VT DINING GAMING PROJECT

CS 4624 – Virginia Tech, Blacksburg

FUNCTIONAL SPECIFICATION

This spec describes the core requirements and the features of the game that is being designed for the VT Dining Services. It outlines the core user scenarios and details the requirements of the game.

DOCUMENT INFORMATION

ROLE	Name; Email
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DOCUMENT UPDATE HISTORY

Date	Author	Changes
02/25/2013	Avneet Singh	Initial design spec draft
03/05/2013	Avneet Singh	Feedback from client
03/10/2013	Avneet Singh	Updated the prioritized station list
03/15/2013	Avneet and Evan	Updated project timeline
04/20/2013	Avneet	Updated serving station details
04/27/2013	Avneet and Evan	Updating the final spec
05/05/2013	Avneet	Final spec complete

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1. Executive Summary

1.1 Elevator Pitch

The Virginia Tech Food Safety Game will allow for users or the new dining employees to learn about food safety in an interactive and more engaging way. The employees will be able to play this game on a personal or a public computer through the use of a browser and familiarize themselves with the food safety material that is necessary to take a food safety exam. The food safety game allows for the training coordinators to make the learning more enjoyable and guarantee food safety in their dining centers. When the game is complete, it will replace the PowerPoint presentation that is currently in place for the new employees to learn about food safety at Virginia Tech.

1.2 Problem

In order to teach the users about the importance of food safety in the dining centers, there is a need for a comprehensive training course. However, due to the lack of interactive material, it has become difficult to interest the employees in learning about food safety. At present, the employees do not have access to an interactive way of learning about the importance of food safety. And the material that is available does not aid the employees in helping them remember all of the important content. This limits their ability to take proper precautions and/steps to sustain a healthy environment in the dining centers at Virginia Tech.

1.3 Justification

1. It is crucial that all the employees be aware of food safety concerns.
2. It is very important that the employees are aware of the proper steps they need to take to ensure the safety of food in the dining centers.
3. It is important that the employees understand and follow the protocol that has been set in place by the dining services at Virginia Tech.
4. It is important that the employees are given an opportunity to learn about safe practices while preparing and serving food in the dining centers.

2. Goals & Non-Goals

In this section, we will focus on the goals for the game as a whole and sub-goals for each of the simulations/activities. We will also mention some of the non-goals, which is very important as it allows us to stay on track and not implement the features that can be part of the game but are not within the scope of this project.

2.1 Main Goals

1. Ability to teach food safety material through an interactive game
2. Ability to play the game using each of the commonly used browsers
3. Ability to navigate through the virtual game environment
4. Ability to walk through the simulations and activities multiple times

5. Ability to learn about how to stack food supplies in a cooler
6. Ability to learn about the proper practices while serving food
7. Ability to learn about how and when to update a temperature log
8. Ability to properly wash hands before handling food
9. Ability to understand the material so that a quiz can be taken afterwards.
10. Realistic time constraints on each of the activities to provide a near life experience.
11. Enable the coordinators to keep track of user's progress
12. Enable the coordinators to edit and save textual content in the game.

2.2 Non-Goals

The following features are being considered for Food Safety Game, but are not tracked by this spec.

- Enable the user to save and come back to the game
- Enable to user to access the game on a mobile device
- Enable the coordinators to change the non-textual content in the game

2.3 Goals for hand washing simulation

The following goals are specifically for the hand washing activity of the game

- Scrub hands and forearms for at least 20 seconds
- Scrubbing is not under running water
- Use paper towel to turn off faucet

2.4 Goals for cooler simulation

The following goals are specifically for the food stacking activity of the game

- Practice FIFO (First-In-First-Out) ordering
- Discarding of food after expiration date
- Store away from walls
- Store raw food below read-to-eat food

2.5 Goals for serving station simulation

The following goals are specifically for the serving station simulation

- Food must be stored at the correct temperature
- A temperature log must be kept
- When the temperature is not correct, the correct action must be taken
    - Reheat
    - Throw away

2.6 Goals for cooking station simulation

The following goals are specifically for the cooking station simulation

- Food must be cooked to minimum internal temperature for the correct amount of time

3. Core Game Interaction

The food safety game as discussed earlier in this spec will possess several different simulations/activities. In this section, we will begin with the overview of the game by looking at the top view for the main kitchen. And then we will discuss the game interaction for each of the simulations. Please keep in mind that this section will be constantly updated in the early game development stages as the game logic evolves. The title screen of the game is shown in Figure 1.

Figure 1: Title Screen for Food Safety 100 Game

3.1 Main Kitchen

In this game, the user or the new employee will begin with a welcome screen. This welcome screen will allow the user to enter his or her information and begin the game. Once the game begins, the user will be taken to a top view of the complete kitchen. This top view as shown in the mockup figure (Figure 1) below will contain a notification bar at the top which will contain:

- Order notifications
- Hand wash simulation shortcut
- Health bank
- Gloves on/off sign
- Game status

The notification bar allows for the user to have constant reminders about different parts of the game. Persistent notifications consistently provide the user with a new task or reminder that introduces a challenging environment. This screen also provides the user with a view of all the stations. This allows for the user to directly navigate to any of the activities with a single mouse click. It also enables the developer to design the game logic such that all the activities have equal priority and the user doesn't have to perform these activities in any particular order.

Figure 2: Top View of the Kitchen

3.2 Hand Washing Station

As mentioned earlier in this specification, the purpose of this food safety game is to inform the employees about the proper protocol and the principles that they need to follow to ensure food safety in the dining centers at Virginia Tech. In this part of the game, the user will be taken through a hand washing simulation, which will allow them to learn about the proper way to wash their hands and counter the potential hazards to food. The simulation will highlight the areas that are commonly missed during handwashing. It will also focus on the proper handwashing technique. Apart from information about the handwashing, this simulation will also involve information about the importance of gloves. It will highlight the purpose of wearing gloves, when to wear gloves, when to change gloves, and when they should not be worn.

Since the handwashing simulation has been integrated as part of a unique station within the game, it will be consistently accessible throughout the game with a click of a button. As mentioned in the previous section about the main game screen, clicking on the “hand” symbol in the notification bar will take the user to the simulation. The following steps explain the game interaction for the handwashing simulation:

1. Click on the faucet to turn water on
2. Click on soap
3. Show timer counting up (must scrub for 20 “seconds”)
4. Scrub hands (Shake mouse back and forth?)
5. Click on paper towel
6. Click on faucet to turn water off
7. Click on trash can to dispose paper towel
8. Click on gloves to put on

Figure 3 shows a mockup for the placement of different artifacts at the handwashing station.

Figure 3: Top view of the handwashing station

3.3 Cooler Station

The purpose of this station is to allow the user to learn more about the importance of proper storage of food. As mentioned earlier, the goals of this simulation include practicing FIFO ordering, discarding of expired food items, storing food away from the walls, and storing raw food below the read-to-eat food. This not only allows for a proper organization of food in the kitchen but also prevents any cross contamination of food items. Figure 4 shows a mockup of the cooler simulation. The game will allow the receiver to visit this station at any time and perform the storage of food on arrival or obtain the food out of the cooler for usage. Following steps show a draft of steps that are part of the game interaction for this particular station. These steps are split into two categories: Food Arrival and Food Usage.

3.3.1 Food Arrival

1. Food arrives at the designated area in the kitchen
2. Click on food item to pick it up and click on cooler

a. Pick the area of the cooler where the item goes

b. Place the food item based on its expiration date

3. Click “Place” or hit “Enter” in cooler to place food
4. When the cooler is opened, show “Check for expired food items”

3.3.2 Food Usage

1. Click on cooler
2. Click on food item that you need
    a. This presents you with an inventory list for that item (including expiration date)
    b. Pick the item based on its expiration date
3. Also allow the user to sort the items
4. Click to exit to kitchen (or maybe hit escape/enter to exit out of the simulation)

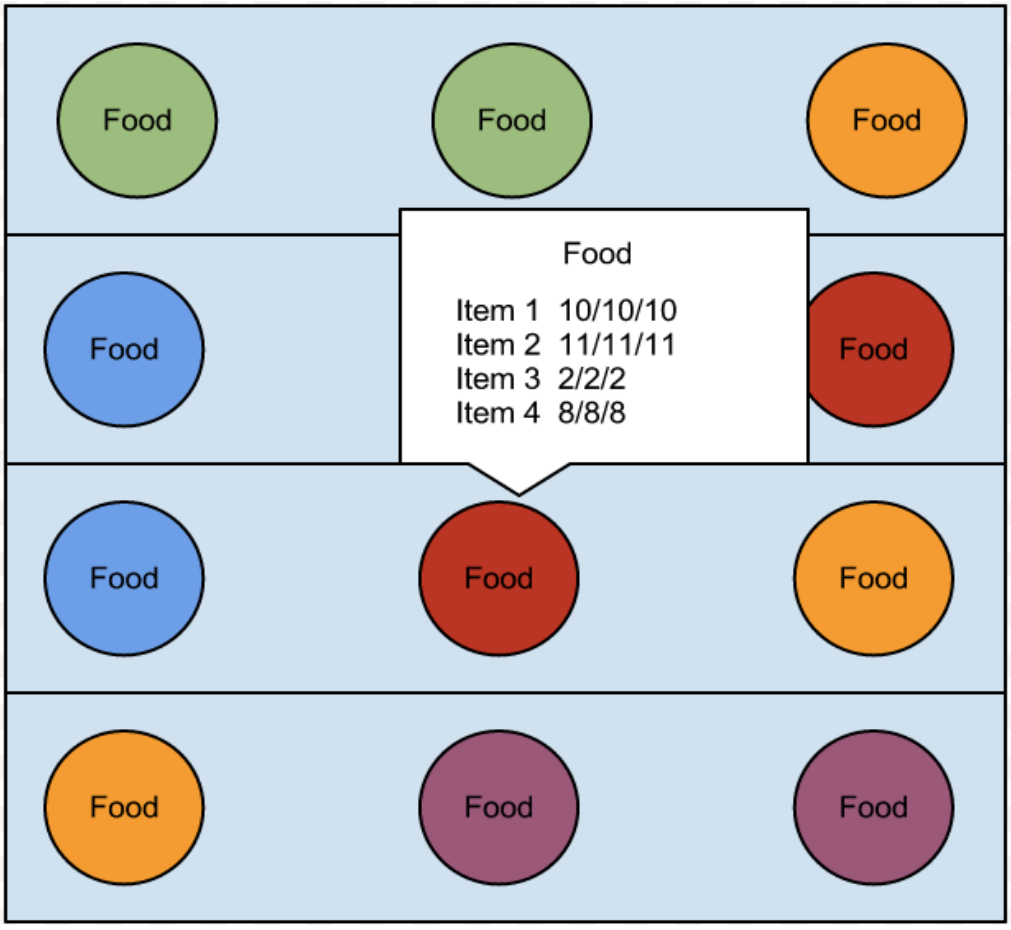

Figure 4: Front view of the Cooler Station

3.4 Serving Station

The purpose of this station is to allow the user to learn more about the proper practices while serving food. The goals involve the need for the user to properly store the serving utensils, use gloves or serving utensils, properly handle dishes and utensils, use an ice scoop or tongs to get ice, and not to take plates from customers across serving lines to avoid contamination. This station will also involve the user to keep track of a temperature log. It is very important that the temperature is kept regularly; therefore the user will be awarded and penalized points based on his or her actions throughout the game. Figure 4 shows a mockup of the serving station simulation and the following steps talk about the game interaction for this particular station.

1. Penalized if the user is supposed to wash hands and he/she hasn't
2. Populate the fields with the food (brief simulation)
3. A timer is displayed which shows when the food temperature needs to be monitored (Notification Bar).
4. Temperature log is auto-populated with the date, items, and time.
5. User enters the temperature and checks off. Once everything is checked off, timer resets
    a. You can click on an item to see all the past entries
6. If there are any actionable items, the user takes the proper actions.

Figure 5: Top view of the Serving Station

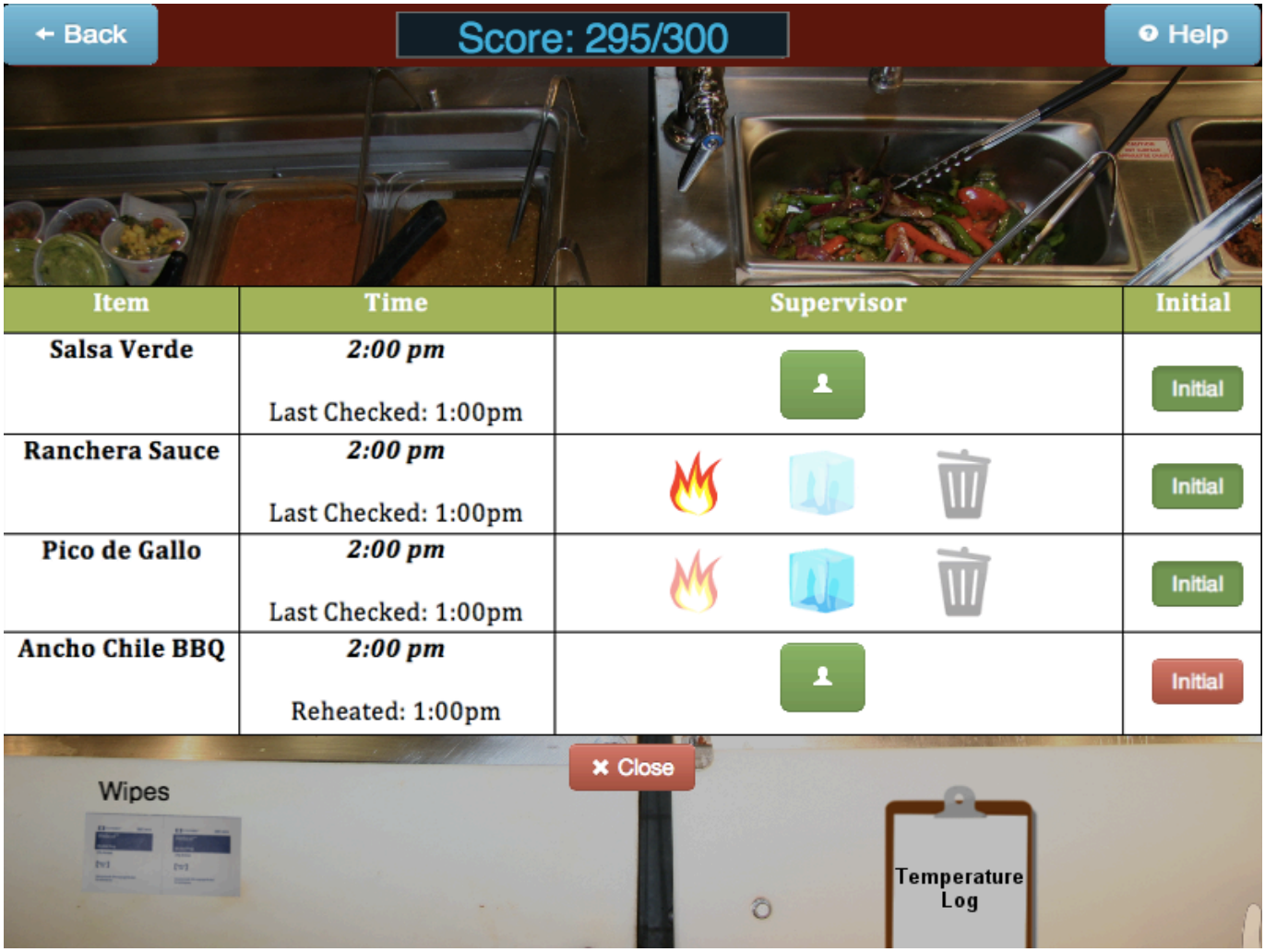

Figure 6: Serving Station with Temperature Log

3.5 Cooking Station

The purpose of the cooking station is to inform the user about the proper and safe way to prepare food. This station will also intersect with the cooler simulation, as the user will have to obtain items from the cooler for food preparation. It will introduce the risk of time-temperature abuse and how to limit the risk of cross contamination. The following steps talk about the game interaction involved in this particular part of the game. Figure 5 shows a mockup of the cooking station.

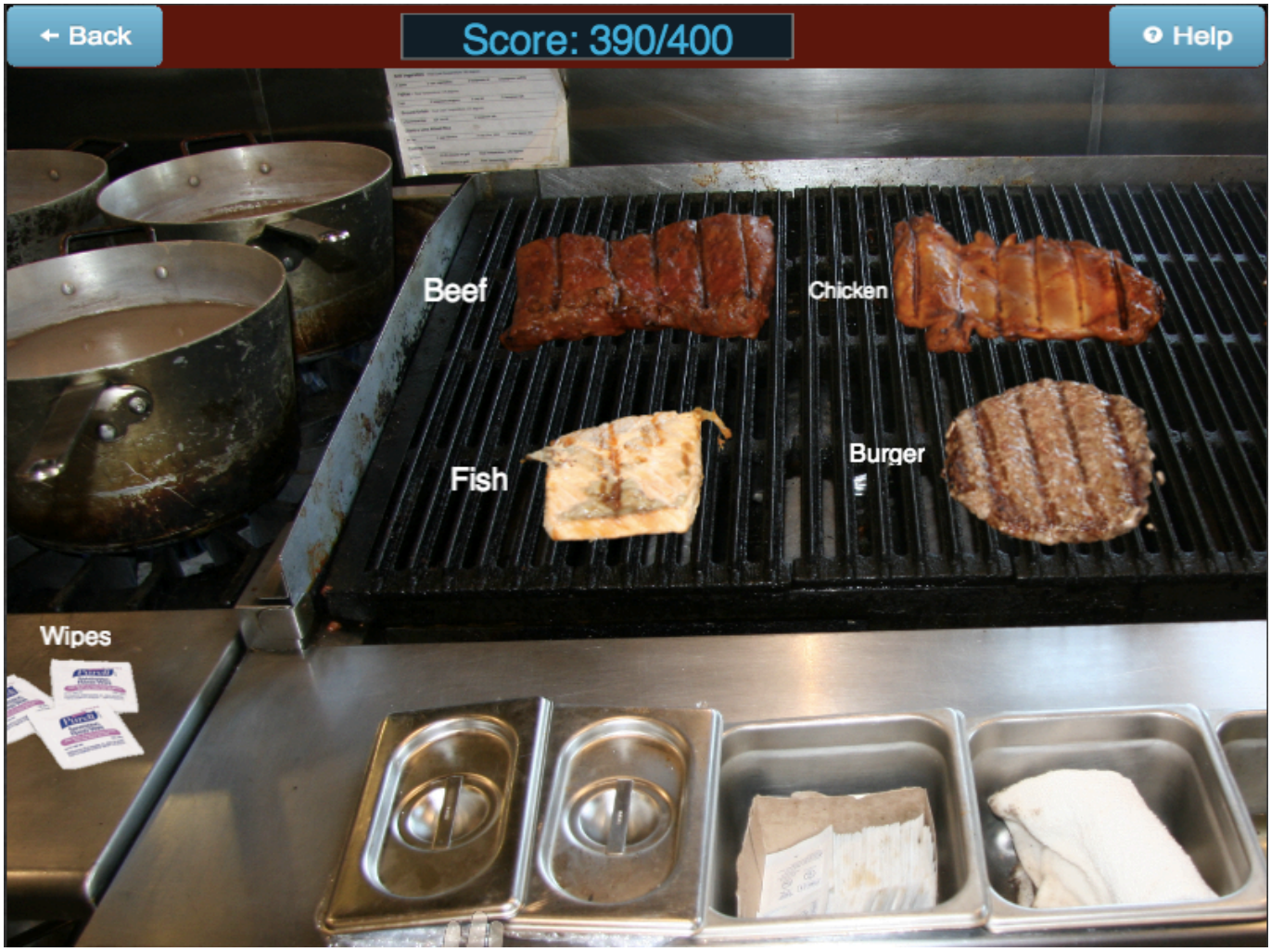

Figure 7: Top view of the Cooking Station

4. Prioritized Functional Requirements (High-Level)

In this section, we will prioritize the stations that will be covered throughout the game development.

Table 1: Prioritized Station Requirements

ID	Pri	Requirement	Status
1	1	Hand Washing Station	Completed
2	1	Cooking Station	Completed
3	2	Serving Station	Completed
4	3	Preparation Station	Planned
5	3	Cooler Station	Planned

5. Project Timeline

Table 2: Goal specific timeline

Goal	Week	Deadline	Deliverable	Member Lead
Project Requirements	2	2/15	Design Mockups	Avneet, Evan
Game Engine	3	2/20	Inform client	Avneet, Evan
Design Mockups	3	2/20	Deliver to client	Avneet, Evan
Design Blueprint	3	2/22	NA	Avneet
Design and Functional Specification	4	2/25	Submit Functional Design Specification	Avneet
Begin Product Development	4	2/25	NA	Avneet, Evan
Finalize Graphics	5	3/5	Update Design Spec	Avneet, Evan
Finish Game Logic and finalize content	5	3/7	Update Functional Design Spec	Avneet, Evan
End Product Development	10	4/12	Update Client	Evan
Beta Phase	11	4/15 – 4/19	Beta Game Invites	Avneet, Evan
Bug Fix	12	4/22 – 4/26	Game Hosting	Evan
Ship Deadline	13	5/3	Deliver Game	Avneet, Evan

6. Critical Dependencies

6.1 User has access to a computer

6.2 Hosting services for the game

7. Risks & Open Issues

7.1 Risks

We need to consider the scenario when the game crashes. Does the user start over? Do we consistently save user score/game status in preparation for a crash?

7.2 Open Issues

Please refer to the development documentation on the Github to obtain instructions for extending the game.

8. User Behavior and Feedback

This section will be filled as we approach the end of game development.

9. Checklist of the Basics

Addressed?	Topics	Rationale/Notes/Links
N/A	Security Need to make sure that the game is secure and that there are no bugs that lead to a compromise with the user's machine.	
YES	Privacy Need to follow proper privacy guidelines that are set by Dining Services at Virginia Tech. The only information we will obtain is probably the name and email address for the user.	
YES	Accessibility The game will not possess any special accommodations unless requested by the client.	
N/A	World Readiness	
YES	Game Updates This needs a further discussion with the client.	

N/A	Supportability The game should work with any popular browser.	

APPENDIX

10. Project Development Documentation

The project is hosted on a web hosting service: Github (Section 11.3). All the content including the raw material, code, graphical resources, specs, instructions, etc. can be obtained in the hosted repository. The project code is well documented which will allow for the developers to understand its implementation. The contact information of the developers is also included with this project specification in case there is a need to contact the original developers. Once the semester is over, the client and its IT staff will maintain the project. For more information, please contact Jessica Fillip (jfilip@vt.edu).

11. References

11.1 Food Safety 100

http://www.dining.vt.edu/staff/training/docs/food_safety_100.pdf

Filip, Jessica, and Andrew Watling. "Food Safety 100." Reading. *Food Safety 100*. Virginia Tech Dining Services. Web.

11.2 Game{Closure} Devkit

http://www.gameclosure.com

11.3 Food-Safety Github Repository

https://github.com/avneet723/Food-Safety

12. Feature Q&A / Decisions

1. Between what stations must the player wash their hands/change gloves?
2. What are the possible actions that the user can take when food is not within the temperature bounds?

13. Additional Notes

Things to do:

- Commenting (Start on Sat) – Complete!
- Main Screen for the game (Ask Jessica for image) – Complete!
- Help Text for each station – Complete!
- Ask Jessica for hints for each screen – Complete!
- Picture for the main kitchen – Complete!