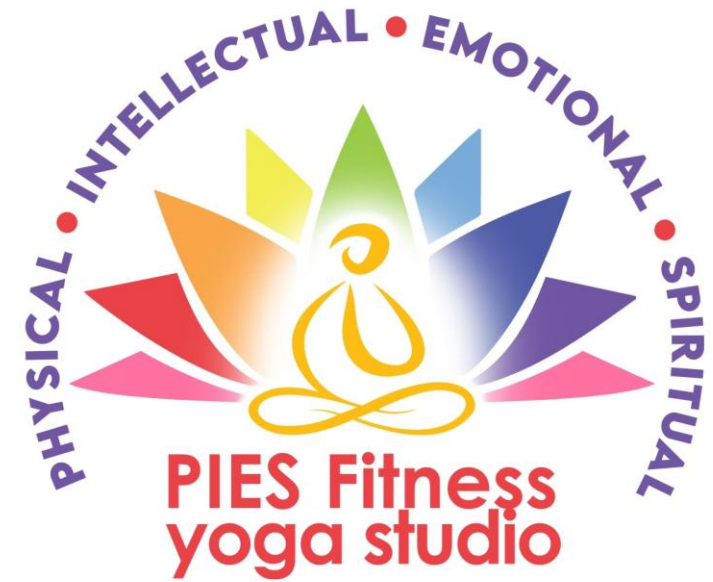


# ELECTRONIC HEALTH RECORDS SYSTEM FOR PIES FITNESS YOGA STUDIO

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CS 5934: CAPSTONE PROJECT


VIRGINIA TECH



# BACKGROUND AND CLIENT

- **Client:** PIES Fitness Yoga Studio, a yoga therapy organization specializing in integrating yoga practices into personalized wellness and rehabilitation programs
  - Located in Old Town, Alexandria, Virginia
- **Context:** PIES therapists manage detailed client records including intake information, SOAP notes, self-assessments, and session history
- **Challenge:** Current workflow relies on paper forms and manual processes, leading to inefficiencies in documentation and record retrieval
- **Project Goal:** Create a secure, digital EHR platform tailored for yoga therapy, streamlining the documentation process

Consultation Completed  Today's Date \_\_\_\_\_



**YOGA THERAPY INTAKE FORM - CONFIDENTIAL INFORMATION**  
**WELCOME!** We would like to make your yoga experience at PIES Fitness Yoga Studio as effective and enjoyable as possible. If at any time you have questions regarding your session, please let us know.

Name \_\_\_\_\_ Date of birth \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_  
 Home Phone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_ Work Phone: \_\_\_\_\_  
 Email Address \_\_\_\_\_  
 Occupation \_\_\_\_\_  
 Emergency Contact (name, #) \_\_\_\_\_  
 Referred by (Name, Flyer, Ad, website, etc.): \_\_\_\_\_

**YOGA EXPERIENCE GOALS**  
 Have you practiced yoga before?  No  Yes (date of last class/practice \_\_\_\_\_)  
 How often do you practice yoga? (circle one) DAILY WEEKLY MONTHLY

Style(s) of yoga practiced most frequently: (select all that apply)  
 Hatha  Ashtanga  Vinyasa-Flow  Iyengar  Power  Anusara  Bikram/Hot Forrest   
 Kundalini  Gentle  Restorative  Yin  Other: \_\_\_\_\_

What are your goals/expectations for your yoga practice? What benefits are you looking for? (select all that apply)  
 Improve fitness  Weight management  Increase well-being  Injury rehabilitation  Positive reinforcement   
 Other: \_\_\_\_\_  
 Explain: \_\_\_\_\_

**Personal Yoga Interests:** (select all that apply)  
 Asana (postures)  Pranayama (breath work)  Meditation  Yoga Philosophy  Eastern energy systems   
 Other: \_\_\_\_\_

**LIFESTYLE & FITNESS**  
 How do you rate your current level of activity? (select one)  
 Sedentary/Very inactive  Somewhat inactive  Average  Somewhat active  Extremely active   
 On a scale of 1-10, (1 is lowest, 10 is highest) how would you rate your level of stress?  
 1 2 3 4 5 6 7 8 9 10

\*\*Continued on Page 2\*\*

**S.O.A.P. NOTES**  
 PIES Fitness Yoga School HOLISTIC YOGA THERAPY TRAINING PROGRAM

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Duration: \_\_\_\_\_  
 Conditions: \_\_\_\_\_ Age: \_\_\_\_\_ Meds: \_\_\_\_\_  
 \_\_\_\_\_ Activity Level: \_\_\_\_\_  
 \_\_\_\_\_ Low \_\_\_\_\_  
 Goals: \_\_\_\_\_ Diet: \_\_\_\_\_  
 \_\_\_\_\_

History of Condition(s): \_\_\_\_\_

**S**ubjective  P  
 Client's perspective of progress & impact on QOL  I  
 \_\_\_\_\_  E  
 \_\_\_\_\_  S

**O**bjective  P  
 Observable & measurable results  I  
 \_\_\_\_\_  E  
 \_\_\_\_\_  S

**A**ssessment  P  
 Prof opinion of progress & justification for protocol development & delivery using S.O.  I  
 \_\_\_\_\_  E  
 \_\_\_\_\_  S

**P**lan  P  
 Objectives, activities, and next steps. Includes action items for client & therapist.  I  
 \_\_\_\_\_  E  
 \_\_\_\_\_  S

**Practicum Self-Assessment**  
 PIES Fitness Yoga School HOLISTIC YOGA THERAPY TRAINING PROGRAM

**SELF ASSESSMENT**

**Koshas**  
 Physical  
 Intellectual  
 Emotional  
 Spiritual

**Asana**  
 Sun A  
 Sun B  
 Seated  
 Standing  
 Prone  
 Supine  
 Balance  
 Revolved  
 Backbends  
 Inversion

**Mindfulness**  
 Guided Visualization  
 Breath-centered  
 Internal Observation  
 External Observation  
 Non-judgement  
 Other \_\_\_\_\_

**Kleshas**  
 Ignorance  
 Egoism  
 Attachment  
 Aversion  
 Fear of Loss

**Chakras**  
 Root  
 Sacral  
 Solar Plexus  
 Heart  
 Throat  
 Third Eye  
 Crown

**Pranayama**  
 Diaphragmatic  
 Three-Part  
 Retention  
 Suspension  
 Victorious  
 Alternate Nostril  
 Other \_\_\_\_\_

How did the client(s) react to the tools presented?  
 \_\_\_\_\_

How did the client(s) react to you?  
 \_\_\_\_\_

How did you respond to the client(s)?  
 \_\_\_\_\_

What adaptations and/or modifications did you utilize?  
 \_\_\_\_\_

What are the next steps for the client(s) work with you (based on direct feedback and your observations)?  
 \_\_\_\_\_

What were your biggest wins of this session?  
 \_\_\_\_\_

What were your biggest lessons learned?  
 \_\_\_\_\_

What, if any, guidance do you need from your mentor?  
 \_\_\_\_\_

# PROBLEM STATEMENT

- Intake, SOAP, and self-assessment forms are currently paper/PDF-based (see above)
- Client data scattered across multiple sources (Google Drive, paper, email)
- No unified system or database for tracking progress over time or retrieving records
- Searching past sessions is manual and time-consuming
- Role-based access to client information is inconsistent and insecure



## GOALS

- Create a **centralized, secure EHR platform** for all therapy records
- Enable **role-based access** for senior and junior therapists
- Provide **dynamic, user-friendly forms** for intake, SOAP notes, and self-assessments
- Implement **search and filter** for efficient record retrieval
- Support **linked client records** for continuity across sessions
- **Lay the groundwork** for future mobile/tablet support (responsive UI + API-first design)

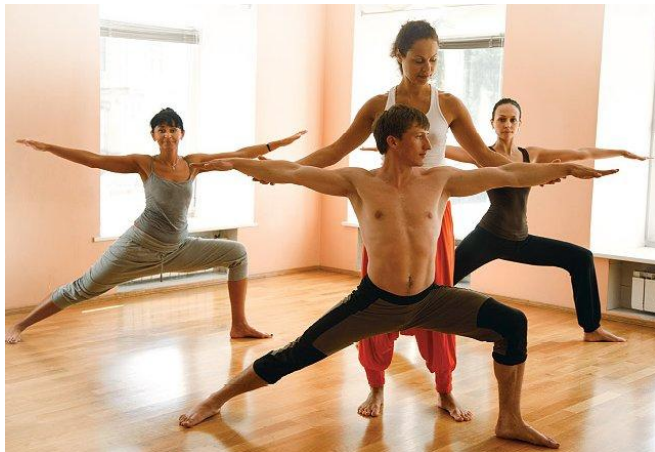
# TARGET USERS

## Senior Therapists

- View and manage all client records
- Oversee and review session documentation
- Perform all junior therapist functions

## Junior Therapists

- Manage only their assigned clients
- Submit essential forms:
  - Intake Form (initial intake)
  - SOAP Note (during sessions)
  - Self-Assessment (post sessions)

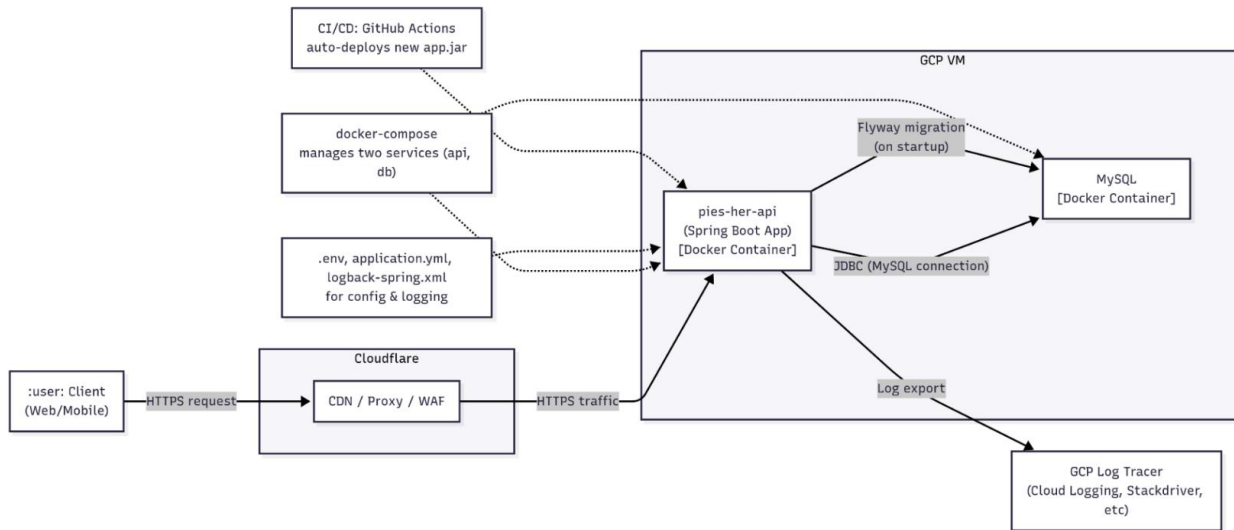


# MAIN FEATURES

- **Integrated Digital Record System** – Centralized storage for intake, SOAP, and self-assessment forms
- **Dynamic and Interactive Forms** – Conditional fields, checkbox mapping, and digital signature capture
- **Role-Based Access Control** – Senior vs. junior therapist permissions with secure JWT authentication
- **Search & Filter Tools** – Locate records by client name, therapist, date, or session type
- **Linked Client Records** – Intake and SOAP data connected for session continuity
- **Follow-Up Tagging** – Mark sessions for review or future actions
- **Secure Architecture** – API-first backend, BCrypt password hashing, and protected endpoints
- **Critical Page Exports** – Intake, SOAP, and self-assessment forms can be exported

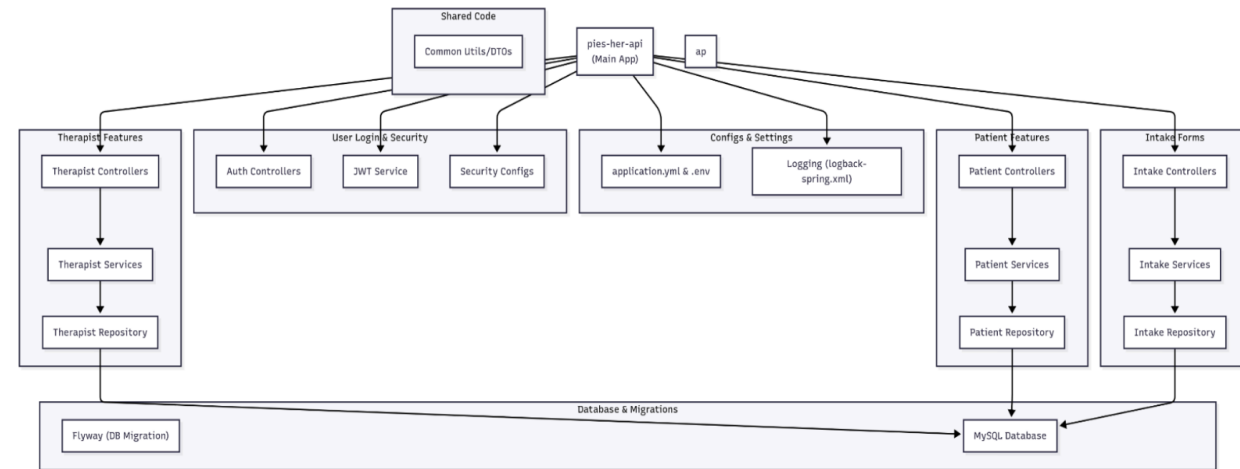
# SYSTEM ARCHITECTURE

## Deployment Architecture



Shows the cloud-based deployment on GCP using Docker, CI/CD automation, and security via Cloudflare

## Backend Module Architecture



Design of the modular backend structure with controllers, services, repositories, and shared code utilities

# TOOLS AND TECHNOLOGIES

## ■ Backend

- Java 17, Spring Boot 3.5.x
- Spring Data JPA + Hibernate
- MySQL 8 (Dockerized)
- Flyway (DB migrations)
- Spring Security + JWT

## ■ Frontend

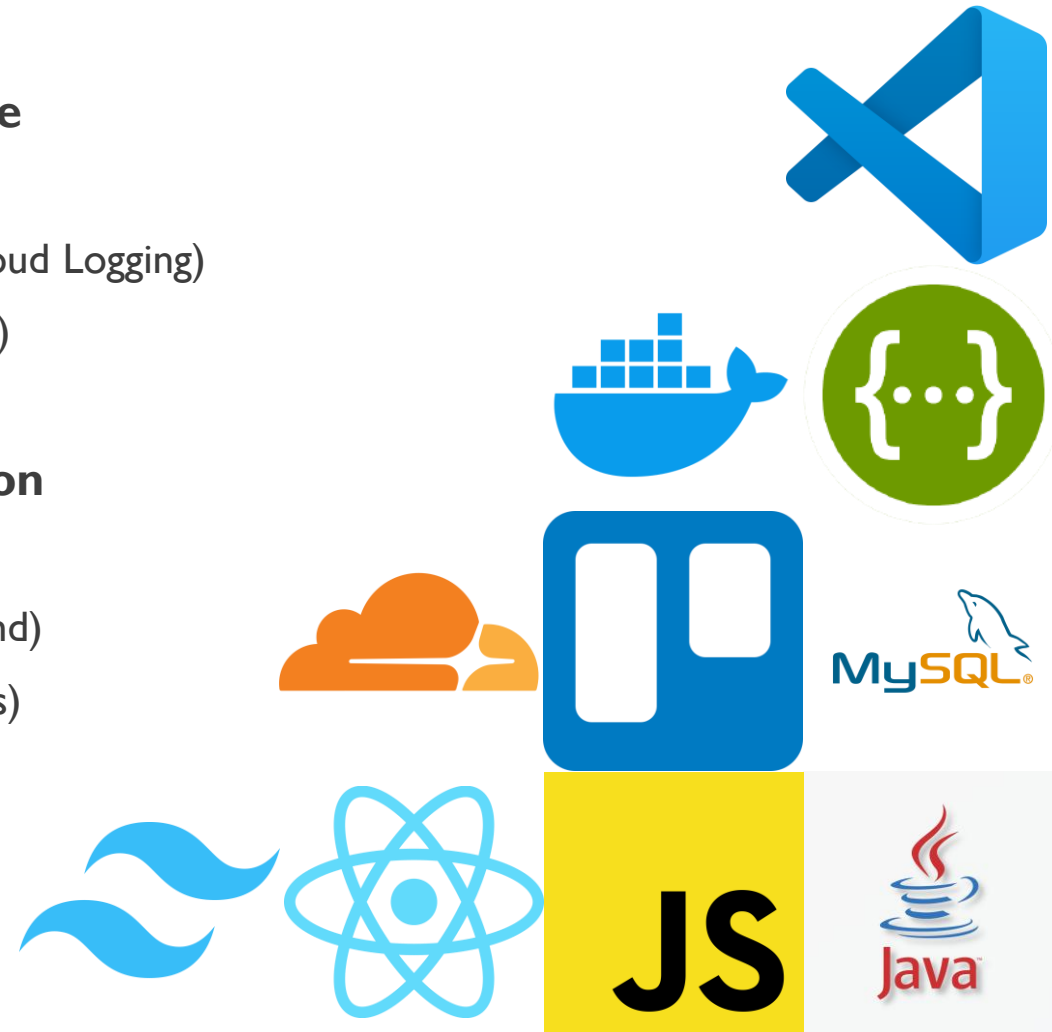
- React, Tailwind CSS
- react-hook-form
- Axios

## ■ Deployment & Infrastructure

- Docker & docker-compose
- Google Cloud Platform (VM, Cloud Logging)
- Cloudflare (CDN / Proxy / WAF)
- GitHub Actions (CI/CD)

## ■ Development & Collaboration

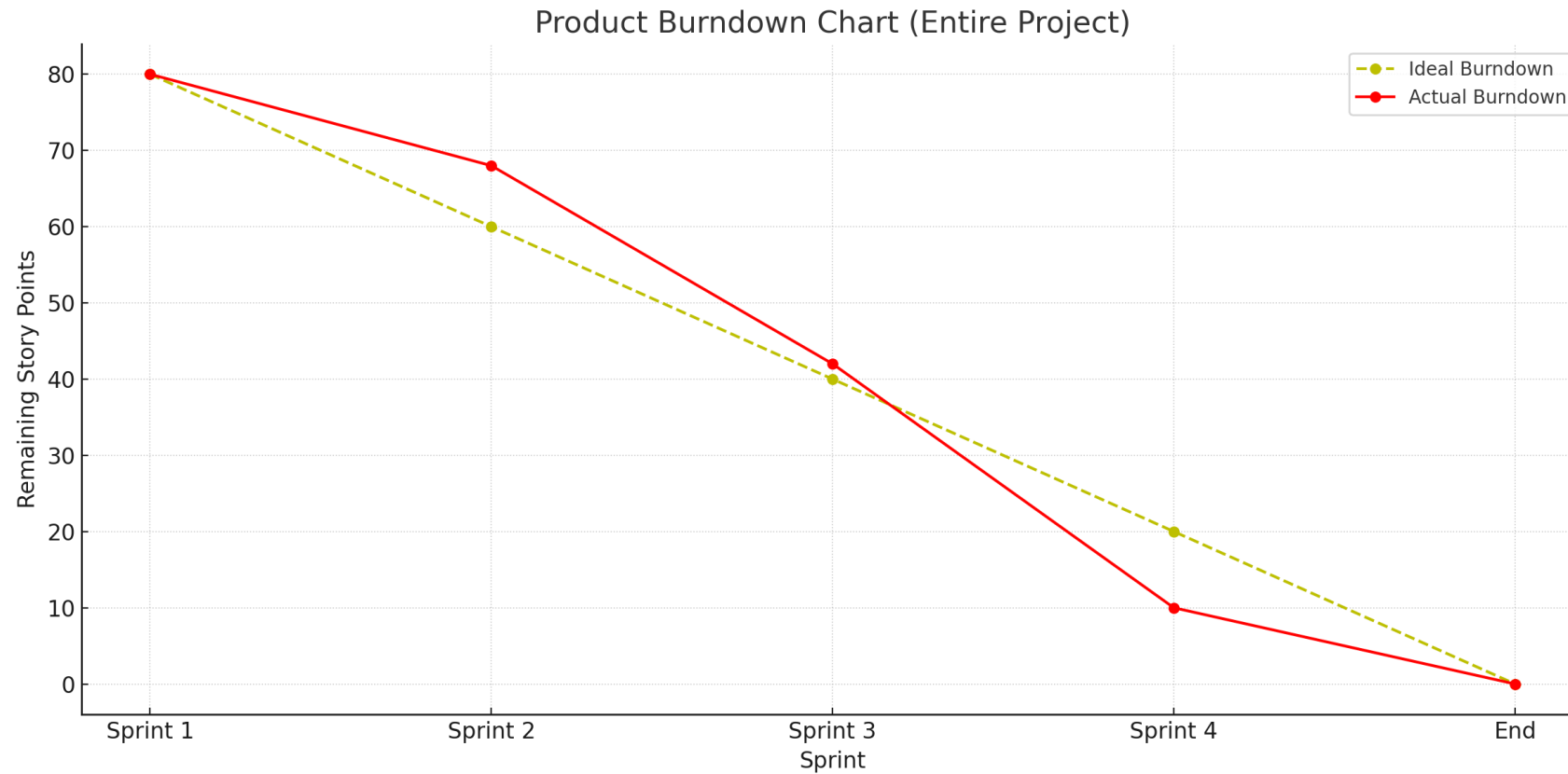
- IntelliJ IDEA (backend)
- VS Code (frontend, some backend)
- GitHub (version control & issues)
- Trello (agile management)





DEMO

# PRODUCT BURNDOWN



# GANTT CHART

Task	Sprint 1	Sprint 2	Sprint 3	Sprint 4
Frontend mockups (intake, SOAP, self-assessment)	■ ■ ■ ■			
Backend API + database schema	■ ■ ■ ■			
Therapist registration (BCrypt + endpoint)	■ ■ ■ ■	■ ■ ■ ■		
Intake form submission (UI + backend)		■ ■ ■ ■	■ ■ ■ ■	
Role-based login (backend + frontend)		■ ■ ■ ■	■ ■ ■ ■	
Therapist dashboard views		■ ■ ■ ■	■ ■ ■ ■	
SOAP form integration (UI + backend)		■ ■ ■ ■	■ ■ ■ ■	
Self-assessment form (UI + backend)			■ ■ ■ ■	■ ■ ■ ■
Tagging and session filters				■ ■ ■ ■
UI validation and bug fixes			■ ■ ■ ■	■ ■ ■ ■
Digital signature capture		■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■
Export functionality				■ ■ ■ ■
Final documentation and demo prep				■ ■ ■ ■

# CHALLENGES AND SOLUTIONS

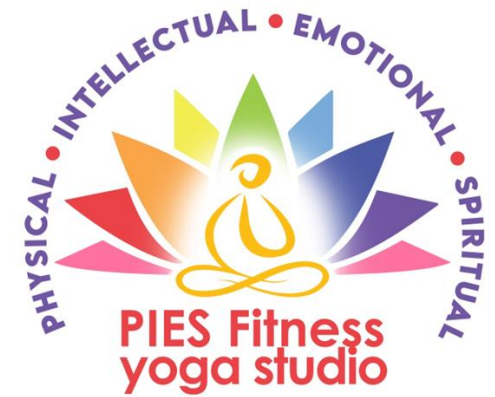
Challenges	Solutions
Checkbox/field mapping issues	Added <code>sanitizeKey()</code> utility and standardized field names across frontend & backend
Role-based routing complexity	Implemented <b>JWT</b> decoding to dynamically load dashboard content per role
Signature submission delays	Exported signature pad data as PNG, stored backend file path for quick retrieval
Late integration bugs	Enabled early payload inspection & detailed backend logging
UI regressions after styling changes	Adopted incremental UI validation after each style change
Keeping backend–frontend data models aligned	Reviewed frontend <b>POST</b> payloads against Swagger API docs and database schema, updated DTO/entity definitions for consistency
Prioritizing sprint scope under deadlines	Used <b>Trello</b> to focus on critical-path features first and deferred non-essential items to Future Work
Communication gaps with project sponsor	Addressed by transitioning primary point of contact to the professor, enabling faster decisions and clearer requirements

# FUTURE WORK

- **Mobile/tablet optimization** for iPad-friendly therapist workflows
- **HIPAA-compliant deployment** with secure hosting and encryption at rest/in transit
  - We simulated HIPAA-compliant development practices, including encryption in transit, role-based access control, and secure data handling, but a true HIPAA-compliant deployment was not feasible within the project scope. Full compliance would require a Business Associate Agreement with a cloud provider, formal policy documentation, and ongoing audits among other items
- **Enhanced PDF/CSV** export function to match the original documents
- **Anatomy map integration** for visual tracking of therapy progress
- **Advanced search and filters** for session history and patient records
- **Digital signature storage improvements** to allow multiple stored signatures per patient

# CONCLUSIONS AND RETROSPECTIVE

- Delivered a **feature-complete, role-aware EHR platform** intended for PIES Fitness Yoga Studio
- Successfully implemented the **full intended therapy documentation workflow** with additional requested features
- Followed secure development practices and simulated **HIPAA-compliance measures during development**
  - We simulated HIPAA-compliant development practices, including encryption in transit, role-based access control, and secure data handling, but a true HIPAA-compliant deployment was not feasible within the project scope. Full compliance would require a BAA with a cloud provider, formal policy documentation, and ongoing audits
- **Communication lessons:** Early misalignment with sponsor during Sprint 2 emphasized the need for clear, consistent communication channels; professor-led coordination allowed progress to continue
- Sprint structure supported **iterative feature delivery** and timely resolution of integration challenges



QUESTIONS AND ANSWERS