary enterprises." display "There are a couple of things to note here however. First, the
expense to" display "revenue ratio is so low that the Tailor Shop might be accused of gouging" display "its customers. And second, the ratio
is increaseing over time . This may" display "signal that income is decreasing, or it may signal a concerted effort on" display "the part of
management to bring down prices to an 'acceptable' level. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation
is quite good. The expense" pdisplay "to revenue ratio indicates that income is not only high enough to cover" pdisplay "expected demand
for equipment replacement, but can also contribute" pdisplay "substantially to decreasing the amount owed to other auxiliary enterprises."
pdisplay "There are a couple of things to note here however. First, the expense to" pdisplay "revenue ratio is so low that the Tailor Shop
might be accused of gouging" pdisplay "its customers. And second, the ratio is increaseing over time . This may" pdisplay "signal that in-
come is decreasing, or it may signal a concerted effort on" pdisplay "the part of management to bring down prices to an 'acceptable' level.";

Rule analyze_exp_to_rev_ratio_5 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 Then e_to_r_analysis = found
    locate 11,6
    color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1
which indicates that expenses exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries
to cover its operating expenses. On a positive note, the ratio" display "is decreasing over time, indicating that improvements are being
made. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The expense" pdisplay "to revenue
ratio is greater than 1 which indicates that expenses exceed" pdisplay "revenues. This means that the Tailor Shop is depending on the other"
pdisplay "auxiliaries to cover its operating expenses. On a positive note, the ratio" pdisplay "is decreasing over time, indicating that im-
provements are being made.";

Rule analyze_exp_to_rev_ratio_6 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is improving. " display "Although the expense to revenue
ratio is barely less than 1, it is" display "improving over time. At this point, it is not earning enough to cover" display "all of expected de-
mand for equipment replacement. However, if the current" display "trend continues, they should be able to do so in the future. ¬" pdisplay
" " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is improving. " pdisplay "Although the expense to revenue
ratio is barely less than 1, it is" pdisplay "improving over time. At this point, it is not earning enough to cover" pdisplay "all of expected
demand for equipment replacement. However, if the current" pdisplay "trend continues, they should be able to do so in the future.";

Rule analyze_exp_to_rev_ratio_7 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio >.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it falls" display "in a very good region. A ratio in this region indicates that net income is" display "sufficient
to cover expected demand for equipment replacement, and also to" display "pay back some of the debt owed to the other auxiliary enter-
prises. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is
the expense to revenue ratio improving over time, but it falls" pdisplay "in a very good region. A ratio in this region indicates that net in-
come is" pdisplay "sufficient to cover expected demand for equipment replacement, and also to" pdisplay "pay back some of the debt owed
to the other auxiliary enterprises.";
```

```
Rule analyze_exp_to_rev_ratio_8 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
   locate 11,6
   color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only is the expense to revenue
ratio improving over time, but it" display "indicates that a substantial dent can be made in its debt to other auxiliary" display "enterprises.
On the negative side, a ratio so small indicates that revenues" display "greatly exceed expenses which could be considered price gouging. ¬"
pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "Not only is the expense
to revenue ratio improving over time, but it" pdisplay "indicates that a substantial dent can be made in its debt to other auxiliary" pdisplay
"enterprises. On the negative side, a ratio so small indicates that revenues" pdisplay "greatly exceed expenses which could be considered
price gouging.";

Rule analyze_exp_to_rev_ratio_9_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but has increased over the" display "past year. A glance at the income statements will give a good indication of" dis-
play "why this is happening. Revenue from the corps (which typically constitutes" display "more than 75% of total revenue) has decreased
by (mil_dec)%. Meanwhile, costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display "of
total costs) have increased by (personal_inc)%. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite
bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but has increased over the" pdisplay "past year. A glance at the
income statements will give a good indication of" pdisplay "why this is happening. Revenue from the corps (which typically constitutes"
pdisplay "more than 75% of total revenue) has decreased by (mil_dec)%. Meanwhile, costs" pdisplay "incurred for salaries and fringe
benefits (which generally make up around 60%" pdisplay "of total costs) have increased by (personal_inc)%.";

Rule analyze_exp_to_rev_ratio_9_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal < = (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Revenue from the corps (which typically" display "constitutes more than 75% of total revenue) has decreased
by (mil_dec)%. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is quite bad. Not only" pdisplay "is the
expense to revenue ratio greater than 1, but it has increased over" pdisplay "the past year. A glance at the income statements will give a
good indication" pdisplay "of why this is happening. Revenue from the corps (which typically" pdisplay "constitutes more than 75% of total
revenue) has decreased by (mil_dec)%.";

Rule analyze_exp_to_rev_ratio_9_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
   find mil_dec
   find personal_inc
   format mil_dec, 4.1
   format personal_inc, 4.1 display "As can be seen above, the present situation is quite bad. Not only" display "is the expense to revenue
ratio greater than 1, but it has increased over" display "the past year. A glance at the income statements will give a good indication" display
"of why this is happening. Costs incurred for salaries and fringe benefits" display "(which generally make up around 60% of total costs)
have increased by (personal_inc)%" display "over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present
situation is quite bad. Not only" pdisplay "is the expense to revenue ratio greater than 1, but it has increased over" pdisplay "the past year.
A glance at the income statements will give a good indication" pdisplay "of why this is happening. Costs incurred for salaries and fringe
benefits" pdisplay "(which generally make up around 60% of total costs) have increased by (personal_inc)%" pdisplay "over the past year.";

Rule analyze_exp_to_rev_ratio_10_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
   locate 11,6
   color = 12
```

```
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
is less than 1, it has increased over the past year." display "Furthermore, its size indicates that the present rate of income is not" display
"enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indication
of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue) has
decreased by (mil_dec)%. Meanwhile, costs incurred for salaries" display "and fringe benefits (whidh generally make up around 60% of
total costs) have" display "increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above,
the present situation is not good. Although" pdisplay "the expense to revenue is less than 1, it has increased over the past year." pdisplay
"Furthermore, its size indicates that the present rate of income is not" pdisplay "enough to cover expected demand for equipment replace-
ments. A glance at" pdisplay "the income statements will give a good indication of why this is happening." pdisplay "Revenue from the
corps (which typically constitutes more than 75% of total" pdisplay "revenue) has decreased by (mil_dec)%. Meanwhile, costs incurred
for salaries" pdisplay "and fringe benefits (whidh generally make up around 60% of total costs) have" pdisplay "increased by
(personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_10_b If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 0 and
  t_mil_rev < (mil_rev_last) and
  t_personal < (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is" display
"not enough to cover expected demand for equipment replacements. A glance at" display "the income statements will give a good indi-
cation of why this is happening." display "Revenue from the corps (which typically constitutes more than 75% of total" display "revenue)
has decreased by (mil_dec)%. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. Although"
pdisplay "the expense to revenue ratio is less than 1, it has increased over the past" pdisplay "year. Furthermore, its size indicates that the
present rate of income is" pdisplay "not enough to cover expected demand for equipment replacements. A glance at" pdisplay "the income
statements will give a good indication of why this is happening." pdisplay "Revenue from the corps (which typically constitutes more than
75% of total" pdisplay "revenue) has decreased by (mil_dec)%.";

Rule analyze_exp_to_rev_ratio_10_c If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.995 and
  exp_to_rev_ratio < = 1 and
  t_mil_rev > = (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 12
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not good. Although" display "the expense to revenue
ratio is less than 1, it has increased over the past" display "year. Furthermore, its size indicates that the present rate of income is not" dis-
play "enough to cover expected demand for equipment replacements. A glance at the" display "income statements will give a good indi-
cation of why this is happening. Costs" display "incurred for salaries and fringe benefits (which generally make up around 60%" display
"of total costs) have increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the
present situation is not good. Although" pdisplay "the expense to revenue ratio is less than 1, it has increased over the past" pdisplay "year.
Furthermore, its size indicates that the present rate of income is not" pdisplay "enough to cover expected demand for equipment replace-
ments. A glance at the" pdisplay "income statements will give a good indication of why this is happening. Costs" pdisplay "incurred for
salaries and fringe benefits (which generally make up around 60%" pdisplay "of total costs) have increased by (personal_inc)% over the
past year.";

Rule analyze_exp_to_rev_ratio_11_a If exp_to_rev_ratio > (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
  exp_to_rev_ratio > = 0.93 and
  exp_to_rev_ratio < = .995 and
  t_mil_rev < (mil_rev_last) and
  t_personal > (personal_last) Then e_to_r_analysis = found
    locate 11,6
    color = 14
    find mil_dec
    find personal_inc
    format mil_dec, 4.1
    format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at
an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" dis-
play "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year.
A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically
constitues 75% of total revenue) has decreased by (mil_dec)%" display "over the past year. Meanwhile, costs incurred for salaries and
fringe" display "benefits (which generally make up around 60% of total costs) have increased by" display " (personal_inc)% over the past
year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio
```

is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio has increased over the past year. A glance at the" pdisplay "income statements will show why this is happening. The revenue from the" pdisplay "corps (which typically constitues 75% of total revenue) has decreased by (mil_dec)%" pdisplay "over the past year. Meanwhile, costs incurred for salaries and fringe" pdisplay "benefits (which generally make up around 60% of total costs) have increased by" pdisplay " (personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_11_b **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
exp_to_rev_ratio > = 0.93 and
exp_to_rev_ratio < = .995 and
t_mil_rev < (mil_rev_last) and
t_personal < (personal_last) **Then** e_to_r_analysis = found
locate 11,6
color = 14
find mil_dec
find personal_inc
format mil_dec, 4.1
format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" display "auxiliaries are being decreased. A word of caution however, is in order." display "Note that the ratio has decreased over the past year. A glance at the" display "income statements will show why this is happening. The revenue from the" display "corps (which typically consititues 75% of total revenue) has decreased by" display " (mil_dec)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however, is in order." pdisplay "Note that the ratio has decreased over the past year. A glance at the" pdisplay "income statements will show why this is happening. The revenue from the" pdisplay "corps (which typically consititues 75% of total revenue) has decreased by" pdisplay " (mil_dec)% over the past year.";

Rule analyze_exp_to_rev_ratio_11_c **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
exp_to_rev_ratio > = 0.93 and
exp_to_rev_ratio < = .995 and
t_mil_rev > = (mil_rev_last) and
t_personal > (personal_last) **Then** e_to_r_analysis = found
locate 11,6
color = 14
find mil_dec
find personal_inc
format mil_dec, 4.1
format personal_inc, 4.1 display "As can be seen above, the present situation is not bad. The expense" display "to revenue ratio is at an acceptable level. This indicates that reserves" display "for future equipment purchases are being built, while the loans from other" display "auxiliaries are being decreased. A word of caution however is in order." display "Note that the ratio has increased over the past year. A glance at the" display "income statements will show why this is happening. Costs incurred for" display "salaries and fringe benefits (which generally make up around 60% of total" display "costs), have increased by (personal_inc)% over the past year. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not bad. The expense" pdisplay "to revenue ratio is at an acceptable level. This indicates that reserves" pdisplay "for future equipment purchases are being built, while the loans from other" pdisplay "auxiliaries are being decreased. A word of caution however is in order." pdisplay "Note that the ratio has increased over the past year. A glance at the" pdisplay "income statements will show why this is happening. Costs incurred for" pdisplay "salaries and fringe benefits (which generally make up around 60% of total" pdisplay "costs), have increased by (personal_inc)% over the past year.";

Rule analyze_exp_to_rev_ratio_12 **If** exp_to_rev_ratio > (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last < (exp_to_rev_ratio_2) and
exp_to_rev_ratio < = .93 **Then** e_to_r_analysis = found
locate 11,6
color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "The expense to revenue ratio is quite low, indicating that a substantial " display "dent can be made in its debt to other auxiliary enterprises. Notice that the" display "ratio has ineased over the past year. This may indicate a decline in income," display "or it may indicate a concerted effort on the part of management to bring" display "prices more in line with costs. If the former case is true, it should be" display "looked into. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. " pdisplay "The expense to revenue ratio is quite low, indicating that a substantial " pdisplay "dent can be made in its debt to other auxiliary enterprises. Notice that the" pdisplay "ratio has ineased over the past year. This may indicate a decline in income," pdisplay "or it may indicate a concerted effort on the part of management to bring" pdisplay "prices more in line with costs. If the former case is true, it should be" pdisplay "looked into.";

Rule analyze_exp_to_rev_ratio_13 **If** exp_to_rev_ratio < (exp_to_rev_ratio_last) and
exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
exp_to_rev_ratio > 1 **Then** e_to_r_analysis = found
locate 11,6
color = 12 display "As can be seen above, the present situation is not good. The expense" display "to revenue ratio is greater than 1 which indicates that costs exceed" display "revenues. This means that the Tailor Shop is depending on the other" display "auxiliaries to cover some of its operating expenses. On a positive note," display "the ratio has decreased over the past year indicating that improvements" display "are being made. ¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the present situation is not good. The expense" pdisplay "to revenue ratio is greater than 1 which indicates that costs exceed" pdisplay "revenues. This means that the Tailor Shop is depending on the other" pdisplay "auxiliaries to cover some of its operating expenses. On a positive note," pdisplay "the ratio has decreased over the past year indicating that improvements" pdisplay "are being made.";

```
Rule analyze_exp_to_rev_ratio_14 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = 1 and
  exp_to_rev_ratio >.995 Then e_to_r_analysis = found
    locate 11,6
    color = 14 display "As can be seen above, the situation at the Tailor Shop is not too bad. " display "Although the expense to revenue
ratio is barely less than 1, it has improved" display "over the past year. At this point, the Tailor Shop is not earning enough to" display
"cover all of expected demand for equipment replacement. However, if the" display "current trend continues, they should be able to do so
in the future.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is not too bad. " pdisplay "Al-
though the expense to revenue ratio is barely less than 1, it has improved" pdisplay "over the past year. At this point, the Tailor Shop is
not earning enough to" pdisplay "cover all of expected demand for equipment replacement. However, if the" pdisplay "current trend con-
tinues, they should be able to do so in the future.";


Rule analyze_exp_to_rev_ratio_15 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .995 and
  exp_to_rev_ratio >.93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is not bad. " display "The expense to revenue ratio falls
within a very good region indicating" display "that net income is sufficient to cover expected demand and also pay back" display "some of
the debt owed to other auxiliary enterprises. It should be noted" display "however, that the ratio has increased over the past year. This
indicates" display "decreasing earnings, and should be checked into.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situ-
ation at the Tailor Shop is not bad. " pdisplay "The expense to revenue ratio falls within a very good region indicating" pdisplay "that net
income is sufficient to cover expected demand and also pay back" pdisplay "some of the debt owed to other auxiliary enterprises. It should
be noted" pdisplay "however, that the ratio has increased over the past year. This indicates" pdisplay "decreasing earnings, and should be
checked into.";


Rule analyze_exp_to_rev_ratio_16 If exp_to_rev_ratio < (exp_to_rev_ratio_last) and
  exp_to_rev_ratio_last > (exp_to_rev_ratio_2) and
  exp_to_rev_ratio < = .93 Then e_to_r_analysis = found
    locate 11,6
    color = 10 display "As can be seen above, the situation at the Tailor Shop is quite good. " display "Not only has the expense to re-
venue ratio improved over the past year, but" display "it also indicates that a substantial dent can be made in their debt to other" display
"auxiliary enterprises. On the negative side, a ratio this small indicates" display "that revenues greatly exceed expenses which could be
considered price gouging.¬" pdisplay " " pdisplay " " pdisplay "As can be seen above, the situation at the Tailor Shop is quite good. "
pdisplay "Not only has the expense to revenue ratio improved over the past year, but" pdisplay "it also indicates that a substantial dent can
be made in their debt to other" pdisplay "auxiliary enterprises. On the negative side, a ratio this small indicates" pdisplay "that revenues
greatly exceed expenses which could be considered price gouging.";


Rule mil_dec If todo = ratio_analysis Then mil_dec = (((mil_rev_last - t_mil_rev) / mil_rev_last) * 100);

Rule personal_inc If todo = ratio_analysis Then personal_inc = (((t_personal - Personal_last) / personal_last) * 100);

Rule exp_to_rev_mkt_seg_display IF corps_e_to_r_this < > unknown Then exp_to_rev_mkt_seg_display = found
    cls
    color = 11
    locate 3,27
    display "EXPENSE TO REVENUE RATIO"
    locate 5,30
    display "BY MARKET SEGMENT"
    locate 8,6 display "Expense to revenue ratios are also calculated for each market segment" display "of the Tailor Shop. These are very
useful as they show which market" display "segments are able to cover their individual expenses. It should be noted" display "however, that
overhead expenses are not included in any of these figures." display "Thus, if all segments showed a ratio of 1.0, the Tailor Shop would
not be" display "able to cover all of its expenses, due to overhead expenses not included" display "in the computations. Overhead expenses
for the Tailor Shop generally" display "constitute between 20% and 30% of total expenses, which is currently" display "between $30,000
and $60,000." locate 19,15 display "Press any key to see the Expense to Revenue ratios ¬"

    pdisplay " "
    pdisplay " "
    pdisplay " "
    locate 3,27
    pdisplay "                    EXPENSE TO REVENUE RATIO"
    pdisplay " "
    locate 5,30
    pdisplay "                      BY MARKET SEGMENT"
    pdisplay " "
    pdisplay " " pdisplay "     Expense to revenue ratios are also calculated for each market segment" pdisplay "of the Tailor Shop. These
are very useful as they show which market" pdisplay "segments are able to cover their individual expenses. It should be noted" pdisplay
"however, that overhead expenses are not included in any of these figures." pdisplay "Thus, if all segments showed a ratio of 1.0, the Tailor
Shop would not be" pdisplay "able to cover all of its expenses, due to overhead expenses not included" pdisplay "in the computations.
Overhead expenses for the Tailor Shop generally" pdisplay "constitute between 20% and 30% of total expenses, which is currently" pdisplay
"between $30,000 and $60,000." pdisplay " " pdisplay "                    Press any key to see the Expense to Revenue ratios"
    find rest_of_display_mkt_seg;

Rule display_for-mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_seg = found
    cls
```

```
    locate 2,25
    color = 11
    display "EXPENSE TO REVENUE RATIOS"
    locate 4,29
    display "BY MARKET SEGMENT"
    locate 7,12
    display "MARKET SEGMENT"
    locate 7,38
    display "{year_2_ago}"
    locate 7,48
    display "{last_year}"
    locate 7,58
    display "{current_year}"
    locate 9,12
    display "Corps"
    locate 10,12
    display "Public"
    locate 11,12
    display "Student/Faculty/Staff"
    locate 12,12
    display "Interdepartmental"
    locate 13,12
    display "Music Department"
    locate 14,12
    display "State Related"
    locate 17,20
    color = 12
    display "market segment not covering its expenses"
    locate 18,22
    color = 14
    display "market segment covering its expenses"
    locate 19,28
    color = 11
    display "* upward trend - not good"

    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "                    EXPENSE TO REVENUE RATIOS"
    pdisplay " "
    pdisplay "                      BY MARKET SEGMENT"
    pdisplay " "
    pdisplay " "
    a = (year_2_ago)
    b = (last_year)
    c = (current_year)
    pdisplay "          MARKET SEGMENT          (a)      (b)      (c)"
    pdisplay " "
    find rest_of_display_mkt_segs;

Rule display_for_mkt_seg If corps_e_to_r_this < > unknown Then rest_of_display_mkt_segs = found
    find corps_e_r_display_this
    find public_e_r_display_this
    find s_f_s_e_r_display_this
    find interdept_e_r_display_this
    find music_e_r_display_this
    find state_e_r_display_this
    find corps_e_r_display_last
    find public_e_r_display_last
    find s_f_s_e_r_display_last
    find interdept_e_r_display_last
    find music_e_r_display_last
    find state_e_r_display_last
    find corps_e_r_display_2
    find public_e_r_display_2
    find s_f_s_e_r_display_2
    find interdept_e_r_display_2
    find music_e_r_display_2
    find state_e_r_display_2
    find corps_star_display
    find public_star_display
    find s_f_s_star_display
    find interdept_star_display
    find music_star_display
    find state_star_display
    a = (corps_e_to_r_this)
    b = (corps_e_to_r_last)
    c = (corps_e_to_r_2)
    find p_corps_display
    a = (public_e_to_r_this)
```

```
    b = (public_e_to_r_last)
    c = (public_e_to_r_2)
    find p_public_display
    a = (s_f_s_e_to_r_this)
    b = (s_f_s_e_to_r_last)
    c = (s_f_s_e_to_r_2)
    find p_s_f_s_display
    a = (interdept_e_to_r_this)
    b = (interdept_e_to_r_last)
    c = (interdept_e_to_r_2)
    find p_interdept_display
    a = (music_e_to_r_this)
    b = (music_e_to_r_last)
    c = (music_e_to_r_2)
    find p_music_display
    a = (state_e_to_r_this)
    b = (state_e_to_r_last)
    c = (state_e_to_r_2)
    find p_state_display
    pdisplay " "
    pdisplay " "
    pdisplay "                    * upward trend - not good";

Rule pdisplay_corps_e_to_r

If a > (b) and
   b > (c) Then p_corps_display = found
     pdisplay "        Corps              (c)     (b)     (a)  *" else pdisplay "        Corps              (c)     (b)     (a)
";

Rule pdisplay_public_e_to_r

If a > (b) and
   b > (c) Then p_public_display = found
     pdisplay "        Public             (c)     (b)     (a)  *" else pdisplay "        Public             (c)     (b)     (a)
";

Rule pdisplay_s_f_s_e_to_r

If a > (b) and
   b > (c) Then p_s_f_s_display = found
     pdisplay "        Student/Faculty/Staff   (c)     (b)     (a)  *" else pdisplay "        Student/Faculty/Staff   (c)     (b)
(a) ";

Rule pdisplay_interdept_e_to_r

If a > (b) and
   b > (c) Then p_interdept_display = found
     pdisplay "        Interdepartmental       (c)     (b)     (a)  *" else pdisplay "        Interdepartmental       (c)     (b)
(a) ";

Rule pdisplay_music_e_to_r

If a > (b) and
   b > (c) Then p_music_display = found
     pdisplay "        Music Department        (c)     (b)     (a)  *" else pdisplay "        Music Department        (c)     (b)
(a) ";

Rule pdisplay_state_e_to_r

If a > (b) and
   b > (c) Then p_state_display = found
     pdisplay "        State Related      (c)     (b)     (a)  *" else pdisplay "        State Related      (c)     (b)     (a)
";

Rule corps_display_this If corps_e_to_r_this < = 1.0 Then color = 14
    locate 9,58
    format corps_e_to_r_this, 4.2
    display "(corps_e_to_r_this)"
    corps_e_r_display_this = found else color = 12
    locate 9,58
    format corps_e_to_r_this,4.2
    display "(corps_e_to_r_this)";

Rule public_display_this If public_e_to_r_this < = 1.0 Then color = 14
    locate 10,58
    format public_e_to_r_this, 4.2
    display "(public_e_to_r_this)"
    public_e_r_display_this = found else color = 12
```

```
    locate 10,58
    format public_e_to_r_this,4.2
    display "(public_e_to_r_this)";

Rule s_f_s_display_this If s_f_s_e_to_r_this < = 1.0 Then color = 14
    locate 11,58
    format s_f_s_e_to_r_this, 4.2
    display "(s_f_s_e_to_r_this)"
    s_f_s_e_r_display_this = found else color = 12
    locate 11,58
    format s_f_s_e_to_r_this,4.2
    display "(s_f_s_e_to_r_this)";

Rule interdept_display_this If interdept_e_to_r_this < = 1.0 Then color = 14
    locate 12,58
    format interdept_e_to_r_this, 4.2
    display "(interdept_e_to_r_this)"
    interdept_e_r_display_this = found else color = 12
    locate 12,58
    format interdept_e_to_r_this,4.2
    display "(interdept_e_to_r_this)";

Rule music_display_this If music_e_to_r_this < = 1.0 Then color = 14
    locate 13,58
    format music_e_to_r_this, 4.2
    display "(music_e_to_r_this)"
    music_e_r_display_this = found else color = 12
    locate 13,58
    format music_e_to_r_this,4.2
    display "(music_e_to_r_this)";

Rule state_display_this If state_e_to_r_this < = 1.0 Then color = 14
    locate 14,58
    format state_e_to_r_this, 4.2
    display "(state_e_to_r_this)"
    state_e_r_display_this = found else color = 12
    locate 14,58
    format state_e_to_r_this,4.2
    display "(state_e_to_r_this)";

Rule corps_display_last If corps_e_to_r_last < = 1.0 Then color = 14
    locate 9,48
    format corps_e_to_r_last, 4.2
    display "(corps_e_to_r_last)"
    corps_e_r_display_last = found else color = 12
    locate 9,48
    format corps_e_to_r_last,4.2
    display "(corps_e_to_r_last)";

Rule public_display_last If public_e_to_r_last < = 1.0 Then color = 14
    locate 10,48
    format public_e_to_r_last, 4.2
    display "(public_e_to_r_last)"
    public_e_r_display_last = found else color = 12
    locate 10,48
    format public_e_to_r_last,4.2
    display "(public_e_to_r_last)";

Rule s_f_s_display_last If s_f_s_e_to_r_last < = 1.0 Then color = 14
    locate 11,48
    format s_f_s_e_to_r_last, 4.2
    display "(s_f_s_e_to_r_last)"
    s_f_s_e_r_display_last = found else color = 12
    locate 11,48
    format s_f_s_e_to_r_last,4.2
    display "(s_f_s_e_to_r_this)";

Rule interdept_display_last If interdept_e_to_r_last < = 1.0 Then color = 14
    locate 12,48
    format interdept_e_to_r_last, 4.2
    display "(interdept_e_to_r_last)"
    interdept_e_r_display_last = found else color = 12
    locate 12,48
    format interdept_e_to_r_last,4.2
    display "(interdept_e_to_r_last)";

Rule music_display_last If music_e_to_r_last < = 1.0 Then color = 14
    locate 13,48
    format music_e_to_r_last, 4.2
    display "(music_e_to_r_last)"
```

```
    music_e_r_display_last = found else color = 12
    locate 13,48
    format music_e_to_r_last,4.2
    display "{music_e_to_r_last}";

Rule state_display_last If state_e_to_r_last < = 1.0 Then color = 14
    locate 14,48
    format state_e_to_r_last, 4.2
    display "{state_e_to_r_last}"
    state_e_r_display_last = found else color = 12
    locate 14,48
    format state_e_to_r_last,4.2
    display "{state_e_to_r_last}";

Rule corps_display_2 If corps_e_to_r_2 < = 1.0 Then color = 14
    locate 9,38
    format corps_e_to_r_2, 4.2
    display "{corps_e_to_r_2}"
    corps_e_r_display_2 = found else color = 12
    locate 9,38
    format corps_e_to_r_2,4.2
    display "{corps_e_to_r_2}";

Rule public_display_2 If public_e_to_r_2 < = 1.0 Then color = 14
    locate 10,38
    format public_e_to_r_2, 4.2
    display "{public_e_to_r_2}"
    public_e_r_display_2 = found else color = 12
    locate 10,38
    format public_e_to_r_2,4.2
    display "{public_e_to_r_2}";

Rule s_f_s_display_2 If s_f_s_e_to_r_2 < = 1.0 Then color = 14
    locate 11,38
    format s_f_s_e_to_r_2, 4.2
    display "{s_f_s_e_to_r_2}"
    s_f_s_e_r_display_2 = found else color = 12
    locate 11,38
    format s_f_s_e_to_r_2,4.2
    display "{s_f_s_e_to_r_2}";

Rule interdept_display_2 If interdept_e_to_r_2 < = 1.0 Then color = 14
    locate 12,38
    format interdept_e_to_r_2, 4.2
    display "{interdept_e_to_r_2}"
    interdept_e_r_display_2 = found else color = 12
    locate 12,38
    format interdept_e_to_r_2,4.2
    display "{interdept_e_to_r_2}";

Rule music_display_2 If music_e_to_r_2 < = 1.0 Then color = 14
    locate 13,38
    format music_e_to_r_2, 4.2
    display "{music_e_to_r_2}"
    music_e_r_display_2 = found else color = 12
    locate 13,38
    format music_e_to_r_2,4.2
    display "{music_e_to_r_2}";

Rule state_display_2 If state_e_to_r_2 < = 1.0 Then color = 14
    locate 14,38
    format state_e_to_r_2, 4.2
    display "{state_e_to_r_2}"
    state_e_r_display_2 = found else color = 12
    locate 14,38
    format state_e_to_r_2,4.2
    display "{state_e_to_r_2}";

Rule star_corps_display If corps_e_to_r_this > = (corps_e_to_r_last) and
  corps_e_to_r_last > = (corps_e_to_r_2) Then corps_star_display = found
    color = 11
    locate 9,64
    display "*";

Rule star_public_display If public_e_to_r_this > = (public_e_to_r_last) and
  public_e_to_r_last > = (public_e_to_r_2) Then public_star_display = found
    color = 11
    locate 10,64
    display "*";
```

```
Rule star_s_f_s_display If s_f_s_e_to_r_this > = (s_f_s_e_to_r_last) and
  s_f_s_e_to_r_last > = (s_f_s_e_to_r_2) Then s_f_s_star_display = found
    color = 11
    locate 11,64
    display "*";

Rule star_interdept_display If interdept_e_to_r_this > = (interdept_e_to_r_last) and
  interdept_e_to_r_last > = (interdept_e_to_r_2) Then interdept_star_display = found
    color = 11
    locate 12,64
    display "*";

Rule star_music_display If music_e_to_r_this > = (music_e_to_r_last) and
  music_e_to_r_last > = (music_e_to_r_2) Then music_star_display = found
    color = 11
    locate 13,64
    display "*";

Rule star_state_display If state_e_to_r_this > = (state_e_to_r_last) and
  state_e_to_r_last > = (state_e_to_r_2) Then state_star_display = found
    color = 11
    locate 14,64
    display "* ¬" else locate 19,77
    display "  ¬";


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the (equip_name) cost?";

ask purchase_month: "Please enter the number for the month in which the (equip_name) was purchased. Use 1 for January, 2 for Febru-
ary, ....12 for December.";

ask useful_life: "How many years is the (equip_name) expected to last?";

ask num_fresh: "June (current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How
many seniors?";

ask ca_fresh: "June (current_year)?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask
ca_sen: "How much was it for seniors?";

plural: ca,put_inventory, new_equip,current_values,depreciation; plural:
corps_ca,corps_num,bl_this,bs_last,bs_2_ago,is_this,is_last,is_2_ago; plural:
mil_rev,other_rev,personal,s_and_m,contractual,continuous,direct_costs; plural: bs_info,is_2_ago_a; bkcolor = 1;
```

```
execute; runtime;

actions color = 15 todo = ratio_analysis display "The system has chained to a new knowledge base and files must be loaded." display
"Please be patient. You will be instructed when to continue." display " " loadfacts ratdata display "Press any key to examine the total asset
turnover ratios. ¬" find t_asset_turn_display find inv_turn_display chain pwits ;


!Rules Block

Rule calculate_t_asset_turn_ratios

If todo = ratio_analysis

Then x = (t_mil_rev + t_other_rev)
    t_asset_turn_ratio = (x / ((total_inv + total_current_value + last_yr_inventory + last_yr_equip_value) / 2))
    x = (mil_rev_last + other_rev_last)
    t_asset_turn_ratio_last = (x / ((last_yr_inventory + last_yr_equip_value + inv_2_ago + equip_2_ago) / 2))
    t_asset_turn_ratio_2 = ((mil_rev_2 + other_rev_2) / ((inv_2_ago + equip_2_ago + t_assets_3) / 2));

Rule calculate_inv_turn_ratios If todo = ratio_analysis Then inv_turn_ratio = (t_mil_rev / ((total_inv + last_yr_inventory) / 2))
    inv_turn_ratio_last = (mil_rev_last / ((last_yr_inventory + inv_2_ago) / 2))
    inv_turn_ratio_2 = (mil_rev_2 / ((inv_2_ago + inv_3_ago) / 2));


Rule display_for_t_asset_turn If t_asset_turn_ratio < > unknown Then cls
    color = 11
    locate 1,24
    display "TOTAL ASSET TURNOVER RATIOS"
    locate 4,45
    display "(current_year)"
    locate 4,35
    display "(last_year)"
    locate 4,25
    display "(year_2_ago)"
    locate 7,44
    format t_asset_turn_ratio, 5.3
    display "(t_asset_turn_ratio)"
    locate 7,34
    format t_asset_turn_ratio_last, 5.3
    display "(t_asset_turn_ratio_last)"
    locate 7,24
    format t_asset_turn_ratio_2, 5.3
    display "(t_asset_turn_ratio_2)"
    t_asset_turn_display = found


    pdisplay " "
    locate 1,24
    pdisplay "                    TOTAL ASSET TURNOVER RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                    (c)       (b)       (a)"
    pdisplay " "
    pdisplay " "
    a = (t_asset_turn_ratio)
    b = (t_asset_turn_ratio_last)
    c = (t_asset_turn_ratio_2)
    pdisplay "                    (c)       (b)       (a)"
    t_asset_turn_display = found
    find t_asset_turn_analysis;

Rule analyze_t_asset_turn_1 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
    locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it is improving over time. ¬"
pdisplay " " pdisplay " " pdisplay "     In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and
a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay
"signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the
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revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " "
pdisplay "      As can be seen above, the total asset turnover ratio is quite good," pdisplay "and it is improving over time."
   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_2 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good," display "and it has improved over the past
year. ¬" pdisplay " " pdisplay " " pdisplay "      In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered
good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms
" pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will ap-
proximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good."
pdisplay " " pdisplay "      As can be seen above, the total asset turnover ratio is quite good," pdisplay "and it has improved over the past
year."
   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_3 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio > = .9 and
  t_asset_turn_ratio < 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and is improving over time. ¬" pdisplay
"" pdisplay "" pdisplay "      In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio
of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out
to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue "
pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay "
As can be seen above, the total asset turnover ratio is acceptable," pdisplay "and is improving over time."

   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_4 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio > = .9 and
  t_asset_turn_ratio < 1.0 Then locate 10,6
    color = 10
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is acceptable," display "and has improved over the past year. ¬"
pdisplay " " pdisplay " " pdisplay "      In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and
a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay
"signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the
revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " "
pdisplay "      As can be seen above, the total asset turnover ratio is acceptable," pdisplay "and has improved over the past year."


   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_5 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio_last > = (t_asset_turn_ratio_2) and
  t_asset_turn_ratio < = .9 Then locate 10,6
    color = 14
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from
them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
   locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However,
it does appear to be improving over time. ¬" pdisplay " " pdisplay " " pdisplay "      In general, a high ratio of dollar sales versus total value
of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop,
issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost
of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered"
pdisplay "to be quite good." pdisplay " " pdisplay "      As can be seen above, the total asset turnover ratio is not as high as" pdisplay
"management would like. However, it does appear to be improving over time."


   t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_6 If t_asset_turn_ratio > = (t_asset_turn_ratio_last) and
  t_asset_turn_ratio < = .9 Then locate 10,6
    color = 12
    display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset
value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major
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portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is not as high as" display "management would like. However, it has improved over the past year and may" display "continue to do so in the future. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is not as high as" pdisplay "management would like. However, it has improved over the past year and may" pdisplay "continue to do so in the future."

t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_7 **If** t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
t_asset_turn_ratio > = 1.0 **Then** locate 10,6
color = 14
display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it appears to be decreasing over time. Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is quite good." pdisplay "However, it appears to be decreasing over time. Management might want to" pdisplay "determine whether this is just random fluctuation or an actual trend."

t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_8 **If** t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
t_asset_turn_ratio > = 1.0 **Then** locate 10,6
color = 14
display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is quite good." display "However, it has decreased over the past year. Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is quite good." pdisplay "However, it has decreased over the past year. Management might want to" pdisplay "determine whether this is just random fluctuation or the beginning of a" pdisplay "trend."

t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_9 **If** t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
t_asset_turn_ratio < 1.0 and
t_asset_turn_ratio > .90 **Then** locate 10,6
color = 14
display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it appears to be decreasing over time. Management" display "might want to determine whether this is just random fluctuation or an actual" display "trend. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is at an" pdisplay "acceptable level. However, it appears to be decreasing over time. Management" pdisplay "might want to determine whether this is just random fluctuation or an actual" pdisplay "trend."

t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_10 **If** t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
t_asset_turn_ratio < 1.0 and
t_asset_turn_ratio > = 0.9 **Then** locate 10,6
color = 14
display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major

portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is at an" display "acceptable level. However, it has decreased over the past year. Management" display "might want to determine whether this is just random fluctuation or the" display "beginning of a downward trend. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is at an" pdisplay "acceptable level. However, it has decreased over the past year. Management" pdisplay "might want to determine whether this is just random fluctuation or the" pdisplay "beginning of a downward trend."

t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_11 **If** t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
t_asset_turn_ratio_last < = (t_asset_turn_ratio_2) and
t_asset_turn_ratio < 0.9 **Then** locate 10,6
color = 12
display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high enough for the level of assets" display "being held. Furthermore, there appears to be a downward trend over time." display "This is definitely something that management should check into. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is fairly low." pdisplay "This indicates that revenues are not high enough for the level of assets" pdisplay "being held. Furthermore, there appears to be a downward trend over time." pdisplay "This is definitely something that management should check into."

t_asset_turn_analysis = found;

Rule analyze_t_asset_turn_12 **If** t_asset_turn_ratio < = (t_asset_turn_ratio_last) and
t_asset_turn_ratio < 0.9 **Then** locate 10,6
color = 12
display "In general, a high ratio of dollar sales versus total value of assets" display "is considered good, and a low ratio of sales to asset value is considered" display "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " display "signed out to cadets) is a major portion of its assets. Since it is " display "expected that the cost of these uniforms will approximate the revenue " display "obtained from them, any asset turnover ratio greater than 1.0 is considered" display "to be quite good."
locate 18,6 display "As can be seen above, the total asset turnover ratio is fairly low." display "This indicates that revenues are not high enough for the level of assets" display "being held. Furthermore, is has decreased over the past year. Management" display "should determine whether or not this is merely random fluctuation or the" display "beginning of a downward trend. ¬" pdisplay " " pdisplay " " pdisplay " In general, a high ratio of dollar sales versus total value of assets" pdisplay "is considered good, and a low ratio of sales to asset value is considered" pdisplay "bad. In the case of the Tailor Shop, issued inventory (i.e., uniforms " pdisplay "signed out to cadets) is a major portion of its assets. Since it is " pdisplay "expected that the cost of these uniforms will approximate the revenue " pdisplay "obtained from them, any asset turnover ratio greater than 1.0 is considered" pdisplay "to be quite good." pdisplay " " pdisplay " As can be seen above, the total asset turnover ratio is fairly low." pdisplay "This indicates that revenues are not high enough for the level of assets" pdisplay "being held. Furthermore, is has decreased over the past year. Management" pdisplay "should determine whether or not this is merely random fluctuation or the" pdisplay "beginning of a downward trend."

t_asset_turn_analysis = found;

Rule displayinv_turn_ratio_beg **If** inv_turn_ratio < > unknown **Then** cls
locate 1,25
color = 11
display "INVENTORY TURNOVER RATIOS"
locate 4,6 display "The inventory turnover ratio is designed to measure how fast an " display "organization turns over its inventory. Ideally, this number is quite high," display "since it is best to turn over goods as quickly as possible. Doing so" display "decreases the possiblity of lowering the value of the goods due to" display "obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory" display "however, cannot be turned over more than once a year, because uniforms" display "issued to cadets are considered part of total inventory. In the case of" display "the Tailor Shop, this ratio is calculated by dividing income produced" display "from the corps by the average dollar value of inventory (which consists" display "almost solely of cadet uniforms). If this ratio is very low, say less" display "than .50, it indicates that the Tailor Shop is holding a large amount of" display "unissued inventory in the shop. Given these circumstances, any ratio" display "which is greater than 0.75 is considered to be 'acceptable.' " locate 19,13 display "Press any key to see the inventory turnover analysis ¬"
pdisplay " "
pdisplay " "
pdisplay " INVENTORY TURNOVER RATIOS"
pdisplay " "
pdisplay " " pdisplay " The inventory turnover ratio is designed to measure how fast an " pdisplay "organization turns over its inventory. Ideally, this number is quite high," pdisplay "since it is best to turn over goods as quickly as possible. Doing so" pdisplay "decreases the possiblity of lowering the value of the goods due to" pdisplay "obsolescence, pilferage, damage, etc. Much of the Tailor Shop's inventory" pdisplay "however, cannot be turned over more than once a year, because uniforms" pdisplay "issued to cadets are considered part of total inventory. In the case of" pdisplay "the Tailor Shop, this ratio is calculated by dividing income produced" pdisplay "from the corps by the average dollar value of inventory (which consists" pdisplay "almost solely of cadet uniforms). If this ratio is very low, say less" pdisplay "than .50, it indicates that the Tailor Shop is holding a large amount of" pdisplay "unissued inventory in the shop. Given these

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circumstances, any ratio" pdisplay "which is greater than 0.75 is considered to be 'acceptable.' " pdisplay " " pdisplay "          Press any
key to see the inventory turnover analysis"
    inv_turn_display = found
    find actual_inv_turn_display;

Rule display_for_inv_turn If inv_turn_ratio < > unknown Then cls
    color = 11
    locate 3,25
    display "INVENTORY TURNOVER RATIOS"
    locate 6,45
    display "{current_year}"
    locate 6,35
    display "{last_year}"
    locate 6,25
    display "{year_2_ago}"
    locate 9,44
    format inv_turn_ratio, 5.3
    display "{inv_turn_ratio}"
    locate 9,34
    format inv_turn_ratio_last, 5.3
    display "{inv_turn_ratio_last}"
    locate 9,24
    format inv_turn_ratio_2, 5.3
    display "{inv_turn_ratio_2}"

    pdisplay " "
    pdisplay " "
    pdisplay " "
    locate 3,25
    pdisplay "                    INVENTORY TURNOVER RATIOS"
    pdisplay " "
    pdisplay " "
    a = (current_year)
    b = (last_year)
    c = (year_2_ago)
    pdisplay "                    {c}      {b}      {a}"
    pdisplay " "
    pdisplay " "
    a = (inv_turn_ratio)
    b = (inv_turn_ratio_last)
    c = (inv_turn_ratio_2)
    pdisplay "                    {c}      {b}      {a}"
    actual_inv_turn_display = found
    find inv_turn_analysis;

Rule analyze_inv_turn_1 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = 0.8 Then locate 9,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good.  Not" display "only does it fall within a good
range, but it is increasing over time. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover
ratio is quite good.  Not" pdisplay "only does it fall within a good range, but it is increasing over time."
    inv_turn_analysis = found;

Rule analyze_inv_turn_2 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good.  Not" display "only does it fall within a good
range, but it has increased over the past" display "year. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the
inventory turnover ratio is quite good.  Not" pdisplay "only does it fall within a good range, but it has increased over the past" pdisplay
"year."

    inv_turn_analysis = found;

Rule analyze_inv_turn_3 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
   locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable.  Not" display "only does it appear reasonable, but
it is increasing over time. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is ac-
ceptable.  Not" pdisplay "only does it appear reasonable, but it is increasing over time."

    inv_turn_analysis = found;

Rule analyze_inv_turn_4 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio > = .75 and
  inv_turn_ratio < 0.8 Then locate 11,6
    color = 10
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    locate 12,6 display "As can be seen above, the inventory turnover ratio is acceptable.  Not" display "only does it appear reasonable, but
it has increased over the past year. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "     As can be seen above, the inventory turnover ratio
is acceptable.  Not" pdisplay "only does it appear reasonable, but it has increased over the past year."

    inv_turn_analysis = found;

Rule analyze_inv_turn_5 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio_last > = (inv_turn_ratio_2) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like.  However,
it does appear to be improving over time. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "     As can be seen above, the inventory
turnover ratio is not as high as" pdisplay "management would like.  However, it does appear to be improving over time."

    inv_turn_analysis = found;

Rule analyze_inv_turn_6 If inv_turn_ratio > = (inv_turn_ratio_last) and
  inv_turn_ratio < = .75 Then locate 11,6
    color = 12
    locate 12,6 display "As can be seen above, the inventory turnover ratio is not as high as" display "management would like.  However,
it has improved over the past year and may" display "continue to do so in the future. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "
As can be seen above, the inventory turnover ratio is not as high as" pdisplay "management would like.  However, it has improved over the
past year and may" pdisplay "continue to do so in the future."

    inv_turn_analysis = found;

Rule analyze_inv_turn_7 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good."  display "However, it appears to be decreasing
over time.  Management might want to" display "determine whether this is just random fluctuation or an actual trend. ¬" pdisplay " "
pdisplay " " pdisplay " " pdisplay "     As can be seen above, the inventory turnover ratio is quite good."  pdisplay "However, it appears
to be decreasing over time.  Management might want to" pdisplay "determine whether this is just random fluctuation or an actual trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_8 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio > = 0.8 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is quite good."  display "However, it has decreased over the past
year.  Management might want to" display "determine whether this is just random fluctuation or the beginning of a" display "trend. ¬"
pdisplay " " pdisplay " " pdisplay " " pdisplay "     As can be seen above, the inventory turnover ratio is quite good."  pdisplay "However,
it has decreased over the past year.  Management might want to" pdisplay "determine whether this is just random fluctuation or the begin-
ning of a" pdisplay "trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_9 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > .750 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level.  However, it appears to be
decreasing over time.  Management might" display "want to determine whether this is just random fluctuation or an actual" display
"trend. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "     As can be seen above, the inventory turnover ratio is at an acceptable"
pdisplay "level.  However, it appears to be decreasing over time.  Management might" pdisplay "want to determine whether this is just
random fluctuation or an actual" pdisplay "trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_10 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.8 and
  inv_turn_ratio > = 0.75 Then locate 11,6
    color = 14
    locate 12,6 display "As can be seen above, the inventory turnover ratio is at an acceptable" display "level.  However, it has decreased
over the past year.  Management might want" display "to determine whether this is just random fluctuation or the beginning of a" display
"downward trend. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "     As can be seen above, the inventory turnover ratio is at an ac-
ceptable" pdisplay "level.  However, it has decreased over the past year.  Management might want" pdisplay "to determine whether this is
just random fluctuation or the beginning of a" pdisplay "downward trend."

    inv_turn_analysis = found;

Rule analyze_inv_turn_11 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio_last < = (inv_turn_ratio_2) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
    locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low.  This" display "indicates that revenues are not high
enough for the level of assets being" display "held.  Furthermore, there appears to be a downward trend over time.  This" display "is defi-
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nitely something that management should check into. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is fairly low. This" pdisplay "indicates that revenues are not high enough for the level of assets being" pdisplay "held. Furthermore, there appears to be a downward trend over time. This" pdisplay "is definitely something that management should check into."

    inv_turn_analysis = found;

Rule analyze_inv_turn_12 If inv_turn_ratio < = (inv_turn_ratio_last) and
  inv_turn_ratio < 0.75 Then locate 11,6
    color = 12
   locate 12,6 display "As can be seen above, the inventory turnover ratio is fairly low. This" display "indicates that revenues are not high enough for the level of assets being" display "held. Furthermore, is has decreased over the past year. Management should" display "determine whether or not this is merely random fluctuation or the beginning" display "of a downward trend. ¬" pdisplay " " pdisplay " " pdisplay " " pdisplay "      As can be seen above, the inventory turnover ratio is fairly low. This" pdisplay "indicates that revenues are not high enough for the level of assets being" pdisplay "held. Furthermore, is has decreased over the past year. Management should" pdisplay "determine whether or not this is merely random fluctuation or the beginning" pdisplay "of a downward trend."

    inv_turn_analysis = found;


! Statements block

ask continue_r: "Is this the most current year end?"; choices continue_r: yes, no;

ask todo:"What would you like to do? Answer /Q when finished"; choices todo: Enter_new_data, graphics, budget_analysis,
  ratio_analysis, what-if_analysis, Change_system_parameters;

ask inventory_ques: "Can you separate the value of ending inventory into issued and unissued?"; choices inventory_ques: yes, no;

ask issued_inv: "What is the value of issued inventory?"; ask unissued_inv: "What is the value of unissued inventory?"; ask total_inv:
"Then, what is the value of total inventory?";

ask equip_number: "How many pieces of equipment does this include?";

ask equip_name: "Give an appropriate title to a piece, using underscores to connect words.";

ask cost: "How much did the {equip_name} cost?";

ask purchase_month: "Please enter the number for the month in which the {equip_name} was purchased. Use 1 for January, 2 for February, ....12 for December.";

ask useful_life: "How many years is the {equip_name} expected to last?";

ask num_fresh: "June {current_year)?"; ask num_soph: "How many sophomores?"; ask num_jun: "How many juniors?"; ask num_sen: "How many seniors?";

ask ca_fresh: "June {current_year)?"; ask ca_soph: "How much was it for sophomores?"; ask ca_jun: "How much was it for juniors?"; ask ca_sen: "How much was it for seniors?";

plural: put_inventory, new_equip,current_values,depreciation; plural: corps_ca,corps_num; bkcolor = 1;
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execute; endoff; runtime;

actions color = 15 todo = trend_statements find trend_display find get_data locate 18,25 display "Press any key to continue¬" pdisplay "
" pdisplay " " display "Press any key to continue" cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end ;

Rule trend_display If todo = trend_statements Then color = 11
    trend_display = found
    locate 2,30 display "TREND STATEMENTS" locate 5,6 display "Trend statements are the financial statements of several years," dis-
play "expressed as percentages of one of those years. For purposes of this" display "analysis, the base year chosen is the first year in the
series. For each" display "year, the dollar value of each item is divided by the dollar value of the" display "corresponding item in the base
year. This results in a value which is in" display "terms of the percentage of the base year. From these statements, trends" display "over
time can be seen. For the statements which follow, any trend of more" display "than 5% increase per year in expenses or 5% decrease per
year in revenues" display "is displayed in red. Likewise, any trend of more than 5% increase per " display "year in revenue or 5% decrease
per year in cost is displayed in yellow." display "The system is currently gathering data for these statements. You will be" display "in-
structed when to continue."

pdisplay "                    TREND STATEMENTS" pdisplay " " pdisplay "    Trend statements are the financial statements of several
years," pdisplay "expressed as percentages of one of those years. For purposes of this" pdisplay "analysis, the base year chosen is the first
year in the series. For each" pdisplay "year, the dollar value of each item is divided by the dollar value of the" pdisplay "corresponding
item in the base year. This results in a value which is in" pdisplay "terms of the percentage of the base year. From these statements, trends"
pdisplay "over time can be seen. For the statements which follow, any trend of more" pdisplay "than 5% increase per year in expenses or
5% decrease per year in revenues" pdisplay "is displayed in red. Likewise, any trend of more than 5% increase per " pdisplay "year in re-
venue or 5% decrease per year in cost is displayed in yellow." pdisplay " ";


Rule get_necessary_data If get_data = unknown Then get_data = found !    wks bs_this,b1..b14,\vpp\wiabbs
    wks bs_this[1],b1,\vpp\wiabbs
    wks bs_this[2],b2,\vpp\wiabbs
    wks bs_this[3],b3,\vpp\wiabbs
    wks bs_this[4],b4,\vpp\wiabbs
    wks bs_this[5],b5,\vpp\wiabbs
    wks bs_this[6],b6,\vpp\wiabbs
    wks bs_this[7],b7,\vpp\wiabbs
    wks bs_this[8],b8,\vpp\wiabbs
    wks bs_this[9],b9,\vpp\wiabbs
    wks bs_this[10],b10,\vpp\wiabbs
    wks bs_this[11],b11,\vpp\wiabbs
    wks bs_this[12],b12,\vpp\wiabbs
    wks bs_this[13],b13,\vpp\wiabbs
    wks bs_this[14],b14,\vpp\wiabbs

!   wks bs_last,c1..c14,\vpp\wiabbs
    wks bs_last[1],c1,\vpp\wiabbs
    wks bs_last[2],c2,\vpp\wiabbs
    wks bs_last[3],c3,\vpp\wiabbs
    wks bs_last[4],c4,\vpp\wiabbs
    wks bs_last[5],c5,\vpp\wiabbs
    wks bs_last[6],c6,\vpp\wiabbs
    wks bs_last[7],c7,\vpp\wiabbs
    wks bs_last[8],c8,\vpp\wiabbs
    wks bs_last[9],c9,\vpp\wiabbs
    wks bs_last[10],c10,\vpp\wiabbs
    wks bs_last[11],c11,\vpp\wiabbs
    wks bs_last[12],c12,\vpp\wiabbs
    wks bs_last[13],c13,\vpp\wiabbs
    wks bs_last[14],c14,\vpp\wiabbs

!   wks bs_2_ago,d1..d14,\vpp\wiabbs
    wks bs_2_ago[1],d1,\vpp\wiabbs
    wks bs_2_ago[2],d2,\vpp\wiabbs
    wks bs_2_ago[3],d3,\vpp\wiabbs
    wks bs_2_ago[4],d4,\vpp\wiabbs
    wks bs_2_ago[5],d5,\vpp\wiabbs
    wks bs_2_ago[6],d6,\vpp\wiabbs
    wks bs_2_ago[7],d7,\vpp\wiabbs
    wks bs_2_ago[8],d8,\vpp\wiabbs
    wks bs_2_ago[9],d9,\vpp\wiabbs
    wks bs_2_ago[10],d10,\vpp\wiabbs
    wks bs_2_ago[11],d11,\vpp\wiabbs
    wks bs_2_ago[12],d12,\vpp\wiabbs
```

```
    wks bs_2_ago[13],d13,\vpp\wiabbs
    wks bs_2_ago[14],d14,\vpp\wiabbs

!    wks cbis_oper_exp,b56..d56,\vpp\wicbis

    wks cash_oper_exp_this,b56,\vpp\wicbis
    wks cash_oper_exp_last,c56,\vpp\wicbis
    wks cash_oper_exp_2,d56,\vpp\wicbis

!   wks cbis_net_income,b57..d57,\vpp\wicbis

    wks cash_net_income_this,b57,\vpp\wicbis
    wks cash_net_income_last,c57,\vpp\wicbis
    wks cash_net_income_2,d57,\vpp\wicbis



!   wks uniforms,b10..d10,\vpp\wicbis

    wks act_unif_this,b10,\vpp\wicbis
    wks act_unif_last,c10,\vpp\wicbis
    wks act_unif_2,d10,\vpp\wicbis

!   wks act_equip,b55..d55,\vpp\wicbis

    wks act_equip_this,b55,\vpp\wicbis
    wks act_equip_last,c55,\vpp\wicbis
    wks act_equip_2,d55,\vpp\wicbis

    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    reserves_this = (bs_this[13])
    reserves_last = (bs_last[13])
    reserves_2 = (bs_2_ago[13])
    t_assets_this = (bs_this[9])
    t_assets_last = (bs_last[9])
    t_assets_2 = (bs_2_ago[9])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])



!!!!!!!!! !    wks is_this,b1..b76,\vpp\wiabis !    wks is_last,c1..c76,\vpp\wiabis !    wks is_2_ago,d1..d76,\vpp\wiabis !!!!!!!!!!



    wks net_income,b65,\vpp\wiabis
    wks net_income_last,c65,\vpp\wiabis
    wks net_income_2,d65,\vpp\wiabis
    wks t_mil_rev,b9,\vpp\wiabis
    wks mil_rev_last,c9,\vpp\wiabis
    wks mil_rev_2,d9,\vpp\wiabis
    wks cost_uniforms_this,b15,\vpp\wiabis
    wks cost_uniforms_last,c15,\vpp\wiabis
    wks cost_uniforms_2,d15,\vpp\wiabis
    wks total_oper_exp_last,c64,\vpp\wiabis
    wks total_oper_exp_2,d64,\vpp\wiabis
    wks total_oper_exp_this,b64,\vpp\wiabis
    wks t_other_rev,b24,\vpp\wiabis
    wks other_rev_last,c24,\vpp\wiabis
    wks other_rev_2,d24,\vpp\wiabis
    wks t_personal,b36,\vpp\wiabis
    wks personal_last,c36,\vpp\wiabis
    wks personal_2,d36,\vpp\wiabis
    wks contract_this,b47,\vpp\wiabis
    wks contract_last,c47,\vpp\wiabis
    wks contract_2,d47,\vpp\wiabis
    wks s_&_m_this,b54,\vpp\wiabis
    wks s_&_m_last,c54,\vpp\wiabis
    wks s_&_m_2,d54,\vpp\wiabis
    wks contin_this,b62,\vpp\wiabis
```

```
    wks contin_last,c62,\vpp\wiabis
    wks contin_2,d62,\vpp\wiabis
    wks deprec_this,b63,\vpp\wiabis
    wks deprec_last,c63,\vpp\wiabis
    wks deprec_2,d63,\vpp\wiabis
    wks public_rev_this,b19,\vpp\wiabis
    wks s_f_s_rev_this,b20,\vpp\wiabis
    wks interdept_rev_this,b21,\vpp\wiabis
    wks music_rev_this,b22,\vpp\wiabis
    wks state_rev_this,b23,\vpp\wiabis
    wks public_rev_last,c19,\vpp\wiabis
    wks s_f_s_rev_last,c20,\vpp\wiabis
    wks interdept_rev_last,c21,\vpp\wiabis
    wks music_rev_last,c22,\vpp\wiabis
    wks state_rev_last,c23,\vpp\wiabis
    wks public_rev_2,d19,\vpp\wiabis
    wks s_f_s_rev_2,d20,\vpp\wiabis
    wks interdept_rev_2,d21,\vpp\wiabis
    wks music_rev_2,d22,\vpp\wiabis
    wks state_rev_2,d23,\vpp\wiabis
    wks corps_cost_this,b68,\vpp\wiabis
    wks public_cost_this,b70,\vpp\wiabis
    wks s_f_s_cost_this,b71,\vpp\wiabis
    wks interdept_cost_this,b72,\vpp\wiabis
    wks music_cost_this,b73,\vpp\wiabis
    wks state_cost_this,b74,\vpp\wiabis
    wks corps_cost_last,c68,\vpp\wiabis
    wks public_cost_last,c70,\vpp\wiabis
    wks s_f_s_cost_last,c71,\vpp\wiabis
    wks interdept_cost_last,c72,\vpp\wiabis
    wks music_cost_last,c73,\vpp\wiabis
    wks state_cost_last,c74,\vpp\wiabis
    wks corps_cost_2,d68,\vpp\wiabis
    wks public_cost_2,d70,\vpp\wiabis
    wks s_f_s_cost_2,d71,\vpp\wiabis
    wks interdept_cost_2,d72,\vpp\wiabis
    wks music_cost_2,d73,\vpp\wiabis
    wks state_cost_2,d74,\vpp\wiabis

    t_expenses = (cost_uniforms_this + total_oper_exp_this)
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)

    t_rev_this = (t_mil_rev + t_other_rev)
    t_rev_last = (mil_rev_last + other_rev_last)
    t_rev_2 = (mil_rev_2 + other_rev_2)
    t_cash_exp_this = (cash_oper_exp_this + act_unif_this)
    t_cash_exp_last = (cash_oper_exp_last + act_unif_last)
    t_cash_exp_2 = (cash_oper_exp_2 + act_unif_2) ;


Rule display_for_which_stmt If todo = trend_statements Then cls
    color = 11
    locate 3,15
    display "Select the number corresponding to the trend"
    locate 4,15
    display "statements which would like to see."
    locate 7,20
    display "1  accrual based income statements"
    locate 9,20
    display "2  cash based income statements"
    locate 11,20
    display "3  balance sheets"
    locate 13,20
    display "4  market segment revenues and expenses"
    locate 15,20
    display "5  exit to main menu"

    pdisplay " "
    pdisplay " "
    pdisplay "            Select the number corresponding to the trend"
    pdisplay "            statements which would like to see."
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "                1  accrual based income statements"
    pdisplay " "
    pdisplay "                2  cash based income statements"
    pdisplay " "
    pdisplay "                3  balance sheets"
```

```
    pdisplay " "
    pdisplay "              4  market segment revenues and expenses"
    pdisplay " "
    pdisplay "              5  exit to main menu"
    pdisplay " "
    pdisplay " "

    find stmt_number
    which_stmt = found
    find what_next;

Rule do_abis If stmt_number = 1 then which_stmt = abis
    what_next = abis
    cls
    color = 11
    locate 0,8 display "TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" locate 2,60 display "(current_year)" locate 2,50 display "(last_year)" locate 2,40 display "(year_2_ago)"

    locate 0,8 pdisplay "       TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" pdisplay " " pdisplay " " a = (year_2_ago) b = (last_year) c = (current_year) pdisplay "                                                    (a)       (b)       (c)"

locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Cost of Uniforms Issued" locate 13,6 display "Personnel" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Depreciation" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find abis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find abis_deprec
    find abis_t_exp
    find abis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset abis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset abis_deprec
    reset abis_t_exp
    reset abis_ni;

Rule do_cbis If stmt_number = 2 then which_stmt = cbis
    what_next = cbis
    cls
    color = 11
    locate 0,10 display "TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" locate 2,60 display "(current_year)" locate 2,50 display "(last_year)" locate 2,40 display "(year_2_ago)" locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Uniform Purchases" locate 13,6 display "Personnel" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Equipment" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"

pdisplay " " pdisplay " " pdisplay "       TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" pdisplay " " pdisplay " " locate 2,60 a = (current_year) b = (last_year) c = (year_2_ago) pdisplay "                                                    (c)       (b)       (a)"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find cbis_uniforms
```

```
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find cbis_equip
    find cbis_t_exp
    find cbis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset cbis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset cbis_equip
    reset cbis_t_exp
    reset cbis_ni;

Rule do_bs If stmt_number = 3 Then which_stmt = bs
    what_next = bs
    cls
    color = 11
    locate 2,23 display "TREND STATEMENTS FOR BALANCE SHEETS" locate 4,65 display "{current_year}" locate 4,55 display
"{last_year}" locate 4,45 display "{year_2_ago}" locate 6,3 display "Current Assets" locate 7,6 display "Inventory" locate 8,3 display "Long
Term Assets" locate 9,6 display "Equipment" locate 10,9 display "Total Assets" locate 12,3 display "Liabilities & Capital" locate 13,6 dis-
play "Cash Basis Loan from " locate 14,8 display "other Auxiliaries" locate 15,6 display "Equity -- Reserves" locate 16,9 display "Total
Liabilities & Captital"

pdisplay " " pdisplay " "
    locate 2,23 pdisplay "                    TREND STATEMENTS FOR BALANCE SHEETS" pdisplay " " pdisplay " " a = (current_year)
b = (last_year) c = (year_2_ago) pdisplay "                                                    (c)       (b)       (a)" pdisplay " " pdisplay " " pdisplay "
Current Assets"

    find bs_inventory
    find bs_equipment
    find bs_total_assets1
    find bs_due_from
    find bs_reserves
    find bs_total_assets
    reset bs_inventory
    reset bs_equipment
    reset bs_total_assets
    reset bs_due_from
    reset bs_reserves;

Rule do_mkt_seg If stmt_number = 4 then which_stmt = mkt_seg
    what_next = mkt_seg
    cls
    color = 11
    locate 0,12 display "TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenues" locate 5,6 display
"Corps" locate 6,6 display "Public" locate 7,6 display "Students,Faculty,Staff" locate 8,6 display "Interdepartmental" locate 9,6 display
"Music Department" locate 10,6 display "State Related " locate 12,3 display "Expenses" locate 14,6 display "Corps" locate 15,6 display
"Public" locate 16,6 display "Students/Faculty/Staff" locate 17,6 display "Interdepartmental" locate 18,6 display "Music Department" locate
19,6 display "State Related"

    locate 0,12 pdisplay "                    TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" pdisplay " "
pdisplay " " a = (year_2_ago) b = (last_year) c = (current_year) pdisplay "                                                    (a)       (b)       (c)" pdisplay
" Revenues" pdisplay " "

    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state

pdisplay " " pdisplay "  Expenses" pdisplay " "


    find seg_corps_cost
    find seg_public_cost
    find seg_s_f_s_cost
    find seg_interdept_cost
    find seg_music_cost
```

```
    find seg_state_cost
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset seg_corps_cost
    reset seg_public_cost
    reset seg_s_f_s_cost
    reset seg_interdept_cost
    reset seg_music_cost
    reset seg_state_cost
    find rev_minus_exp_display;

Rule do_mkt_seg If stmt_number = 4 then rev_minus_exp_display = found
    cls
    color = 11
    locate 3,30 display "TREND STATEMENTS FOR" locate 4,21 display "MARKET SEGMENT REVENUES MINUS EXPENSES"
locate 7,56 display "(current_year)" locate 7,46 display "(last_year)" locate 7,36 display "(year_2_ago)" locate 9,6 display "Corps" locate
10,6 display "Public" locate 11,6 display "Students/Faculty/Staff" locate 12,6 display "Interdepartmental" locate 13,6 display "Music De-
partment" locate 14,6 display "State Related "

pdisplay " " pdisplay " " pdisplay " " pdisplay "                    TREND STATEMENTS FOR" pdisplay "                MARKET
SEGMENT REVENUES MINUS EXPENSES" pdisplay " " pdisplay " " c = (current_year) b = (last_year) a = (year_2_ago) pdisplay
"                              (a)       (b)       (c)"

    find corps_diff
    find public_diff
    find s_f_s_diff
    find interdept_diff
    find music_diff
    find state_diff
    reset corps_diff
    reset pub_diff
    reset s_f_s_diff
    reset interdept_diff
    reset music_diff
    reset state_diff
    find display_for_neg;

Rule exit_this_kbs If stmt_number = 5 Then which_stmt = doesnt_matter
    what_next = return
    color = 15
    chain pwits;

Rule display_abis_corps If todo = trend_statements Then  abis_corps = found
    trend_mil_rev_last = (mil_rev_last / mil_rev_2)
    trend_mil_rev_this = (t_mil_rev / mil_rev_2)
    x = (trend_mil_rev_last)
    y = (trend_mil_rev_this)
    find rev_color
    locate 4,60
    format trend_mil_rev_this, 5.2
    a = (trend_mil_rev_this)
    format a,5.2
    display "(trend_mil_rev_this)"
    locate 4,50
    format trend_mil_rev_last, 5.2
    b = (trend_mil_rev_last)
    format b,5.2
    display "(trend_mil_rev_last)"
    locate 4,40
    display "1.00"
    pdisplay "    Corps                          1.00      (b)      (a)"
    reset rev_color;

Rule display_abis_public If todo = trend_statements Then  abis_pub = found
    trend_pub_rev_last = (public_rev_last / public_rev_2)
    trend_pub_rev_this = (public_rev_this / public_rev_2)
    x = (trend_pub_rev_last)
    y = (trend_pub_rev_this)
    find rev_color
    locate 5,60
    format trend_pub_rev_this, 5.2
    display "(trend_pub_rev_this)"
    a = (trend_pub_rev_this)
    format a,5.2
    locate 5,50
    format trend_pub_rev_last, 5.2
```

```
    b = (trend_pub_rev_last)
    format b,5.2
    display "(trend_pub_rev_last)"
    locate 5,40
    display "1.00"
    pdisplay "    Public                    1.00    (b)    (a)"
    reset rev_color;

Rule display_abis_s_f_s If todo = trend_statements Then abis_s_f_s = found
    trend_s_f_s_rev_last = (s_f_s_rev_last / s_f_s_rev_2)
    trend_s_f_s_rev_this = (s_f_s_rev_this / s_f_s_rev_2)
    x = (trend_s_f_s_rev_last)
    y = (trend_s_f_s_rev_this)
    find rev_color
    locate 6,60
    format trend_s_f_s_rev_this, 5.2
    display "(trend_s_f_s_rev_this)"
    a = (trend_s_f_s_rev_this)
    format a,5.2
    locate 6,50
    format trend_s_f_s_rev_last, 5.2
    display "(trend_s_f_s_rev_last)"
    b = (trend_s_f_s_rev_last)
    format b,5.2
    locate 6,40
    display "1.00"
    pdisplay "    Student/Faculty/Staff        1.00    (b)    (a)"
    reset rev_color;

Rule display_abis_interdept If todo = trend_statements Then abis_interdept = found
    trend_interdept_rev_last = (interdept_rev_last / interdept_rev_2)
    trend_interdept_rev_this = (interdept_rev_this / interdept_rev_2)
    x = (trend_interdept_rev_last)
    y = (trend_interdept_rev_this)
    find rev_color
    locate 7,60
    format trend_interdept_rev_this, 5.2
    display "(trend_interdept_rev_this)"
    a = (trend_interdept_rev_this)
    format a,5.2
    locate 7,50
    format trend_interdept_rev_last, 5.2
    display "(trend_interdept_rev_last)"
    b = (trend_interdept_rev_last)
    format b,5.2
    locate 7,40
    display "1.00"
    pdisplay "    Interdepartmental            1.00    (b)    (a)"
    reset rev_color;

Rule display_abis_music If todo = trend_statements Then abis_music = found
    trend_music_rev_last = (music_rev_last / music_rev_2)
    trend_music_rev_this = (music_rev_this / music_rev_2)
    x = (trend_music_rev_last)
    y = (trend_music_rev_this)
    find rev_color
    locate 8,60
    format trend_music_rev_this, 5.2
    display "(trend_music_rev_this)"
    a = (trend_music_rev_this)
    format a,5.2
    locate 8,50
    format trend_music_rev_last, 5.2
    display "(trend_music_rev_last)"
    b = (trend_music_rev_last)
    format b,5.2
    locate 8,40
    display "1.00"
    pdisplay "    Music Department             1.00    (b)    (a)"
    reset rev_color;

Rule display_abis_state If todo = trend_statements Then abis_state = found
    trend_state_rev_last = (state_rev_last / state_rev_2)
    trend_state_rev_this = (state_rev_this / state_rev_2)
    x = (trend_state_rev_last)
    y = (trend_state_rev_this)
    find rev_color
    locate 9,60
    format trend_state_rev_this, 5.2
    display "(trend_state_rev_this)"
```

```
    a = (trend_state_rev_this)
    format a,5.2
    locate 9,50
    format trend_state_rev_last, 5.2
    display "(trend_state_rev_last)"
    b = (trend_state_rev_last)
    format b,5.2
    locate 9,40
    display "1.00"
    pdisplay "     State Related                1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_t_rev If todo = trend_statements Then abis_t_rev = found
    trend_t_rev_last = (t_rev_last / t_rev_2)
    trend_t_rev_this = (t_rev_this / t_rev_2)
    x = (trend_t_rev_last)
    y = (trend_t_rev_this)
    find rev_color
    locate 10,60
    format trend_t_rev_this, 5.2
    display "(trend_t_rev_this)"
    a = (trend_t_rev_this)
    format a,5.2
    locate 10,50
    format trend_t_rev_last, 5.2
    display "(trend_t_rev_last)"
    b = (trend_t_rev_last)
    format b,5.2
    locate 10,40
    display "1.00"
    pdisplay "       Total Revenue              1.00     (b)     (a)"
    pdisplay "  Expenses"
    reset rev_color;

Rule display_abis_cost_uniforms_issued If todo = trend_statements Then abis_uniforms = found
    trend_uniforms_last = (cost_uniforms_last / cost_uniforms_2)
    trend_uniforms_this = (cost_uniforms_this / cost_uniforms_2)
    x = (trend_uniforms_last)
    y = (trend_uniforms_this)
    find cost_color
    locate 12,60
    format trend_uniforms_this, 5.2
    display "(trend_uniforms_this)"
    a = (trend_uniforms_this)
    format a,5.2
    locate 12,50
    format trend_uniforms_last, 5.2
    display "(trend_uniforms_last)"
    b = (trend_uniforms_last)
    format b,5.2
    locate 12,40
    display "1.00"
    pdisplay "     Cost of Uniforms Issued      1.00     (b)     (a)"
    reset cost_color;

Rule display_cbis_cost_uniforms_issued If stmt_number = 2 Then cbis_uniforms = found
    trend_uniforms_last_c = (act_unif_last / act_unif_2)
    trend_uniforms_this_c = (act_unif_this / act_unif_2)
    x = (trend_uniforms_last_c)
    y = (trend_uniforms_this_c)
    find cost_color
    locate 12,60
    format trend_uniforms_this_c, 5.2
    display "(trend_uniforms_this_c)"
    a = (trend_uniforms_this_c)
    format a,5.2
    locate 12,50
    format trend_uniforms_last_c, 5.2
    display "(trend_uniforms_last_c)"
    b = (trend_uniforms_last_c)
    format b,5.2
    locate 12,40
    display "1.00"
    pdisplay "     Uniform Purchases            1.00     (b)     (a)"
    reset cost_color;

Rule display_abis_personal If todo = trend_statements Then abis_personal = found
    trend_personal_last = (personal_last / personal_2)
    trend_personal_this = (t_personal / personal_2)
    x = (trend_personal_last)
```

```
    y = (trend_personal_this)
    find cost_color
    locate 13,60
    format trend_personal_this, 5.2
    display "(trend_personal_this)"
    a = (trend_personal_this)
    format a,5.2
    locate 13,50
    format trend_personal_last, 5.2
    display "(trend_personal_last)"
    b = (trend_personal_last)
    format b,5.2
    locate 13,40
    display "1.00"
    pdisplay "    Personnel                    1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_contractual If todo = trend_statements Then abis_contract = found
    trend_contract_last = (contract_last / contract_2)
    trend_contract_this = (contract_this / contract_2)
    x = (trend_contract_last)
    y = (trend_contract_this)
    find cost_color
    locate 14,60
    format trend_contract_this, 5.2
    display "(trend_contract_this)"
    a = (trend_contract_this)
    format a,5.2
    locate 14,50
    format trend_contract_last, 5.2
    display "(trend_contract_last)"
    b = (trend_contract_last)
    format b,5.2
    locate 14,40
    display "1.00"
    pdisplay "    Contractual                  1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_s_&_m If todo = trend_statements Then abis_s_&_m = found
    trend_s_&_m_last = (s_&_m_last / s_&_m_2)
    trend_s_&_m_this = (s_&_m_this / s_&_m_2)
    x = (trend_s_&_m_last)
    y = (trend_s_&_m_this)
    find cost_color
    locate 15,60
    format trend_s_&_m_this, 5.2
    display "(trend_s_&_m_this)"
    a = (trend_s_&_m_this)
    format a,5.2
    locate 15,50
    format trend_s_&_m_last, 5.2
    display "(trend_s_&_m_last)"
    b = (trend_s_&_m_last)
    format b,5.2
    locate 15,40
    display "1.00"
    pdisplay "    Supplies & Materials         1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_continuous If todo = trend_statements Then abis_contin = found
    trend_contin_last = (contin_last / contin_2)
    trend_contin_this = (contin_this / contin_2)
    x = (trend_contin_last)
    y = (trend_contin_this)
    find cost_color
    locate 16,60
    format trend_contin_this, 5.2
    display "(trend_contin_this)"
    a = (trend_contin_this)
    format 1,5.2
    locate 16,50
    format trend_contin_last, 5.2
    display "(trend_contin_last)"
    b = (trend_contin_last)
    format b,5.2
    locate 16,40
    display "1.00"
    pdisplay "    Continuous                   1.00    (b)    (a)"
    reset cost_color;
```

```
Rule display_abis_depreciation If todo = trend_statements Then abis_deprec = found
    trend_deprec_last = (deprec_last / deprec_2)
    trend_deprec_this = (deprec_this / deprec_2)
    x = (trend_deprec_last)
    y = (trend_deprec_this)
    find cost_color
    locate 17,60
    format trend_deprec_this, 5.2
    display "(trend_deprec_this)"
    a = (trend_deprec_this)
    format a,5.2
    locate 17,50
    format trend_deprec_last, 5.2
    display "(trend_deprec_last)"
    b = (trend_deprec_last)
    format b,5.2
   locate 17,40
    display "1.00"
    pdisplay "    Depreciation                1.00    (b)    (a)"
    reset cost_color;

Rule display_cbis_equipment If todo = trend_statements Then cbis_equip = found
    trend_equip_last = (act_equip_last / act_equip_2)
    trend_equip_this = (act_equip_this / act_equip_2)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find cost_color
    locate 17,60
    format trend_equip_this, 5.2
    a = (trend_equip_this)
    format a,5.2
    display "(trend_equip_this)"
    locate 17,50
    format trend_equip_last, 5.2
    b = (trend_equip_last)
    format b,5.2
    display "(trend_equip_last)"
    locate 17,40
    display "1.00"
    pdisplay "    Equipment                  1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_t_expenses If todo = trend_statements Then abis_t_exp = found
    trend_t_expenses_last = (t_expenses_last / t_expenses_2)
    trend_t_expenses_this = (t_expenses / t_expenses_2)
    x = (trend_t_expenses_last)
    y = (trend_t_expenses_this)
    find cost_color
    locate 18,60
    format trend_t_expenses_this, 5.2
    display "(trend_t_expenses_this)"
    a = (trend_t_expenses_this)
    format a,5.2
    locate 18,50
    format trend_t_expenses_last, 5.2
    display "(trend_t_expenses_last)"
    b = (trend_t_expenses_last)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "      Total Expenses           1.00    (b)    (a)"
    reset cost_color;

Rule display_cbis_t_expenses If todo = trend_statements Then cbis_t_exp = found
    trend_t_expenses_last_c = (t_cash_exp_last / t_cash_exp_2)
    trend_t_expenses_this_c = (t_cash_exp_this / t_cash_exp_2)
    x = (trend_t_expenses_last_c)
    y = (trend_t_expenses_this_c)
    find cost_color
    locate 18,60
    format trend_t_expenses_this_c, 5.2
    display "(trend_t_expenses_this_c)"
    a = (trend_t_expenses_this_c)
    format a,5.2
    locate 18,50
    format trend_t_expenses_last_c, 5.2
    display "(trend_t_expenses_last_c)"
    b = (trend_t_expenses_last_c)
    format b,5.2
    locate 18,40
```

```
    display "1.00"
    pdisplay "        Total Expenses                1.00      (b)      (a)"
    reset cost_color;

Rule display_abis_net_income If todo = trend_statements Then  abis_ni = found
    trend_net_income_last = (net_income_last / net_income_2)
    trend_net_income_this = (net_income / net_income_2)
    x = (trend_net_income_last)
    y = (trend_net_income_this)
    find rev_color
    locate 19,60
    format trend_net_income_this, 5.2
    display "(trend_net_income_this)"
    a = (trend_net_income_this)
    format a,5.2
    locate 19,50
    format trend_net_income_last, 5.2
    display "(trend_net_income_last)"
    b = (trend_net_income_last)
    format b,5.2
    find is_it_neg
!   find neg_base
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00 -"
    pdisplay "   Net Income from Operations          1.00      (b)      (a)"
    find neg_disp?
    reset rev_color
    reset is_it_neg;


Rule display_that_ni_base_yr_neg

If net_income_2 < 0

Then neg_base = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";


 Rule pdisplay_neg_ni_abis

If is_it_neg = yes

Then neg_disp? = found
    pdisplay " "
    pdisplay "Note that net income is increasing in the negative direction."
    pdisplay " "
    pdisplay " ";



Rule display_cbis_net_income If todo = trend_statements Then  cbis_ni = found
    trend_net_income_last_c = (cash_net_income_last / cash_net_income_2)
    trend_net_income_this_c = (cash_net_income_this / cash_net_income_2)
    x = (trend_net_income_last_c)
    y = (trend_net_income_this_c)
    find rev_color
    locate 19,60
    format trend_net_income_this_c, 5.2
    display "(trend_net_income_this_c)"
    a = (trend_net_income_this_c)
    format a,5.2
    locate 19,50
    format trend_net_income_last_c, 5.2
    display "(trend_net_income_last_c)"
    b = (trend_net_income_last_c)
    format b,5.2
```

```
    find is_it_neg_c !      find neg_base_c
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00¬"
    pdisplay "   Net Income from Operations          1.00      (b)      (a)"
    find neg_disp?_c
    reset rev_color
    reset is_it_neg_c;

Rule display_that_ni_base_yr_neg

If cash_net_income_2 < 0

Then neg_base_c = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";




Rule pdisplay_neg_ni_cbis

If is_it_neg_c = yes

Then neg_disp?_c = found
    pdisplay " "
    pdisplay "Note that net income is increasing in the negative direction."
    pdisplay " "
    pdisplay " ";

Rule is_net_income_negative If net_income < = 0 and
  net_income_last < = 0 and
  net_income_2 < = 0 and
  x > 1.05 and
  y > 1.1025 Then locate 8,68
    color = 15
    display "**  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction"
    locate 19,66
    display "**"
    color = 12                          !!2
    locate 19,60                        !!!this was all added
    format trend_net_income_this, 5.2
    display "(trend_net_income_this)"
    locate 19,50
    format trend_net_income_last, 5.2
    display "(trend_net_income_last)"
    locate 19,40
    display "1.00¬"                     !!
   is_it_neg = yes;

Rule is_net_income_negative If cash_net_income_this < = 0 and
  cash_net_income_last < = 0 and
  cash_net_income_2 < = 0 and
  x > 1.05 and
```

```
y > 1.1025 Then locate 8,68
  color = 15
  display "** note "
  locate 9,68
  display "that it is"
  locate 10,68
  display "increasing"
  locate 11,68
  display "in the "
  locate 12,68
  display "negative"
  locate 13,68
  display "direction"
  locate 19,66
  display "**"
  color = 12
  locate 19,60
  format trend_net_income_this_c, 5.2
  display "{trend_net_income_this_c}"
  locate 19,50
  format trend_net_income_last_c, 5.2
  display "{trend_net_income_last_c}"
  locate 19,40
  display "1.00 -"
  is_it_neg_c = yes;

Rule display_bs_inventory If todo = trend_statements Then bs_inventory = found
    trend_inv_rev_last = (last_yr_inventory / inv_2_ago)
    trend_inv_rev_this = (total_inv / inv_2_ago)
    x = (trend_inv_rev_last)
    y = (trend_inv_rev_this)
    find rev_color
    locate 7,65
    format trend_inv_rev_this, 5.2
    display "{trend_inv_rev_this}"
    a = (trend_inv_rev_this)
    format a,5.2
    locate 7,55
    format trend_inv_rev_last, 5.2
    display "{trend_inv_rev_last}"
    b = (trend_inv_rev_last)
    format b,5.2
    locate 7,45
    display "1.00"
    pdisplay "    Inventory                    1.00    {b}    {a}"
    pdisplay "  Long Term Assets"
    reset rev_color;

Rule display_bs_equipment If todo = trend_statements Then bs_equipment = found
    trend_equip_last = (last_yr_equip_value / equip_2_ago)
    trend_equip_this = (total_current_value / equip_2_ago)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find rev_color
    locate 9,65
    format trend_equip_this, 5.2
    display "{trend_equip_this}"
    a = (trend_equip_this)
    format a,5.2
    locate 9,55
    format trend_equip_last, 5.2
    display "{trend_equip_last}"
    b = (trend_equip_last)
    format b,5.2
    locate 9,45
    display "1.00"
    pdisplay "    Equipment                    1.00    {b}    {a}"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets1 = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    format trend_totals_this, 5.2
    a = (trend_totals_this)
    format a,5.2
    format trend_totals_last, 5.2
    b = (trend_totals_last)
```

```
    format b,5.2
    locate 10,45
    locate 16,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    locate 16,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
    locate 16,45
    pdisplay "       Total Assets                    1.00     (b)      (a)"
    pdisplay " "
    pdisplay "  Liabilities & Capital";


Rule display_bs_due_to_other_ae If todo = trend_statements Then bs_due_from = found
    trend_due_rev_last = (last_yr_due_to / due_to_2_ago)
    trend_due_rev_this = (new_due_to / due_to_2_ago)
    x = (trend_due_rev_last)
    y = (trend_due_rev_this)
    find cost_color
    locate 14,65
    format trend_due_rev_this, 5.2
    display "{trend_due_rev_this}"
    a = (trend_due_rev_this)
    format a,5.2
    locate 14,55
    format trend_due_rev_last, 5.2
    display "{trend_due_rev_last}"
    b = (trend_due_rev_last)
    format b,5.2
    locate 14,45
    display "1.00"
    pdisplay "     Cash Basis Loan from              1.00     (b)      (a)"
    pdisplay "       other Auxiliaries"
    reset cost_color;

Rule display_bs_reserves If todo = trend_statements Then bs_reserves = found
    trend_reserves_last = (reserves_last / reserves_2)
    trend_reserves_this = (reserves_this / reserves_2)
    x = (trend_reserves_last)
    y = (trend_reserves_this)
    find rev_color
    locate 15,65
    format trend_reserves_this, 5.2
    display "{trend_reserves_this}"
    a = (trend_reserves_this)
    format a,5.2
    locate 15,55
    format trend_reserves_last, 5.2
    display "{trend_reserves_last}"
    b = (trend_reserves_last)
    format b,5.2
    locate 15,45
    display "1.00"
    pdisplay "     Equity -- Reserves                1.00     (b)      (a)"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    color = 11
    locate 10,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    locate 10,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
    locate 10,45
    display "1.00"
    locate 16,65
    format trend_totals_this, 5.2
    display "{trend_totals_this}"
    a = (trend_totals_this)
    format a,5.2
    locate 16,55
    format trend_totals_last, 5.2
    display "{trend_totals_last}"
    b = (trend_totals_last)
```

```
    format b,5.2
    locate 16,45
    pdisplay "      Total Liabilities & Capital      1.00     (b)      (a)"
    display "1.00¬";

Rule display_seg_corps_cost If todo = trend_statements Then seg_corps_cost = found
    trend_seg_corps_cost_last = (corps_cost_last / corps_cost_2)
    trend_seg_corps_cost_this = (corps_cost_this / corps_cost_2)
    x = (trend_seg_corps_cost_last)
    y = (trend_seg_corps_cost_this)
    find cost_color
    locate 14,60
    format trend_seg_corps_cost_this, 5.2
    display "{trend_seg_corps_cost_this}"
    a = (trend_seg_corps_cost_this)
    format a,5.2
    locate 14,50
    format trend_seg_corps_cost_last, 5.2
    display "{trend_seg_corps_cost_last}"
    b = (trend_seg_corps_cost_last)
    format b,5.2
    locate 14,40
    display "1.00"
    pdisplay "     Corps                    1.00     (b)      (a)"
    reset cost_color;

Rule display_seg_public_cost If todo = trend_statements Then seg_public_cost = found
    trend_seg_public_cost_last = (public_cost_last / public_cost_2)
    trend_seg_public_cost_this = (public_cost_this / public_cost_2)
    x = (trend_seg_public_cost_last)
    y = (trend_seg_public_cost_this)
    find cost_color
    locate 15,60
    format trend_seg_public_cost_this, 5.2
    display "{trend_seg_public_cost_this}"
    a = (trend_seg_public_cost_this)
    format a,5.2
    locate 15,50
    format trend_seg_public_cost_last, 5.2
    display "{trend_seg_public_cost_last}"
    b = (trend_seg_public_cost_last)
    format b,5.2
    locate 15,40
    display "1.00"
    pdisplay "     Public                   1.00     (b)      (a)"
    reset cost_color;

Rule display_seg_s_f_s_cost If todo = trend_statements Then seg_s_f_s_cost = found
    trend_seg_s_f_s_cost_last = (s_f_s_cost_last / s_f_s_cost_2)
    trend_seg_s_f_s_cost_this = (s_f_s_cost_this / s_f_s_cost_2)
    x = (trend_seg_s_f_s_cost_last)
    y = (trend_seg_s_f_s_cost_this)
    find cost_color
    locate 16,60
    format trend_seg_s_f_s_cost_this, 5.2
    display "{trend_seg_s_f_s_cost_this}"
    a = (trend_seg_s_f_s_cost_this)
    format a,5.2
    locate 16,50
    format trend_seg_s_f_s_cost_last, 5.2
    display "{trend_seg_s_f_s_cost_last}"
    b = (trend_seg_s_f_s_cost_last)
    format b,5.2
    locate 16,40
    display "1.00"
    pdisplay "     Students/Faculty/Staff   1.00     (b)      (a)"
    reset cost_color;

Rule display_seg_interdept_cost If todo = trend_statements Then seg_interdept_cost = found
    trend_seg_interdept_cost_last = (interdept_cost_last / interdept_cost_2)
    trend_seg_interdept_cost_this = (interdept_cost_this / interdept_cost_2)
    x = (trend_seg_interdept_cost_last)
    y = (trend_seg_interdept_cost_this)
    find cost_color
    locate 17,60
    format trend_seg_interdept_cost_this, 5.2
    display "{trend_seg_interdept_cost_this}"
    a = (trend_seg_interdept_cost_this)
    format a,5.2
    locate 17,50
```

```
    format trend_seg_interdept_cost_last, 5.2
    display "(trend_seg_interdept_cost_last)"
    b = (trend_seg_interdept_cost_last)
    format b,5.2
    locate 17,40
    display "1.00"
    pdisplay "     Interdepartmental              1.00     (b)     (a)"
    reset cost_color;

Rule display_seg_music_cost If todo = trend_statements Then seg_music_cost = found
    trend_seg_music_cost_last = (music_cost_last / music_cost_2)
    trend_seg_music_cost_this = (music_cost_this / music_cost_2)
    x = (trend_seg_music_cost_last)
    y = (trend_seg_music_cost_this)
    find cost_color
    locate 18,60
    format trend_seg_music_cost_this, 5.2
    display "(trend_seg_music_cost_this)"
    a = (trend_seg_music_cost_this)
    format a,5.2
    locate 18,50
    format trend_seg_music_cost_last, 5.2
    display "(trend_seg_music_cost_last)"
    b = (trend_seg_music_cost_last)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "     Music Department               1.00     (b)     (a)"
    reset cost_color;

Rule display_seg_state_cost If todo = trend_statements Then seg_state_cost = found
    trend_seg_state_cost_last = (state_cost_last / state_cost_2)
    trend_seg_state_cost_this = (state_cost_this / state_cost_2)
    x = (trend_seg_state_cost_last)
    y = (trend_seg_state_cost_this)
    find cost_color
    locate 19,60
    format trend_seg_state_cost_this, 5.2
    display "(trend_seg_state_cost_this)"
    a = (trend_seg_state_cost_this)
    format a,5.2
    locate 19,50
    format trend_seg_state_cost_last, 5.2
    display "(trend_seg_state_cost_last)"
    b = (trend_seg_state_cost_last)
    format b,5.2
    locate 19,40
    display "1.00"
    pdisplay "     State Related                  1.00     (b)     (a)"
    reset cost_color;

Rule display_corps_diff If todo = trend_statements Then corps_diff = found
    corps_diff_this = (t_mil_rev - corps_cost_this)
    corps_diff_last = (mil_rev_last - corps_cost_last)
    corps_diff_2 = (mil_rev_2 - corps_cost_2)
    trend_corps_diff_last = (corps_diff_last / corps_diff_2)
    trend_corps_diff_this = (corps_diff_this / corps_diff_2)
    x = (trend_corps_diff_last)
    y = (trend_corps_diff_this)
    find rev_color
    a = (corps_diff_this)
    b = (corps_diff_last)
    c = (corps_diff_2)
    temp_vbl = corps
    find neg?
    locate 9,56
    format trend_corps_diff_this, 5.2
    display "(trend_corps_diff_this)"
    a = (trend_corps_diff_this)
    format a,5.2
    locate 9,46
    format trend_corps_diff_last, 5.2
    display "(trend_corps_diff_last)"
    b = (trend_corps_diff_last)
    format b,5.2
    locate 9,36
    pdisplay "     Corps                          1.00     (b)     (a)"
    display "1.00"
    reset rev_color
    locate 9,62
```

```
    display "(neg?)"
    reset neg?;

Rule display_public_diff If todo = trend_statements Then public_diff = found
    public_diff_this = (public_rev_this - public_cost_this)
    public_diff_last = (public_rev_last - public_cost_last)
    public_diff_2 = (public_rev_2 - public_cost_2)
    trend_public_diff_last = (public_diff_last / public_diff_2)
    trend_public_diff_this = (public_diff_this / public_diff_2)
    x = (trend_public_diff_last)
    y = (trend_public_diff_this)
    find rev_color
    a = (public_diff_this)
    b = (public_diff_last)
    c = (public_diff_2)
    temp_vbl = public
    find neg?
    locate 10,56
    format trend_public_diff_this, 5.2
    display "(trend_public_diff_this)"
    a = (trend_public_diff_this)
    format a,5.2
    locate 10,46
    format trend_public_diff_last, 5.2
    display "(trend_public_diff_last)"
    b = (trend_public_diff_last)
    format b,5.2
    locate 10,36
    pdisplay "     Public                    1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 10,62
    display "(neg?)"
    reset neg?;

Rule display_s_f_s_diff If todo = trend_statements Then s_f_s_diff = found
    s_f_s_diff_this = (s_f_s_rev_this - s_f_s_cost_this)
    s_f_s_diff_last = (s_f_s_rev_last - s_f_s_cost_last)
    s_f_s_diff_2 = (s_f_s_rev_2 - s_f_s_cost_2)
    trend_s_f_s_diff_last = (s_f_s_diff_last / s_f_s_diff_2)
    trend_s_f_s_diff_this = (s_f_s_diff_this / s_f_s_diff_2)
    x = (trend_s_f_s_diff_last)
    y = (trend_s_f_s_diff_this)
    find rev_color
    a = (s_f_s_diff_this)
    b = (s_f_s_diff_last)
    c = (s_f_s_diff_2)
    temp_vbl = students_faculty_staff
    find neg?
    locate 11,56
    format trend_s_f_s_diff_this, 5.2
    display "(trend_s_f_s_diff_this)"
    a = (trend_s_f_s_diff_this)
    format a,5.2
    locate 11,46
    format trend_s_f_s_diff_last, 5.2
    display "(trend_s_f_s_diff_last)"
    b = (trend_s_f_s_diff_last)
    format b,5.2
    locate 11,36
    pdisplay "     Students/Faculty/Staff      1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 11,62
    display "(neg?)"
    reset neg?;

Rule display_interdept_diff If todo = trend_statements Then interdept_diff = found
    interdept_diff_this = (interdept_rev_this - interdept_cost_this)
    interdept_diff_last = (interdept_rev_last - interdept_cost_last)
    interdept_diff_2 = (interdept_rev_2 - interdept_cost_2)
    trend_interdept_diff_last = (interdept_diff_last / interdept_diff_2)
    trend_interdept_diff_this = (interdept_diff_this / interdept_diff_2)
    x = (trend_interdept_diff_last)
    y = (trend_interdept_diff_this)
    find rev_color
    a = (interdept_diff_this)
    b = (interdept_diff_last)
    c = (interdept_diff_2)
    temp_vbl = interdepartmental
```

```
    find neg?
    locate 12,56
    format trend_interdept_diff_this, 5.2
    display "(trend_interdept_diff_this)"
    a = (trend_interdept_diff_this)
    format a,5.2
    locate 12,46
    format trend_interdept_diff_last, 5.2
    display "(trend_interdept_diff_last)"
    b = (trend_interdept_diff_last)
    format b,5.2
    locate 12,36
    pdisplay "    Interdepartmental          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 12,62
    display "(neg?)"
    reset neg?;

Rule display_music_diff If todo = trend_statements Then  music_diff = found
    music_diff_this = (music_rev_this - music_cost_this)
    music_diff_last = (music_rev_last - music_cost_last)
    music_diff_2 = (music_rev_2 - music_cost_2)
    trend_music_diff_last = (music_diff_last / music_diff_2)
    trend_music_diff_this = (music_diff_this / music_diff_2)
    x = (trend_music_diff_last)
    y = (trend_music_diff_this)
    find rev_color
    a = (music_diff_this)
    b = (music_diff_last)
    c = (music_diff_2)
    temp_vbl = music_department
    find neg?
    locate 13,56
    format trend_music_diff_this, 5.2
    display "(trend_music_diff_this)"
    a = (trend_music_diff_this)
    format a,5.2
    locate 13,46
    format trend_music_diff_last, 5.2
    display "(trend_music_diff_last)"
    b = (trend_music_diff_last)
    format b,5.2
    locate 13,36
    pdisplay "    Music Department          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 13,62
    display "(neg?)"
    reset neg?;

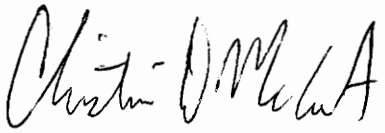
Rule display_state_diff If todo = trend_statements Then  state_diff = found
    state_diff_this = (state_rev_this - state_cost_this)
    state_diff_last = (state_rev_last - state_cost_last)
    state_diff_2 = (state_rev_2 - state_cost_2)
    trend_state_diff_last = (state_diff_last / state_diff_2)
    trend_state_diff_this = (state_diff_this / state_diff_2)
    x = (trend_state_diff_last)
    y = (trend_state_diff_this)
    find rev_color
    a = (state_diff_this)
    b = (state_diff_last)
    c = (state_diff_2)
    temp_vbl = state_related
    find neg?
    locate 14,56
    format trend_state_diff_this, 5.2
    display "(trend_state_diff_this)"
    a = (trend_state_diff_this)
    format a,5.2
    locate 14,46
    format trend_state_diff_last, 5.2
    display "(trend_state_diff_last)"
    b = (trend_state_diff_last)
    format b,5.2
    locate 14,36
    pdisplay "    State Related          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 14,62
```

VITA

Christina Drab McCart was born in Morristown, New Jersey on August 31, 1957. She attended elementary school in Chester, New Jersey and graduated from John Jay Senior High School in Cross River, New York in January 1975. In September of that year she entered Virginia Polytechnic Institute and State University and in August 1979 received her Bachelor of Science degree in Finance. From October 1979 to March 1980 she worked as a staff accountant for Dun & Bradstreet, Inc. in New York, New York. From April 1980 to September 1983 she worked as an auditor for the National Bank of Blacksburg in Blacksburg, Virginia. She entered the Masters of Business Administration program at Virginia Polytechnic Institute and State University in September of that year and completed her degree in March of 1985. Upon completion of her Masters of Business Administration, she entered the doctoral program in Management Science. While working on her graduate degrees she worked as a graduated assistant and then as an instructor. In August 1989 she took a position as assistant professor at Radford University in Radford, Virginia. She currently holds the position of Assistant Professor at Roanoke College in Salem, Virginia.

She is a member of the Decision Sciences Institute and The Institute of Management Science.

She is married to Douglas G. McCart of Blacksburg, Virginia and gave birth to Ryan G. McCart in December 1988.



```
NO. = 4303   SYSTEM ENTRY       TIME = 15.11.38   DATE = FEB 15, 1991
                    PURGE              15.18.30          FEB 15, 1991

M   54D53  VTVM1    MCCART

 mode output group was scheduled to print              19    pages

NTING SUMMARY     START TIME ON MAIN   15.11.55
ON TIME ON NONE                        00.00.00              .00
CPS                                           0              .00
CPS                                           0              .00
E SECONDS                                     0              .00
PUT ON L35.JR1                             1121              .00
RINTED

 CHARGES


 CHARGES (excluding page mode output)                        .00

!!  The total run charges above  DO NOT  include charges for output
    printed on the 3800 in page mode.  Printed output will be charged
    at a rate of $.08 per foot of paper.  This is equivalent to
    $.073  per portrait page or $.057  per page of landscape output.
    Also not included are priority charges for page mode output.

LANCE                                                      803.45
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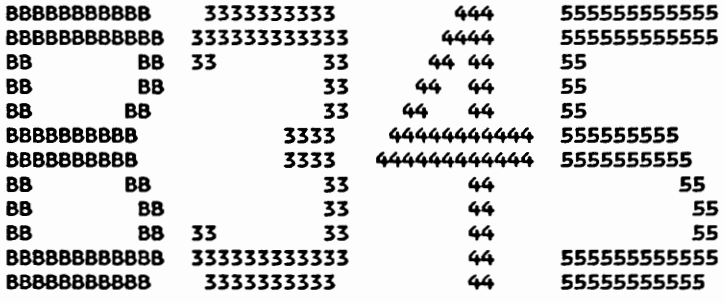
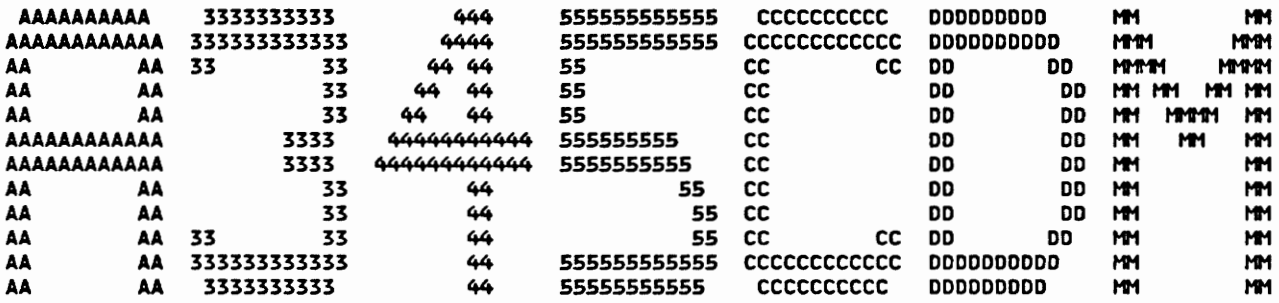
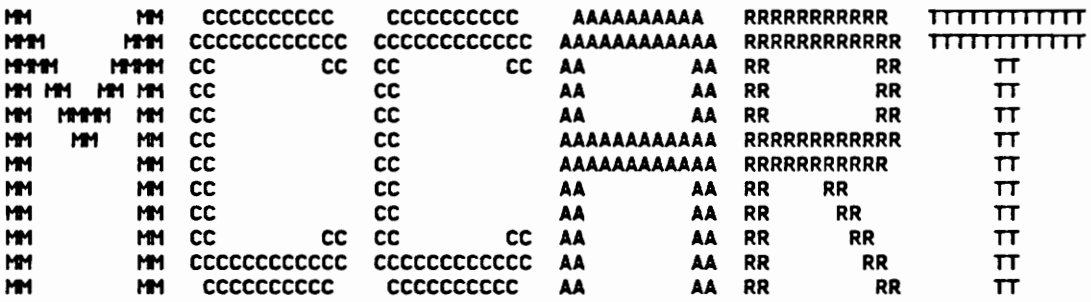




CCART



DB 4321 A345CDM MCCART DISAPP15 VTVM1 MCCART 3.18.30 PM 15 FEB 91 PRT2 CPU1 START M

```
execute; endoff; runtime;

actions color = 15 todo = trend_statements find trend_display find get_data locate 18,25 display "Press any key to continue¬" pdisplay "
" pdisplay " " display "Press any key to continue" cls whileknown which_stmt
  find which_stmt
  reset what_next
  reset stmt_number
  reset which_stmt
  cls
  find which_stmt end ;

Rule trend_display If todo = trend_statements Then color = 11
    trend_display = found
    locate 2,30 display "TREND STATEMENTS" locate 5,6 display "Trend statements are the financial statements of several years," dis-
play "expressed as percentages of one of those years. For purposes of this" display "analysis, the base year chosen is the first year in the
series. For each" display "year, the dollar value of each item is divided by the dollar value of the" display "corresponding item in the base
year. This results in a value which is in" display "terms of the percentage of the base year. From these statements, trends" display "over
time can be seen. For the statements which follow, any trend of more" display "than 5% increase per year in expenses or 5% decrease per
year in revenues" display "is displayed in red. Likewise, any trend of more than 5% increase per " display "year in revenue or 5% decrease
per year in cost is displayed in yellow." display "The system is currently gathering data for these statements. You will be" display "in-
structed when to continue."

pdisplay "                    TREND STATEMENTS" pdisplay " " pdisplay "  Trend statements are the financial statements of several
years," pdisplay "expressed as percentages of one of those years. For purposes of this" pdisplay "analysis, the base year chosen is the first
year in the series. For each" pdisplay "year, the dollar value of each item is divided by the dollar value of the" pdisplay "corresponding
item in the base year. This results in a value which is in" pdisplay "terms of the percentage of the base year. From these statements, trends"
pdisplay "over time can be seen. For the statements which follow, any trend of more" pdisplay "than 5% increase per year in expenses or
5% decrease per year in revenues" pdisplay "is displayed in red. Likewise, any trend of more than 5% increase per " pdisplay "year in re-
venue or 5% decrease per year in cost is displayed in yellow." pdisplay " ";



Rule get_necessary_data If get_data = unknown Then get_data = found !    wks bs_this,b1..b14,\vpp\wiabbs
    wks bs_this[1],b1,\vpp\wiabbs
    wks bs_this[2],b2,\vpp\wiabbs
    wks bs_this[3],b3,\vpp\wiabbs
    wks bs_this[4],b4,\vpp\wiabbs
    wks bs_this[5],b5,\vpp\wiabbs
    wks bs_this[6],b6,\vpp\wiabbs
    wks bs_this[7],b7,\vpp\wiabbs
    wks bs_this[8],b8,\vpp\wiabbs
    wks bs_this[9],b9,\vpp\wiabbs
    wks bs_this[10],b10,\vpp\wiabbs
    wks bs_this[11],b11,\vpp\wiabbs
    wks bs_this[12],b12,\vpp\wiabbs
    wks bs_this[13],b13,\vpp\wiabbs
    wks bs_this[14],b14,\vpp\wiabbs

!   wks bs_last,c1..c14,\vpp\wiabbs
    wks bs_last[1],c1,\vpp\wiabbs
    wks bs_last[2],c2,\vpp\wiabbs
    wks bs_last[3],c3,\vpp\wiabbs
    wks bs_last[4],c4,\vpp\wiabbs
    wks bs_last[5],c5,\vpp\wiabbs
    wks bs_last[6],c6,\vpp\wiabbs
    wks bs_last[7],c7,\vpp\wiabbs
    wks bs_last[8],c8,\vpp\wiabbs
    wks bs_last[9],c9,\vpp\wiabbs
    wks bs_last[10],c10,\vpp\wiabbs
    wks bs_last[11],c11,\vpp\wiabbs
    wks bs_last[12],c12,\vpp\wiabbs
    wks bs_last[13],c13,\vpp\wiabbs
    wks bs_last[14],c14,\vpp\wiabbs

!   wks bs_2_ago,d1..d14,\vpp\wiabbs
    wks bs_2_ago[1],d1,\vpp\wiabbs
    wks bs_2_ago[2],d2,\vpp\wiabbs
    wks bs_2_ago[3],d3,\vpp\wiabbs
    wks bs_2_ago[4],d4,\vpp\wiabbs
    wks bs_2_ago[5],d5,\vpp\wiabbs
    wks bs_2_ago[6],d6,\vpp\wiabbs
    wks bs_2_ago[7],d7,\vpp\wiabbs
    wks bs_2_ago[8],d8,\vpp\wiabbs
    wks bs_2_ago[9],d9,\vpp\wiabbs
    wks bs_2_ago[10],d10,\vpp\wiabbs
    wks bs_2_ago[11],d11,\vpp\wiabbs
    wks bs_2_ago[12],d12,\vpp\wiabbs
```

```
    wks bs_2_ago[13],d13,\vpp\wiabbs
    wks bs_2_ago[14],d14,\vpp\wiabbs

!    wks cbis_oper_exp,b56..d56,\vpp\wicbis

    wks cash_oper_exp_this,b56,\vpp\wicbis
    wks cash_oper_exp_last,c56,\vpp\wicbis
    wks cash_oper_exp_2,d56,\vpp\wicbis

!   wks cbis_net_income,b57..d57,\vpp\wicbis

    wks cash_net_income_this,b57,\vpp\wicbis
    wks cash_net_income_last,c57,\vpp\wicbis
    wks cash_net_income_2,d57,\vpp\wicbis


!   wks uniforms,b10..d10,\vpp\wicbis

    wks act_unif_this,b10,\vpp\wicbis
    wks act_unif_last,c10,\vpp\wicbis
    wks act_unif_2,d10,\vpp\wicbis

!   wks act_equip,b55..d55,\vpp\wicbis

    wks act_equip_this,b55,\vpp\wicbis
    wks act_equip_last,c55,\vpp\wicbis
    wks act_equip_2,d55,\vpp\wicbis

    current_year = (bs_this[1])
    last_year = (current_year - 1)
    year_2_ago = (current_year - 2)
    total_inv = (bs_this[7])
    last_yr_inventory = (bs_last[7])
    inv_2_ago = (bs_2_ago[7])
    new_due_to = (bs_this[12])
    last_yr_due_to = (bs_last[12])
    due_to_2_ago = (bs_2_ago[12])
    reserves_this = (bs_this[13])
    reserves_last = (bs_last[13])
    reserves_2 = (bs_2_ago[13])
    t_assets_this = (bs_this[9])
    t_assets_last = (bs_last[9])
    t_assets_2 = (bs_2_ago[9])
    total_current_value = (bs_this[8])
    last_yr_equip_value = (bs_last[8])
    equip_2_ago = (bs_2_ago[8])


!!!!!!!!! !    wks is_this,b1..b76,\vpp\wiabis !    wks is_last,c1..c76,\vpp\wiabis !    wks is_2_ago,d1..d76,\vpp\wiabis !!!!!!!!!!


    wks net_income,b65,\vpp\wiabis
    wks net_income_last,c65,\vpp\wiabis
    wks net_income_2,d65,\vpp\wiabis
    wks t_mil_rev,b9,\vpp\wiabis
    wks mil_rev_last,c9,\vpp\wiabis
    wks mil_rev_2,d9,\vpp\wiabis
    wks cost_uniforms_this,b15,\vpp\wiabis
    wks cost_uniforms_last,c15,\vpp\wiabis
    wks cost_uniforms_2,d15,\vpp\wiabis
    wks total_oper_exp_last,c64,\vpp\wiabis
    wks total_oper_exp_2,d64,\vpp\wiabis
    wks total_oper_exp_this,b64,\vpp\wiabis
    wks t_other_rev,b24,\vpp\wiabis
    wks other_rev_last,c24,\vpp\wiabis
    wks other_rev_2,d24,\vpp\wiabis
    wks t_personal,b36,\vpp\wiabis
    wks personal_last,c36,\vpp\wiabis
    wks personal_2,d36,\vpp\wiabis
    wks contract_this,b47,\vpp\wiabis
    wks contract_last,c47,\vpp\wiabis
    wks contract_2,d47,\vpp\wiabis
    wks s_&_m_this,b54,\vpp\wiabis
    wks s_&_m_last,c54,\vpp\wiabis
    wks s_&_m_2,d54,\vpp\wiabis
    wks contin_this,b62,\vpp\wiabis
```

```
    wks contin_last,c62,\vpp\wiabis
    wks contin_2,d62,\vpp\wiabis
    wks deprec_this,b63,\vpp\wiabis
    wks deprec_last,c63,\vpp\wiabis
    wks deprec_2,d63,\vpp\wiabis
    wks public_rev_this,b19,\vpp\wiabis
    wks s_f_s_rev_this,b20,\vpp\wiabis
    wks interdept_rev_this,b21,\vpp\wiabis
    wks music_rev_this,b22,\vpp\wiabis
    wks state_rev_this,b23,\vpp\wiabis
    wks public_rev_last,c19,\vpp\wiabis
    wks s_f_s_rev_last,c20,\vpp\wiabis
    wks interdept_rev_last,c21,\vpp\wiabis
    wks music_rev_last,c22,\vpp\wiabis
    wks state_rev_last,c23,\vpp\wiabis
    wks public_rev_2,d19,\vpp\wiabis
    wks s_f_s_rev_2,d20,\vpp\wiabis
    wks interdept_rev_2,d21,\vpp\wiabis
    wks music_rev_2,d22,\vpp\wiabis
    wks state_rev_2,d23,\vpp\wiabis
    wks corps_cost_this,b68,\vpp\wiabis
    wks public_cost_this,b70,\vpp\wiabis
    wks s_f_s_cost_this,b71,\vpp\wiabis
    wks interdept_cost_this,b72,\vpp\wiabis
    wks music_cost_this,b73,\vpp\wiabis
    wks state_cost_this,b74,\vpp\wiabis
    wks corps_cost_last,c68,\vpp\wiabis
    wks public_cost_last,c70,\vpp\wiabis
    wks s_f_s_cost_last,c71,\vpp\wiabis
    wks interdept_cost_last,c72,\vpp\wiabis
    wks music_cost_last,c73,\vpp\wiabis
    wks state_cost_last,c74,\vpp\wiabis
    wks corps_cost_2,d68,\vpp\wiabis
    wks public_cost_2,d70,\vpp\wiabis
    wks s_f_s_cost_2,d71,\vpp\wiabis
    wks interdept_cost_2,d72,\vpp\wiabis
    wks music_cost_2,d73,\vpp\wiabis
    wks state_cost_2,d74,\vpp\wiabis

    t_expenses = (cost_uniforms_this + total_oper_exp_this)
    t_expenses_last = (total_oper_exp_last + cost_uniforms_last)
    t_expenses_2 = (total_oper_exp_2 + cost_uniforms_2)

    t_rev_this = (t_mil_rev + t_other_rev)
    t_rev_last = (mil_rev_last + other_rev_last)
    t_rev_2 = (mil_rev_2 + other_rev_2)
    t_cash_exp_this = (cash_oper_exp_this + act_unif_this)
    t_cash_exp_last = (cash_oper_exp_last + act_unif_last)
    t_cash_exp_2 = (cash_oper_exp_2 + act_unif_2) ;


Rule display_for_which_stmt If todo = trend_statements Then cls
    color = 11
    locate 3,15
    display "Select the number corresponding to the trend"
    locate 4,15
    display "statements which would like to see."
    locate 7,20
    display "1  accrual based income statements"
    locate 9,20
    display "2  cash based income statements"
    locate 11,20
    display "3  balance sheets"
    locate 13,20
    display "4  market segment revenues and expenses"
    locate 15,20
    display "5  exit to main menu"

    pdisplay " "
    pdisplay " "
    pdisplay "            Select the number corresponding to the trend"
    pdisplay "            statements which would like to see."
    pdisplay " "
    pdisplay " "
    pdisplay " "
    pdisplay "               1  accrual based income statements"
    pdisplay " "
    pdisplay "               2  cash based income statements"
    pdisplay " "
    pdisplay "               3  balance sheets"
```

```
    pdisplay " "
    pdisplay "              4  market segment revenues and expenses"
    pdisplay " "
    pdisplay "              5  exit to main menu"
    pdisplay " "
    pdisplay " "

    find stmt_number
    which_stmt = found
    find what_next;

Rule do_abis If stmt_number = 1 then which_stmt = abis
    what_next = abis
    cls
    color = 11
    locate 0,8 display "TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" locate 2,60 display "{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}"

    locate 0,8 pdisplay "       TREND STATEMENTS FOR CONDENSED ACCRUAL BASED INCOME STATEMENTS" pdisplay " " pdisplay " " a = (year_2_ago) b = (last_year) c = (current_year) pdisplay "                                                    (a)      (b)      (c)"

locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Cost of Uniforms Issued" locate 13,6 display "Personnel" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Depreciation" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find abis_uniforms
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find abis_deprec
    find abis_t_exp
    find abis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset abis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset abis_deprec
    reset abis_t_exp
    reset abis_ni;

Rule do_cbis If stmt_number = 2 then which_stmt = cbis
    what_next = cbis
    cls
    color = 11
    locate 0,10 display "TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" locate 2,60 display "{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenue" locate 4,6 display "Corps" locate 5,6 display "Public" locate 6,6 display "Student/Faculty/Staff" locate 7,6 display "Interdepartmental" locate 8,6 display "Music Department" locate 9,6 display "State Related" locate 10,9 display "Total Revenue" locate 11,3 display "Expenses" locate 12,6 display "Uniform Purchases" locate 13,6 display "Personnel" locate 14,6 display "Contractual" locate 15,6 display "Supplies & Materials" locate 16,6 display "Continuous" locate 17,6 display "Equipment" locate 18,9 display "Total Expenses" locate 19,3 display "Net Income from Operations"

pdisplay " " pdisplay " " pdisplay "          TREND STATEMENTS FOR CONDENSED CASH BASED INCOME STATEMENTS" pdisplay " " pdisplay " " locate 2,60 a = (current_year) b = (last_year) c = (year_2_ago) pdisplay "                                                    (c)      (b)      (a)"
    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state
    find abis_t_rev
    find cbis_uniforms
```

```
    find abis_personal
    find abis_contract
    find abis_s_&_m
    find abis_contin
    find cbis_equip
    find cbis_t_exp
    find cbis_ni
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset abis_t_rev
    reset cbis_uniforms
    reset abis_personal
    reset abis_contract
    reset abis_s_&_m
    reset abis_contin
    reset cbis_equip
    reset cbis_t_exp
    reset cbis_ni;

Rule do_bs If stmt_number = 3 Then which_stmt = bs
    what_next = bs
    cls
    color = 11
    locate 2,23 display "TREND STATEMENTS FOR BALANCE SHEETS" locate 4,65 display "{current_year}" locate 4,55 display
"{last_year}" locate 4,45 display "{year_2_ago}" locate 6,3 display "Current Assets" locate 7,6 display "Inventory" locate 8,3 display "Long
Term Assets" locate 9,6 display "Equipment" locate 10,9 display "Total Assets" locate 12,3 display "Liabilities & Capital" locate 13,6 dis-
play "Cash Basis Loan from " locate 14,8 display "other Auxiliaries" locate 15,6 display "Equity -- Reserves" locate 16,9 display "Total
Liabilities & Captital"

pdisplay " " pdisplay " "
    locate 2,23 pdisplay "                    TREND STATEMENTS FOR BALANCE SHEETS" pdisplay " " pdisplay " " a = (current_year)
b = (last_year) c = (year_2_ago) pdisplay "                                                    (c)      (b)      (a)" pdisplay " " pdisplay " " pdisplay "
Current Assets"

    find bs_inventory
    find bs_equipment
    find bs_total_assetsl
    find bs_due_from
    find bs_reserves
    find bs_total_assets
    reset bs_inventory
    reset bs_equipment
    reset bs_total_assets
    reset bs_due_from
    reset bs_reserves;

Rule do_mkt_seg If stmt_number = 4 then which_stmt = mkt_seg
    what_next = mkt_seg
    cls
    color = 11
    locate 0,12 display "TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" locate 2,60 display
"{current_year}" locate 2,50 display "{last_year}" locate 2,40 display "{year_2_ago}" locate 3,3 display "Revenues" locate 5,6 display
"Corps" locate 6,6 display "Public" locate 7,6 display "Students Faculty/Staff" locate 8,6 display "Interdepartmental" locate 9,6 display
"Music Department" locate 10,6 display "State Related " locate 12,3 display "Expenses" locate 14,6 display "Corps" locate 15,6 display
"Public" locate 16,6 display "Students/Faculty/Staff" locate 17,6 display "Interdepartmental" locate 18,6 display "Music Department" locate
19,6 display "State Related"

    locate 0,12 pdisplay "                    TREND STATEMENTS FOR MARKET SEGMENT REVENUES & EXPENSES" pdisplay " "
pdisplay " " a = (year_2_ago) b = (last_year) c = (current_year) pdisplay "                                                    (a)      (b)      (c)" pdisplay
" Revenues" pdisplay " "

    find abis_corps
    find abis_pub
    find abis_s_f_s
    find abis_interdept
    find abis_music
    find abis_state

pdisplay " " pdisplay "  Expenses" pdisplay " "


    find seg_corps_cost
    find seg_public_cost
    find seg_s_f_s_cost
    find seg_interdept_cost
    find seg_music_cost
```

```
    find seg_state_cost
    reset abis_corps
    reset abis_pub
    reset abis_s_f_s
    reset abis_interdept
    reset abis_music
    reset abis_state
    reset seg_corps_cost
    reset seg_public_cost
    reset seg_s_f_s_cost
    reset seg_interdept_cost
    reset seg_music_cost
    reset seg_state_cost
    find rev_minus_exp_display;

Rule do_mkt_seg If stmt_number = 4 then rev_minus_exp_display = found
    cls
    color = 11
    locate 3,30 display "TREND STATEMENTS FOR" locate 4,21 display "MARKET SEGMENT REVENUES MINUS EXPENSES"
locate 7,56 display "{current_year}" locate 7,46 display "{last_year}" locate 7,36 display "{year_2_ago}" locate 9,6 display "Corps" locate
10,6 display "Public" locate 11,6 display "Students/Faculty/Staff" locate 12,6 display "Interdepartmental" locate 13,6 display "Music De-
partment" locate 14,6 display "State Related "

pdisplay " " pdisplay " " pdisplay " " pdisplay "                    TREND STATEMENTS FOR" pdisplay "                MARKET
SEGMENT REVENUES MINUS EXPENSES" pdisplay " " pdisplay " " c = (current_year) b = (last_year) a = (year_2_ago) pdisplay
"                              (a)      (b)      (c)"

    find corps_diff
    find public_diff
    find s_f_s_diff
    find interdept_diff
    find music_diff
    find state_diff
    reset corps_diff
    reset pub_diff
    reset s_f_s_diff
    reset interdept_diff
    reset music_diff
    reset state_diff
    find display_for_neg;

Rule exit_this_kbs If stmt_number = 5 Then which_stmt = doesnt_matter
    what_next = return
    color = 15
    chain pwits;

Rule display_abis_corps If todo = trend_statements Then  abis_corps = found
    trend_mil_rev_last = (mil_rev_last / mil_rev_2)
    trend_mil_rev_this = (t_mil_rev / mil_rev_2)
    x = (trend_mil_rev_last)
    y = (trend_mil_rev_this)
    find rev_color
    locate 4,60
    format trend_mil_rev_this, 5.2
    a = (trend_mil_rev_this)
    format a,5.2
    display "{trend_mil_rev_this}"
    locate 4,50
    format trend_mil_rev_last, 5.2
    b = (trend_mil_rev_last)
    format b,5.2
    display "{trend_mil_rev_last}"
    locate 4,40
    display "1.00"
    pdisplay "    Corps                    1.00     {b}     {a}"
    reset rev_color;

Rule display_abis_public If todo = trend_statements Then  abis_pub = found
    trend_pub_rev_last = (public_rev_last / public_rev_2)
    trend_pub_rev_this = (public_rev_this / public_rev_2)
    x = (trend_pub_rev_last)
    y = (trend_pub_rev_this)
    find rev_color
    locate 5,60
    format trend_pub_rev_this, 5.2
    display "{trend_pub_rev_this}"
    a = (trend_pub_rev_this)
    format a,5.2
    locate 5,50
    format trend_pub_rev_last, 5.2
```

```
    b = (trend_pub_rev_last)
    format b,5.2
    display "(trend_pub_rev_last)"
    locate 5,40
    display "1.00"
    pdisplay "     Public                    1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_s_f_s If todo = trend_statements Then abis_s_f_s = found
    trend_s_f_s_rev_last = (s_f_s_rev_last / s_f_s_rev_2)
    trend_s_f_s_rev_this = (s_f_s_rev_this / s_f_s_rev_2)
    x = (trend_s_f_s_rev_last)
    y = (trend_s_f_s_rev_this)
    find rev_color
    locate 6,60
    format trend_s_f_s_rev_this, 5.2
    display "(trend_s_f_s_rev_this)"
    a = (trend_s_f_s_rev_this)
    format a,5.2
    locate 6,50
    format trend_s_f_s_rev_last, 5.2
    display "(trend_s_f_s_rev_last)"
    b = (trend_s_f_s_rev_last)
    format b,5.2
    locate 6,40
    display "1.00"
    pdisplay "     Student/Faculty/Staff     1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_interdept If todo = trend_statements Then abis_interdept = found
    trend_interdept_rev_last = (interdept_rev_last / interdept_rev_2)
    trend_interdept_rev_this = (interdept_rev_this / interdept_rev_2)
    x = (trend_interdept_rev_last)
    y = (trend_interdept_rev_this)
    find rev_color
    locate 7,60
    format trend_interdept_rev_this, 5.2
    display "(trend_interdept_rev_this)"
    a = (trend_interdept_rev_this)
    format a,5.2
    locate 7,50
    format trend_interdept_rev_last, 5.2
    display "(trend_interdept_rev_last)"
    b = (trend_interdept_rev_last)
    format b,5.2
    locate 7,40
    display "1.00"
    pdisplay "     Interdepartmental         1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_music If todo = trend_statements Then abis_music = found
    trend_music_rev_last = (music_rev_last / music_rev_2)
    trend_music_rev_this = (music_rev_this / music_rev_2)
    x = (trend_music_rev_last)
    y = (trend_music_rev_this)
    find rev_color
    locate 8,60
    format trend_music_rev_this, 5.2
    display "(trend_music_rev_this)"
    a = (trend_music_rev_this)
    format a,5.2
    locate 8,50
    format trend_music_rev_last, 5.2
    display "(trend_music_rev_last)"
    b = (trend_music_rev_last)
    format b,5.2
    locate 8,40
    display "1.00"
    pdisplay "     Music Department          1.00     (b)     (a)"
    reset rev_color;

Rule display_abis_state If todo = trend_statements Then abis_state = found
    trend_state_rev_last = (state_rev_last / state_rev_2)
    trend_state_rev_this = (state_rev_this / state_rev_2)
    x = (trend_state_rev_last)
    y = (trend_state_rev_this)
    find rev_color
    locate 9,60
    format trend_state_rev_this, 5.2
    display "(trend_state_rev_this)"
```

```
    a = (trend_state_rev_this)
    format a,5.2
    locate 9,50
    format trend_state_rev_last, 5.2
    display "(trend_state_rev_last)"
    b = (trend_state_rev_last)
    format b,5.2
    locate 9,40
    display "1.00"
    pdisplay "    State Related                1.00    (b)    (a)"
    reset rev_color;

Rule display_abis_t_rev If todo = trend_statements Then abis_t_rev = found
    trend_t_rev_last = (t_rev_last / t_rev_2)
    trend_t_rev_this = (t_rev_this / t_rev_2)
    x = (trend_t_rev_last)
    y = (trend_t_rev_this)
    find rev_color
    locate 10,60
    format trend_t_rev_this, 5.2
    display "(trend_t_rev_this)"
    a = (trend_t_rev_this)
    format a,5.2
    locate 10,50
    format trend_t_rev_last, 5.2
    display "(trend_t_rev_last)"
    b = (trend_t_rev_last)
    format b,5.2
    locate 10,40
    display "1.00"
    pdisplay "      Total Revenue              1.00    (b)    (a)"
    pdisplay "  Expenses"
    reset rev_color;

Rule display_abis_cost_uniforms_issued If todo = trend_statements Then abis_uniforms = found
    trend_uniforms_last = (cost_uniforms_last / cost_uniforms_2)
    trend_uniforms_this = (cost_uniforms_this / cost_uniforms_2)
    x = (trend_uniforms_last)
    y = (trend_uniforms_this)
    find cost_color
    locate 12,60
    format trend_uniforms_this, 5.2
    display "(trend_uniforms_this)"
    a = (trend_uniforms_this)
    format a,5.2
    locate 12,50
    format trend_uniforms_last, 5.2
    display "(trend_uniforms_last)"
    b = (trend_uniforms_last)
    format b,5.2
    locate 12,40
    display "1.00"
    pdisplay "    Cost of Uniforms Issued      1.00    (b)    (a)"
    reset cost_color;

Rule display_cbis_cost_uniforms_issued If stmt_number = 2 Then cbis_uniforms = found
    trend_uniforms_last_c = (act_unif_last / act_unif_2)
    trend_uniforms_this_c = (act_unif_this / act_unif_2)
    x = (trend_uniforms_last_c)
    y = (trend_uniforms_this_c)
    find cost_color
    locate 12,60
    format trend_uniforms_this_c, 5.2
    display "(trend_uniforms_this_c)"
    a = (trend_uniforms_this_c)
    format a,5.2
    locate 12,50
    format trend_uniforms_last_c, 5.2
    display "(trend_uniforms_last_c)"
    b = (trend_uniforms_last_c)
    format b,5.2
    locate 12,40
    display "1.00"
    pdisplay "    Uniform Purchases            1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_personal If todo = trend_statements Then abis_personal = found
    trend_personal_last = (personal_last / personal_2)
    trend_personal_this = (t_personal / personal_2)
    x = (trend_personal_last)
```

```
    y = (trend_personal_this)
    find cost_color
    locate 13,60
    format trend_personal_this, 5.2
    display "{trend_personal_this}"
    a = (trend_personal_this)
    format a,5.2
    locate 13,50
    format trend_personal_last, 5.2
    display "{trend_personal_last}"
    b = (trend_personal_last)
    format b,5.2
    locate 13,40
    display "1.00"
    pdisplay "    Personnel                    1.00    {b}    {a}"
    reset cost_color;

Rule display_abis_contractual If todo = trend_statements Then abis_contract = found
    trend_contract_last = (contract_last / contract_2)
    trend_contract_this = (contract_this / contract_2)
    x = (trend_contract_last)
    y = (trend_contract_this)
    find cost_color
    locate 14,60
    format trend_contract_this, 5.2
    display "{trend_contract_this}"
    a = (trend_contract_this)
    format a,5.2
    locate 14,50
    format trend_contract_last, 5.2
    display "{trend_contract_last}"
    b = (trend_contract_last)
    format b,5.2
    locate 14,40
    display "1.00"
    pdisplay "    Contractual                  1.00    {b}    {a}"
    reset cost_color;

Rule display_abis_s_&_m If todo = trend_statements Then abis_s_&_m = found
    trend_s_&_m_last = (s_&_m_last / s_&_m_2)
    trend_s_&_m_this = (s_&_m_this / s_&_m_2)
    x = (trend_s_&_m_last)
    y = (trend_s_&_m_this)
    find cost_color
    locate 15,60
    format trend_s_&_m_this, 5.2
    display "{trend_s_&_m_this}"
    a = (trend_s_&_m_this)
    format a,5.2
    locate 15,50
    format trend_s_&_m_last, 5.2
    display "{trend_s_&_m_last}"
    b = (trend_s_&_m_last)
    format b,5.2
    locate 15,40
    display "1.00"
    pdisplay "    Supplies & Materials         1.00    {b}    {a}"
    reset cost_color;

Rule display_abis_continuous If todo = trend_statements Then abis_contin = found
    trend_contin_last = (contin_last / contin_2)
    trend_contin_this = (contin_this / contin_2)
    x = (trend_contin_last)
    y = (trend_contin_this)
    find cost_color
    locate 16,60
    format trend_contin_this, 5.2
    display "{trend_contin_this}"
    a = (trend_contin_this)
    format 1,5.2
    locate 16,50
    format trend_contin_last, 5.2
    display "{trend_contin_last}"
    b = (trend_contin_last)
    format b,5.2
    locate 16,40
    display "1.00"
    pdisplay "    Continuous                   1.00    {b}    {a}"
    reset cost_color;
```

```
Rule display_abis_depreciation If todo = trend_statements Then  abis_deprec = found
    trend_deprec_last = (deprec_last / deprec_2)
    trend_deprec_this = (deprec_this / deprec_2)
    x = (trend_deprec_last)
    y = (trend_deprec_this)
    find cost_color
    locate 17,60
    format trend_deprec_this, 5.2
    display "(trend_deprec_this)"
    a = (trend_deprec_this)
    format a,5.2
    locate 17,50
    format trend_deprec_last, 5.2
    display "(trend_deprec_last)"
    b = (trend_deprec_last)
    format b,5.2
   locate 17,40
    display "1.00"
    pdisplay "    Depreciation                1.00    (b)    (a)"
    reset cost_color;

Rule display_cbis_equipment If todo = trend_statements Then  cbis_equip = found
    trend_equip_last = (act_equip_last / act_equip_2)
    trend_equip_this = (act_equip_this / act_equip_2)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find cost_color
    locate 17,60
    format trend_equip_this, 5.2
    a = (trend_equip_this)
    format a,5.2
    display "(trend_equip_this)"
    locate 17,50
    format trend_equip_last, 5.2
    b = (trend_equip_last)
    format b,5.2
    display "(trend_equip_last)"
    locate 17,40
    display "1.00"
    pdisplay "    Equipment                  1.00    (b)    (a)"
    reset cost_color;

Rule display_abis_t_expenses If todo = trend_statements Then  abis_t_exp = found
    trend_t_expenses_last = (t_expenses_last / t_expenses_2)
    trend_t_expenses_this = (t_expenses / t_expenses_2)
    x = (trend_t_expenses_last)
    y = (trend_t_expenses_this)
    find cost_color
    locate 18,60
    format trend_t_expenses_this, 5.2
    display "(trend_t_expenses_this)"
    a = (trend_t_expenses_this)
    format a,5.2
    locate 18,50
    format trend_t_expenses_last, 5.2
    display "(trend_t_expenses_last)"
    b = (trend_t_expenses_last)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "    Total Expenses             1.00    (b)    (a)"
    reset cost_color;

Rule display_cbis_t_expenses If todo = trend_statements Then  cbis_t_exp = found
    trend_t_expenses_last_c = (t_cash_exp_last / t_cash_exp_2)
    trend_t_expenses_this_c = (t_cash_exp_this / t_cash_exp_2)
    x = (trend_t_expenses_last_c)
    y = (trend_t_expenses_this_c)
    find cost_color
    locate 18,60
    format trend_t_expenses_this_c, 5.2
    display "(trend_t_expenses_this_c)"
    a = (trend_t_expenses_this_c)
    format a,5.2
    locate 18,50
    format trend_t_expenses_last_c, 5.2
    display "(trend_t_expenses_last_c)"
    b = (trend_t_expenses_last_c)
    format b,5.2
    locate 18,40
```

```
    display "1.00"
    pdisplay "      Total Expenses              1.00     (b)     (a)"
    reset cost_color;

Rule display_abis_net_income If todo = trend_statements Then  abis_ni = found
    trend_net_income_last = (net_income_last / net_income_2)
    trend_net_income_this = (net_income / net_income_2)
    x = (trend_net_income_last)
    y = (trend_net_income_this)
    find rev_color
    locate 19,60
    format trend_net_income_this, 5.2
    display "(trend_net_income_this)"
    a = (trend_net_income_this)
    format a,5.2
    locate 19,50
    format trend_net_income_last, 5.2
    display "(trend_net_income_last)"
    b = (trend_net_income_last)
    format b,5.2
    find is_it_neg
!   find neg_base
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00 "
    pdisplay "   Net Income from Operations        1.00     (b)     (a)"
    find neg_disp?
    reset rev_color
    reset is_it_neg;


Rule display_that_ni_base_yr_neg

If net_income_2 < 0

Then neg_base = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";


 Rule pdisplay_neg_ni_abis

If is_it_neg = yes

Then neg_disp? = found
    pdisplay " "
    pdisplay "Note that net income is increasing in the negative direction."
    pdisplay " "
    pdisplay " ";


Rule display_cbis_net_income If todo = trend_statements Then  cbis_ni = found
    trend_net_income_last_c = (cash_net_income_last / cash_net_income_2)
    trend_net_income_this_c = (cash_net_income_this / cash_net_income_2)
    x = (trend_net_income_last_c)
    y = (trend_net_income_this_c)
    find rev_color
    locate 19,60
    format trend_net_income_this_c, 5.2
    display "(trend_net_income_this_c)"
    a = (trend_net_income_this_c)
    format a,5.2
    locate 19,50
    format trend_net_income_last_c, 5.2
    display "(trend_net_income_last_c)"
    b = (trend_net_income_last_c)
    format b,5.2
```

```
    find is_it_neg_c !     find neg_base_c
    locate 19,40
    reset rev_color
    find rev_color
    display "1.00¬"
    pdisplay "   Net Income from Operations          1.00      (b)      (a)"
    find neg_disp?_c
    reset rev_color
    reset is_it_neg_c;

Rule display_that_ni_base_yr_neg

If cash_net_income_2 < 0

Then neg_base_c = found

    locate 8,68
    display "note: the"
    locate 9,68
    display "net income"
    locate 10,68
    display "for the "
    locate 11,68
    display "base year"
    locate 12,68
    display "was"
    locate 13,68
    display "negative";




Rule pdisplay_neg_ni_cbis

If is_it_neg_c = yes

Then neg_disp?_c = found
    pdisplay " "
    pdisplay "Note that net income is increasing in the negative direction."
    pdisplay " "
    pdisplay " ";

Rule is_net_income_negative If net_income < = 0 and
  net_income_last < = 0 and
  net_income_2 < = 0 and
  x > 1.05  and
  y > 1.1025 Then locate 8,68
    color = 15
    display "**  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction"
    locate 19,66
    display "**"
    color = 12                          !!2
     locate 19,60                       !!!this was all added
     format trend_net_income_this, 5.2
     display "(trend_net_income_this)"
     locate 19,50
     format trend_net_income_last, 5.2
     display "(trend_net_income_last)"
     locate 19,40
     display "1.00¬"                    !!
    is_it_neg = yes;

Rule is_net_income_negative If cash_net_income_this < = 0 and
  cash_net_income_last < = 0 and
  cash_net_income_2 < = 0 and
  x > 1.05  and
```

```
y > 1.1025 Then locate 8,68
  color = 15
  display "**  note "
  locate 9,68
  display "that it is"
  locate 10,68
  display "increasing"
  locate 11,68
  display "in the "
  locate 12,68
  display "negative"
  locate 13,68
  display "direction"
  locate 19,66
  display "**"
  color = 12
  locate 19,60
  format trend_net_income_this_c, 5.2
  display "(trend_net_income_this_c)"
  locate 19,50
  format trend_net_income_last_c, 5.2
  display "(trend_net_income_last_c)"
  locate 19,40
  display "1.00¬"
  is_it_neg_c = yes;


Rule display_bs_inventory If todo = trend_statements Then bs_inventory = found
    trend_inv_rev_last = (last_yr_inventory / inv_2_ago)
    trend_inv_rev_this = (total_inv / inv_2_ago)
    x = (trend_inv_rev_last)
    y = (trend_inv_rev_this)
    find rev_color
    locate 7,65
    format trend_inv_rev_this, 5.2
    display "(trend_inv_rev_this)"
    a = (trend_inv_rev_this)
    format a,5.2
    locate 7,55
    format trend_inv_rev_last, 5.2
    display "(trend_inv_rev_last)"
    b = (trend_inv_rev_last)
    format b,5.2
    locate 7,45
    display "1.00"
    pdisplay "    Inventory                    1.00    (b)    (a)"
    pdisplay "  Long Term Assets"
    reset rev_color;

Rule display_bs_equipment If todo = trend_statements Then bs_equipment = found
    trend_equip_last = (last_yr_equip_value / equip_2_ago)
    trend_equip_this = (total_current_value / equip_2_ago)
    x = (trend_equip_last)
    y = (trend_equip_this)
    find rev_color
    locate 9,65
    format trend_equip_this, 5.2
    display "(trend_equip_this)"
    a = (trend_equip_this)
    format a,5.2
    locate 9,55
    format trend_equip_last, 5.2
    display "(trend_equip_last)"
    b = (trend_equip_last)
    format b,5.2
    locate 9,45
    display "1.00"
    pdisplay "    Equipment                    1.00    (b)    (a)"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets1 = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    format trend_totals_this, 5.2
    a = (trend_totals_this)
    format a,5.2
    format trend_totals_last, 5.2
    b = (trend_totals_last)
```

```
    format b,5.2
    locate 10,45
    locate 16,65
    format trend_totals_this, 5.2
    display "(trend_totals_this)"
    locate 16,55
    format trend_totals_last, 5.2
    display "(trend_totals_last)"
    locate 16,45
    pdisplay "       Total Assets                    1.00     (b)      (a)"
    pdisplay " "
    pdisplay "  Liabilities & Capital";


Rule display_bs_due_to_other_ae If todo = trend_statements Then bs_due_from = found
    trend_due_rev_last = (last_yr_due_to / due_to_2_ago)
    trend_due_rev_this = (new_due_to / due_to_2_ago)
    x = (trend_due_rev_last)
    y = (trend_due_rev_this)
    find cost_color
    locate 14,65
    format trend_due_rev_this, 5.2
    display "(trend_due_rev_this)"
    a = (trend_due_rev_this)
    format a,5.2
    locate 14,55
    format trend_due_rev_last, 5.2
    display "(trend_due_rev_last)"
    b = (trend_due_rev_last)
    format b,5.2
    locate 14,45
    display "1.00"
    pdisplay "     Cash Basis Loan from              1.00     (b)      (a)"
    pdisplay "       other Auxiliaries"
    reset cost_color;

Rule display_bs_reserves If todo = trend_statements Then bs_reserves = found
    trend_reserves_last = (reserves_last / reserves_2)
    trend_reserves_this = (reserves_this / reserves_2)
    x = (trend_reserves_last)
    y = (trend_reserves_this)
    find rev_color
    locate 15,65
    format trend_reserves_this, 5.2
    display "(trend_reserves_this)"
    a = (trend_reserves_this)
    format a,5.2
    locate 15,55
    format trend_reserves_last, 5.2
    display "(trend_reserves_last)"
    b = (trend_reserves_last)
    format b,5.2
    locate 15,45
    display "1.00"
    pdisplay "     Equity -- Reserves                1.00     (b)      (a)"
    reset rev_color;

Rule display_bs_totals If todo = trend_statements Then bs_total_assets = found
    trend_totals_last = (t_assets_last / t_assets_2)
    trend_totals_this = (t_assets_this / t_assets_2)
    x = (trend_totals_last)
    y = (trend_totals_this)
    color = 11
    locate 10,65
    format trend_totals_this, 5.2
    display "(trend_totals_this)"
    locate 10,55
    format trend_totals_last, 5.2
    display "(trend_totals_last)"
    locate 10,45
    display "1.00"
    locate 16,65
    format trend_totals_this, 5.2
    display "(trend_totals_this)"
    a = (trend_totals_this)
    format a,5.2
    locate 16,55
    format trend_totals_last, 5.2
    display "(trend_totals_last)"
    b = (trend_totals_last)
```

```
    format b,5.2
    locate 16,45
    pdisplay "      Total Liabilities & Capital        1.00      (b)       (a)"
    display "1.00 ¬";

Rule display_seg_corps_cost If todo = trend_statements Then seg_corps_cost = found
    trend_seg_corps_cost_last = (corps_cost_last / corps_cost_2)
    trend_seg_corps_cost_this = (corps_cost_this / corps_cost_2)
    x = (trend_seg_corps_cost_last)
    y = (trend_seg_corps_cost_this)
    find cost_color
    locate 14,60
    format trend_seg_corps_cost_this, 5.2
    display "(trend_seg_corps_cost_this)"
    a = (trend_seg_corps_cost_this)
    format a,5.2
    locate 14,50
    format trend_seg_corps_cost_last, 5.2
    display "(trend_seg_corps_cost_last)"
    b = (trend_seg_corps_cost_last)
    format b,5.2
    locate 14,40
    display "1.00"
    pdisplay "    Corps                          1.00      (b)       (a)"
    reset cost_color;

Rule display_seg_public_cost If todo = trend_statements Then seg_public_cost = found
    trend_seg_public_cost_last = (public_cost_last / public_cost_2)
    trend_seg_public_cost_this = (public_cost_this / public_cost_2)
    x = (trend_seg_public_cost_last)
    y = (trend_seg_public_cost_this)
    find cost_color
    locate 15,60
    format trend_seg_public_cost_this, 5.2
    display "(trend_seg_public_cost_this)"
    a = (trend_seg_public_cost_this)
    format a,5.2
    locate 15,50
    format trend_seg_public_cost_last, 5.2
    display "(trend_seg_public_cost_last)"
    b = (trend_seg_public_cost_last)
    format b,5.2
    locate 15,40
    display "1.00"
    pdisplay "    Public                         1.00      (b)       (a)"
    reset cost_color;

Rule display_seg_s_f_s_cost If todo = trend_statements Then seg_s_f_s_cost = found
    trend_seg_s_f_s_cost_last = (s_f_s_cost_last / s_f_s_cost_2)
    trend_seg_s_f_s_cost_this = (s_f_s_cost_this / s_f_s_cost_2)
    x = (trend_seg_s_f_s_cost_last)
    y = (trend_seg_s_f_s_cost_this)
    find cost_color
    locate 16,60
    format trend_seg_s_f_s_cost_this, 5.2
    display "(trend_seg_s_f_s_cost_this)"
    a = (trend_seg_s_f_s_cost_this)
    format a,5.2
    locate 16,50
    format trend_seg_s_f_s_cost_last, 5.2
    display "(trend_seg_s_f_s_cost_last)"
    b = (trend_seg_s_f_s_cost_last)
    format b,5.2
    locate 16,40
    display "1.00"
    pdisplay "    Students/Faculty/Staff         1.00      (b)       (a)"
    reset cost_color;

Rule display_seg_interdept_cost If todo = trend_statements Then seg_interdept_cost = found
    trend_seg_interdept_cost_last = (interdept_cost_last / interdept_cost_2)
    trend_seg_interdept_cost_this = (interdept_cost_this / interdept_cost_2)
    x = (trend_seg_interdept_cost_last)
    y = (trend_seg_interdept_cost_this)
    find cost_color
    locate 17,60
    format trend_seg_interdept_cost_this, 5.2
    display "(trend_seg_interdept_cost_this)"
    a = (trend_seg_interdept_cost_this)
    format a,5.2
    locate 17,50
```

```
    format trend_seg_interdept_cost_last, 5.2
    display "(trend_seg_interdept_cost_last)"
    b = (trend_seg_interdept_cost_last)
    format b,5.2
    locate 17,40
    display "1.00"
    pdisplay "     Interdepartmental              1.00     (b)     (a)"
    reset cost_color;

Rule display_seg_music_cost If todo = trend_statements Then seg_music_cost = found
    trend_seg_music_cost_last = (music_cost_last / music_cost_2)
    trend_seg_music_cost_this = (music_cost_this / music_cost_2)
    x = (trend_seg_music_cost_last)
    y = (trend_seg_music_cost_this)
    find cost_color
    locate 18,60
    format trend_seg_music_cost_this, 5.2
    display "(trend_seg_music_cost_this)"
    a = (trend_seg_music_cost_this)
    format a,5.2
    locate 18,50
    format trend_seg_music_cost_last, 5.2
    display "(trend_seg_music_cost_last)"
    b = (trend_seg_music_cost_last)
    format b,5.2
    locate 18,40
    display "1.00"
    pdisplay "     Music Department               1.00     (b)     (a)"
    reset cost_color;

Rule display_seg_state_cost If todo = trend_statements Then seg_state_cost = found
    trend_seg_state_cost_last = (state_cost_last / state_cost_2)
    trend_seg_state_cost_this = (state_cost_this / state_cost_2)
    x = (trend_seg_state_cost_last)
    y = (trend_seg_state_cost_this)
    find cost_color
    locate 19,60
    format trend_seg_state_cost_this, 5.2
    display "(trend_seg_state_cost_this)"
    a = (trend_seg_state_cost_this)
    format a,5.2
    locate 19,50
    format trend_seg_state_cost_last, 5.2
    display "(trend_seg_state_cost_last)"
    b = (trend_seg_state_cost_last)
    format b,5.2
    locate 19,40
    display "1.00"
    pdisplay "     State Related                  1.00     (b)     (a)"
    reset cost_color;

Rule display_corps_diff If todo = trend_statements Then corps_diff = found
    corps_diff_this = (t_mil_rev - corps_cost_this)
    corps_diff_last = (mil_rev_last - corps_cost_last)
    corps_diff_2 = (mil_rev_2 - corps_cost_2)
    trend_corps_diff_last = (corps_diff_last / corps_diff_2)
    trend_corps_diff_this = (corps_diff_this / corps_diff_2)
    x = (trend_corps_diff_last)
    y = (trend_corps_diff_this)
    find rev_color
    a = (corps_diff_this)
    b = (corps_diff_last)
    c = (corps_diff_2)
    temp_vbl = corps
    find neg?
    locate 9,56
    format trend_corps_diff_this, 5.2
    display "(trend_corps_diff_this)"
    a = (trend_corps_diff_this)
    format a,5.2
    locate 9,46
    format trend_corps_diff_last, 5.2
    display "(trend_corps_diff_last)"
    b = (trend_corps_diff_last)
    format b,5.2
    locate 9,36
    pdisplay "     Corps                          1.00     (b)     (a)"
    display "1.00"
    reset rev_color
    locate 9,62
```

```
    display "(neg?)"
    reset neg?;

Rule display_public_diff If todo = trend_statements Then public_diff = found
    public_diff_this = (public_rev_this - public_cost_this)
    public_diff_last = (public_rev_last - public_cost_last)
    public_diff_2 = (public_rev_2 - public_cost_2)
    trend_public_diff_last = (public_diff_last / public_diff_2)
    trend_public_diff_this = (public_diff_this / public_diff_2)
    x = (trend_public_diff_last)
    y = (trend_public_diff_this)
    find rev_color
    a = (public_diff_this)
    b = (public_diff_last)
    c = (public_diff_2)
    temp_vbl = public
    find neg?
    locate 10,56
    format trend_public_diff_this, 5.2
    display "(trend_public_diff_this)"
    a = (trend_public_diff_this)
    format a,5.2
    locate 10,46
    format trend_public_diff_last, 5.2
    display "(trend_public_diff_last)"
    b = (trend_public_diff_last)
    format b,5.2
    locate 10,36
    pdisplay "    Public                    1.00     (b)     (a)"
    display "1.00"
    reset rev_color
    locate 10,62
    display "(neg?)"
    reset neg?;

Rule display_s_f_s_diff If todo = trend_statements Then s_f_s_diff = found
    s_f_s_diff_this = (s_f_s_rev_this - s_f_s_cost_this)
    s_f_s_diff_last = (s_f_s_rev_last - s_f_s_cost_last)
    s_f_s_diff_2 = (s_f_s_rev_2 - s_f_s_cost_2)
    trend_s_f_s_diff_last = (s_f_s_diff_last / s_f_s_diff_2)
    trend_s_f_s_diff_this = (s_f_s_diff_this / s_f_s_diff_2)
    x = (trend_s_f_s_diff_last)
    y = (trend_s_f_s_diff_this)
    find rev_color
    a = (s_f_s_diff_this)
    b = (s_f_s_diff_last)
    c = (s_f_s_diff_2)
    temp_vbl = students_faculty_staff
    find neg?
    locate 11,56
    format trend_s_f_s_diff_this, 5.2
    display "(trend_s_f_s_diff_this)"
    a = (trend_s_f_s_diff_this)
    format a,5.2
    locate 11,46
    format trend_s_f_s_diff_last, 5.2
    display "(trend_s_f_s_diff_last)"
    b = (trend_s_f_s_diff_last)
    format b,5.2
    locate 11,36
    pdisplay "    Students/Faculty/Staff    1.00     (b)     (a)"
    display "1.00"
    reset rev_color
    locate 11,62
    display "(neg?)"
    reset neg?;

Rule display_interdept_diff If todo = trend_statements Then interdept_diff = found
    interdept_diff_this = (interdept_rev_this - interdept_cost_this)
    interdept_diff_last = (interdept_rev_last - interdept_cost_last)
    interdept_diff_2 = (interdept_rev_2 - interdept_cost_2)
    trend_interdept_diff_last = (interdept_diff_last / interdept_diff_2)
    trend_interdept_diff_this = (interdept_diff_this / interdept_diff_2)
    x = (trend_interdept_diff_last)
    y = (trend_interdept_diff_this)
    find rev_color
    a = (interdept_diff_this)
    b = (interdept_diff_last)
    c = (interdept_diff_2)
    temp_vbl = interdepartmental
```

```
    find neg?
    locate 12,56
    format trend_interdept_diff_this, 5.2
    display "(trend_interdept_diff_this)"
    a = (trend_interdept_diff_this)
    format a,5.2
    locate 12,46
    format trend_interdept_diff_last, 5.2
    display "(trend_interdept_diff_last)"
    b = (trend_interdept_diff_last)
    format b,5.2
    locate 12,36
    pdisplay "    Interdepartmental          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 12,62
    display "(neg?)"
    reset neg?;

Rule display_music_diff If todo = trend_statements Then music_diff = found
    music_diff_this = (music_rev_this - music_cost_this)
    music_diff_last = (music_rev_last - music_cost_last)
    music_diff_2 = (music_rev_2 - music_cost_2)
    trend_music_diff_last = (music_diff_last / music_diff_2)
    trend_music_diff_this = (music_diff_this / music_diff_2)
    x = (trend_music_diff_last)
    y = (trend_music_diff_this)
    find rev_color
    a = (music_diff_this)
    b = (music_diff_last)
    c = (music_diff_2)
    temp_vbl = music_department
    find neg?
    locate 13,56
    format trend_music_diff_this, 5.2
    display "(trend_music_diff_this)"
    a = (trend_music_diff_this)
    format a,5.2
    locate 13,46
    format trend_music_diff_last, 5.2
    display "(trend_music_diff_last)"
    b = (trend_music_diff_last)
    format b,5.2
    locate 13,36
    pdisplay "    Music Department          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 13,62
    display "(neg?)"
    reset neg?;

Rule display_state_diff If todo = trend_statements Then state_diff = found
    state_diff_this = (state_rev_this - state_cost_this)
    state_diff_last = (state_rev_last - state_cost_last)
    state_diff_2 = (state_rev_2 - state_cost_2)
    trend_state_diff_last = (state_diff_last / state_diff_2)
    trend_state_diff_this = (state_diff_this / state_diff_2)
    x = (trend_state_diff_last)
    y = (trend_state_diff_this)
    find rev_color
    a = (state_diff_this)
    b = (state_diff_last)
    c = (state_diff_2)
    temp_vbl = state_related
    find neg?
    locate 14,56
    format trend_state_diff_this, 5.2
    display "(trend_state_diff_this)"
    a = (trend_state_diff_this)
    format a,5.2
    locate 14,46
    format trend_state_diff_last, 5.2
    display "(trend_state_diff_last)"
    b = (trend_state_diff_last)
    format b,5.2
    locate 14,36
    pdisplay "    State Related          1.00      (b)      (a)"
    display "1.00"
    reset rev_color
    locate 14,62
```

```
    display "{neg?}"
    find print_negs
    reset neg?;

Rule print_neg_mkt_trends

If mkt_neg_trends < > unknown

Then print_negs = found
    pdisplay " "
    pdisplay " "
    pdisplay "Note that the trends for revenue minus expenses in some market segments"
    pdisplay "are increasing in the negative direction.  These market segments include:"
    pdisplay "{mkt_neg_trends}"
    pdisplay " "
    pdisplay " ";

Rule is_it_negative If a < = 0 and
  b < = 0 and
  c < = 0 and
  x > 1.05 and
  y > 1.1025 Then neg? = "*"
    mkt_neg_trends = (temp_vbl)
    color = 12;

Rule put_"*"_explanation_on_display If todo = trend_statements Then display_for_neg = found
    locate 8,68
    color = 14
    display "*  note "
    locate 9,68
    display "that it is"
    locate 10,68
    display "increasing"
    locate 11,68
    display "in the "
    locate 12,68
    display "negative"
    locate 13,68
    display "direction ¬ ";

Rule color_exp_inc_rev If x > = 1.05 and
  y > = 1.1025 Then rev_color = found
    color = 14;

Rule color_exp_dec_rev If x < = .95 and
  y < = .9025 Then rev_color = found
    color = 12 else color = 11;

Rule color_exp_inc_cost If x > = 1.05 and
  y > = 1.1025 Then cost_color = found
    color = 12;

Rule color_exp_dec_cost If x < = .95 and
  y < = .9025 Then cost_color = found
    color = 14 else color = 11;

! Statement Block

ask stmt_number: " "; choices stmt_number: 1,2,3,4,5; plural:bs_this,bs_last,bs_2_ago; plural: mkt_neg_trends; bkcolor = 1;
```