Software Requirements Specification
SFWRENG 4G06

Team #7, Team FAAM, SweatSmart

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Contents

Revision History

Revision Version	Date	Developer(s)	Change
0	Oct 6, 2023	Sophie, Daniel, Sam, Jonathan	First draft
0.1	Oct 20, 2023	Sophie, Jonathan	Updated safety requirements that mitigate system hazards

1 Reference Material

1.1 Terminology

1. ML - machine learning
2. AI - Artificial Intelligence
3. Rep - short for repetition

2 Introduction

2.1 Purpose of Document

The primary purpose of this document is to capture and define the functional and non-functional requirements of the SweatSmart app. It will serve as a comprehensive reference that outlines what the application will need to do. It provides a roadmap for the development of the application. Additionally, this document serves as a means of communication between project stakeholders, ensuring all team members have a clear understanding of the project's scope and requirements. By providing a place for clear specification of requirements and constraints, the SRS document also supports quality assurance efforts.

2.2 Purpose of Project

The purpose of "SweatSmart," the AI-Powered Workout Planner, is to develop a sophisticated mobile application that harnesses the capabilities of artificial intelligence (AI) and machine learning (ML) to revolutionize how individuals plan and manage their fitness routines. This project's main goal is to address the growing demand for purpose-built health and fitness solutions that cater to users with a diverse set of fitness goals, experience levels, preferences, and backgrounds.

2.3 Goals

The SweatSmart project is driven by a set of self-defined goals and objectives that shape its development and implementation. These goals reflect the project's mission and the desired outcomes. The main project goals are listed as follows:

2.3.1 Personalization

The primary goal of the project is to deliver a highly personalized fitness experience to users of the SweatSmart application. Using AI and ML technologies, our team aims to create tailored and unique workout plans for each individual user. These plans should adapt to users' individual progress, preferences, feedback, and evolving fitness goals.

2.3.2 Guidance and Support

The project aims to provide comprehensive guidance and support during workouts through the SweatSmart application, enhancing safety and effectiveness of the application during workouts.

2.3.3 Progress Tracking

SweatSmart aims to provide users with a wide range of tools to track their fitness progress over time. Enabling users to log completed workouts, record performance metrics, and visualize their fitness achievements.

2.3.4 Simplicity and User-Centered Design

Our team aims to deliver a user-friendly and intuitive experience with the SweatSmart application. The SweatSmart user interface will prioritize simplicity and ease-of-use so that users can navigate the app efficiently.

2.3.5 Reliability

This project strives to provide a robust and error-free application, operating without any critical errors leading to crashes or unexpected behavior.

2.3.6 Efficient Code and Documentation

Maintain clean and effective code while also providing comprehensive documentation.

2.3.7 Budget Adherence

Stay within the allotted budget of $750 CAD.

2.4 Stakeholders

2.4.1 Direct

- Beginners: Individuals with little to no experience in the fitness world.
- Fitness enthusiasts: Individuals who are already dedicated to maintaining an active and healthy lifestyle.
- Athletes: Competitive athletes seeking to optimize/improve their training regimens.
- Health-Focused Individuals: People with specific health objectives, such as weight management, stress reduction, or injury rehabilitation, who require bespoke fitness plans to achieve these goals.

2.4.2 Indirect

- Fitness Industry Experts: Professionals in the fitness industry who may indirectly or directly influence the app's content and application through their industry expertise and research.
- Fitness Equipment Manufacturers: Companies that produce fitness equipment may benefit from the application leading to an increase in users' interest in fitness and related equipment.
- Local Fitness Facilities: Gyms, fitness centers, and local fitness trainers who may indirectly interact with users referred by the app or who engage with the fitness community fostered by the app.

2.5 Assumptions

2.5.1 Project Assumptions

- The app will be available/maintained post the 8-month development period.

2.5.2 User Assumptions

- Users are consistently updating the application to view the latest updates and changes.
- Users are assumed to have access to the internet at times when using certain features of the app.
- Users have basic knowledge of using mobile apps to navigate properly.
- Users use the app consistently for accurate fitness tracking and results.

2.6 Off-the-shelf Solutions

2.6.1 EvolveAI

EvolveAI is an application that combines artificial intelligence, industry-leading coaches, world-class athletes, and research to simulate a personal trainer and nutritionist in a digital era. Based on users' dietary preferences and health status, the system focuses on users' nutrition, on top of their workout routine, to help achieve their goals. The algorithm focuses on providing the right exercises and features videos and coaching cues to ensure proper form and technique. The system also integrates special features, including voice-to-text logging, adjustable workout intensity, and inbuilt stress index feature. [1]

2.6.2 Fitbod

Fitbod creates personalized training programs through an AI algorithm. It tracks users progress and uses that data to suggest changes in the users workout, such as weights and number of reps. It also recommends workouts based on muscle fatigue from previous sessions. This application also integrates fitbit, Apple Health, and other wearables. Lastly, it has an extensive library of exercises and high-quality video instructions to ensure proper form and injury prevention. [2]

2.6.3 FitnessAI

FitnessAi is another AI-powered fitness application that creates personalized workouts based on workout history, personal goals, and fitness levels. An interesting feature from this app is the use of 3D animation to show proper form and the targeted muscles of specific exercises. [3]

3 System Description

3.1 System Context

3.1.1 Users

At the heart of the system lie the users of the application. Users are a diverse group of individuals and interact with the SweatSmart app to access workout plans, track progress, and receive guidance on their fitness journey. Users are further categorized in section 2.4 "Stakeholders" so we will not go into detail here, but it is important to mention users when discussing context.

3.1.2 Social Media Platforms

We recognize how important social media is for the average person's fitness journey. SweatSmart will need to utilize this excellent resource to help motivate our users and promote the app in the process. Users should be able to easily share progress updates and workouts they enjoyed to social media sites like Instagram, X (formerly Twitter), and Facebook.

3.1.3 External Data Sources

SweatSmart will need to harness the power and information of external data sources to enrich its functionality and provide a comprehensive data set for its ML model. Resources like fitness blogs, articles, research papers, nutritional databases, and much more will help the application deliver up-to-date health and fitness information.

3.1.4 Fitness Equipment and Wearables (Future Integration)

The current fitness market is full of wearable technologies that help track an extensive set of metrics to help people on their health and fitness journeys. Integration with wearable technology will allow for a more robust user experience with workouts seamlessly synchronized in real-time. Fitness equipment has also become more advanced, with features in equipment like free weights, stationary bikes, and treadmills, which enable users to accurately track their workouts. SweatSmart would see positive user engagement from integration with these devices.

3.2 User Characteristics

Users will have varying levels of fitness experience and knowledge. Users might be beginners at the gym who are looking to start their fitness journey, regular gym-goers who are looking to improve their workouts, or highly experienced fitness enthusiasts who would like to track their workouts. Users should have a basic understanding of how to use a smartphone or tablet. It is expected that users will already be familiar with downloading an application, opening an application, and navigating using a touch-screen device. It is important to note that this list is not comprehensive, but it helps illustrate the types of basic functions we expect our users to be familiar with before opening our application. Users will not require any formal training to be able to operate the system.

3.3 Problem Description

The fitness industry has seen a remarkable explosion in interest recently due to a variety of factors. However, many challenges still persist for individuals seeking effective fitness solutions despite the increase in popularity.

1. One-Size-Fits-All Approach: Traditional fitness regimens often adopt this kind of approach, providing generic workout plans that do not consider the individuality of those seeking guidance.

2. Lack of Personalization: Many apps offer limited means of personalization, resulting in user disengagement due to plans that fail to align with each individual's needs and goals.

3. Guidance Gaps: Users, namely beginners, frequently encounter gaps in guidance. This makes it challenging to understand proper exercise technique, safety measures, and what progress should look like.

4. Motivation and Accountability: Staying accountable and motivated on a fitness journey is difficult without support and commitment to some sort of community.

5. Complexity and Information Overload: Existing fitness apps and other solutions may overwhelm users with extensive data, metrics, and features, making the fitness experience too complex to be accessible.

In summary, the current fitness landscape sees a lack of effective and personalized options for users, leading to less-than-ideal fitness outcomes and an overall lack of engagement.

3.4 Use Cases/Scenarios

3.4.1 User Creates an Account

Before a user can use the application, the user must create an account if an account has not been made yet.

3.4.2 User Signs In

If an account already exists and is associated with the user, the user must log in before using the application.

3.4.3 Exercise is Added to Workout Plan

A user is able to customize their workout plans by adding their own exercises to a tailored workout plan that they can follow.

3.4.4 Exercise is Updated/Removed from Workout Plan

Users can remove or update their workout plans by deleting exercises or an entire workout plan that they created.

3.4.5 Live Workout is Started

Users can start their live workout and add their weights, repetitions, and the number of sets to add detail to every exercise they perform.

3.4.6 User Signs Out

Users can sign out of their accounts.

3.4.7 Update Personal Information

Users will update personal information such as their weight, gender, age, etc. This will be used when a workout is generated by an AI.

3.4.8 A Workout is Generated

A workout is generated from an AI after user input.

3.4.9 View Workout History

Users can view their workout history once their live workouts have been tracked.

3.4.10 Communicate with a Chatbot Coach

Users can constantly chat with a virtual bot to get help related to fitness.

4 Constraints

4.1 Input Data Constraints

4.1.1 User Data Validation

All user input data related to personal information (e.g., age, weight, height, gender) must adhere to predefined formats and ranges.

- Age: Must be an integer with a minimum value of at least 13 years.
- Weight: A positive number.
- Height: A positive number.

4.1.2 Workout Session Data

Users should be allowed to input a range for the duration of a workout session.

4.1.3 Workout Intensity

Fitness intensity of workouts should be categorized into predefined levels (e.g., Beginner, Intermediate, Advanced).

4.1.4 Health and Safety Exercise Restrictions

The system should restrict certain exercises or intensities for users with specific health conditions or preferences based on the input health profile.

4.2 Timeline

4.2.1 Requirements

The SRS is to be completed by October 6, 2023.

4.2.2 Hazard Analysis

The hazard analysis is to be completed by October 20, 2023.

4.2.3 Verification and Validation (VV)

The VnV is to be completed by November 3, 2023.

4.2.4 Proof of Concept

The proof of concept is expected to be met by November 13, 2023.

4.2.5 Design Documentation

The Design documentation is to be completed by January 17, 2023.

4.2.6 VV Report

The VV report is to be completed by March 6, 2023.

4.2.7 Final Deliverable

The app is to be completed by March 18, 2023.

4.3 Budget

4.3.1 Development Budget

The total budget allocated for the entire development lifecycle of the application is $750 CAD.

4.3.2 Cloud Services

The budget allocated for cloud services is $100 CAD.

5 Functional Requirements

5.1 User Account

UA1: The app allows users to register an account using basic information.

$$Register(UserInfo) \rightarrow Account$$

$$\forall UserInfo : (UserInfo \neq null) \Rightarrow (Account = true)$$

UA2: The app shall allow users to log in/log out of their account.

$$LogIn(UserCredentials) \rightarrow Session$$

$$\forall UserCredentials : (UserCredentials \neq null) \Rightarrow (Session = true)$$
$$= LogOut(Session) \rightarrow \neg Session$$

$$\forall Session : (Session = true) \Rightarrow (\neg Session = true)$$

UA3: The app shall allow users to create and update their profile on their account.

$$UpdateProfile(UserInput) \rightarrow UpdatedProfile$$

$$\forall UserInput : (UserInput = true) \Rightarrow (UpdatedProfile = true)$$

UA4: The app must present the user with a terms and conditions agreement upon user registration.

$$PresentTerms(UserRegistration) \rightarrow TermsPresented$$

$$\forall UserRegistration : (UserRegistration = true) \Rightarrow (TermsPresented = true)$$

UA5: The user must agree to the terms and conditions agreement to create an account.

$$AgreeToTerms(UserAgreement) \rightarrow AccountCreation$$

$$\forall UserAgreement : (UserAgreement = true) \Rightarrow (AccountCreation = true)$$

5.2 AI Workout Generation

AI1: The system should generate personalized workout plans based on user input.

$$GenerateWorkoutPlan(UserInput) \rightarrow WorkoutPlan$$

$$\forall UserInput : (UserInput \neq null) \Rightarrow (WorkoutPlan = true)$$

AI2: The system should alter and revise user workout plans.

$$AlterWorkoutPlan(WorkoutPlan, UserRequest) \rightarrow AlteredWorkoutPlan$$

$$\forall (WorkoutPlan, UserRequest) : (WorkoutPlan \land UserRequest = true) \Rightarrow (AlteredWorkoutPlan = true)$$

AI3: The system should recursively train the model based on user progress.

$$TrainModel(UserProgress, PreviousModel) \rightarrow UpdatedModel$$

$$\forall(UserProgress, PreviousModel) : (UserProgress \land PreviousModel = true) \Rightarrow (UpdatedModel = true)$$

AI4: The app shall have an AI chatbot that users can interact with.

$$InteractWithChatBot(UserInput) \rightarrow ChatBotResponse$$

$$\forall UserInput : (UserInput \neq null) \Rightarrow (ChatBotResponse \neq null)$$

AI5: The app shall provide messages during a user's workout, giving the user tips for their specified exercises.

$$ProvideExerciseTips(UserWorkout) \rightarrow TipsProvided$$

$$\forall UserWorkout : (UserWorkout = true) \Rightarrow (TipsProvided = true)$$

5.3 User Workout Creation

UC1: The app shall allow users to link their calendar to plan their workouts around their schedule.

$$LinkCalendar(User, Calendar) \rightarrow LinkedCalendar$$

$$\forall(User, Calendar) : (User \neq null \land Calendar \neq null) \Rightarrow (LinkedCalendar = true)$$

UC2: The app shall allow users to rate their workouts after completion.

$$RateWorkout(User, Workout, Rating) \rightarrow WorkoutRating$$

$$\forall(User, Workout, Rating) : (User \neq null \land Workout \neq null \land Rating \in [1, 5]) \Rightarrow (WorkoutRating = true)$$

UC3: The app shall allow users to design and save their own custom workouts tailored to their preferences.

$$CreateCustomWorkout(User, Preferences) \rightarrow CustomWorkout$$

$$\forall(User, Preferences) : (User \neq null \land Preferences \neq null) \Rightarrow (CustomWorkout = true)$$

UC4: The system should list all exercises.

$$ListExercises() \rightarrow ExerciseList$$

$$\forall : () \Rightarrow (ExerciseList \neq null)$$

5.4 Workout History

WH1: The app shall display a user's workout history.

$$DisplayHistory(User) \rightarrow History$$

$$\forall User : (User \neq null) \Rightarrow (History \neq null)$$

WH2: The app saves a completed workout.

$$SaveCompletedWorkout(User, CompletedWorkout) \rightarrow SavedWorkout$$

$$\forall (User, CompletedWorkout) : (User \neq null \wedge CompletedWorkout = true) \Rightarrow (SavedWorkout = true)$$

5.5 Database

DB1: The app shall have a database to store user account information, workout plans, user feedback, and workout history.

$$StoreData(UserAccount, WorkoutPlan, UserFeedback, WorkoutHistory) \rightarrow StoredData$$

$$\forall (UserAccount, WorkoutPlan, UserFeedback, WorkoutHistory) :$$
$$(UserAccount \neq null \wedge WorkoutPlan \neq null \wedge UserFeedback \neq null \wedge WorkoutHistory \neq null) \Rightarrow$$
$$(StoredData = true)$$

5.6 Additional Features

AF1: The app should allow users to begin/engage in a planned workout while tracking the workout live throughout.

$$TrackLiveWorkout(User, PlannedWorkout) \rightarrow LiveTracking$$

$$\forall (User, PlannedWorkout) : (User \neq null \wedge PlannedWorkout = true) \Rightarrow (LiveTracking = true)$$

AF2: The app shall be able to push notifications.

$$PushNotification(User, NotificationContent) \rightarrow NotificationPushed$$

$$\forall (User, NotificationContent) : (User \neq null \wedge NotificationContent \neq null) \Rightarrow$$
$$(NotificationPushed = true)$$

AF3: The app allows users to start planned workouts and follow along live.

$$StartLiveWorkout(User, PlannedWorkout) \rightarrow LiveWorkoutSession$$

$$\forall(User, PlannedWorkout) : (User \neq null \wedge PlannedWorkout = true) \Rightarrow (LiveWorkoutSession = true)$$

AF4: The app allows users to download workouts for offline access.

$$DownloadWorkout(User, SelectedWorkout) \rightarrow OfflineWorkout$$

$$\forall(User, SelectedWorkout) : (User \neq null \wedge SelectedWorkout \neq null) \Rightarrow (OfflineWorkout = true)$$

AF5: The app shall allow users to share information from the application to social media.

$$ShareInfo(User, Information) \rightarrow InfoShared$$

$$\forall(User, Information) : (User \neq null \wedge Information \neq null) \Rightarrow (InfoShared = true)$$

6 Non-functional Requirements

6.1 Look and Feel

6.1.1 Appearance Requirements

- APR1: The app shall have an intuitive and user-friendly interface with minimalist design.
- APR2: The app shall be able to adapt to a variety of screen sizes and aspect ratios.
- APR3: The app shall provide visual feedback whenever a user action takes place.
- APR4: The app shall load data at a reasonable time so there are no noticeable delays for users.
- APR5: The app shall only support portrait mode.

6.1.2 Styling Requirements

- STR1: The app should have consistent styling and design throughout by using the same colour palette.
- STR2: The application's styling should be modern and similar to iOS apps.
- STR3: The styling should be visually appealing and align with the app's logo or theme.

6.2 Usability and Human Requirements

6.2.1 Ease of Use Requirements

- EUR1: The system shall be intuitive such that new users can quickly understand basic functions and commands by using intuitive icons.
- EUR2: The user interface elements, terminology, and interactions should remain consistent throughout the application's various pages.

6.2.2 Personalization Requirements

- PER1: The app will support local date/time formats based on the user's device settings.
- PER2: The app shall stay consistent with the personalization settings on the user's device regarding display and font.

6.2.3 Learning Requirements

- LER1: Users shall not require external resources to navigate the application; everything they need to know to use the app should be taught in-app.

6.2.4 Understandability and Politeness Requirements

- UPR1: The system should provide a tutorial for first-time users.
- UPR2: The application shall contain an FAQ to answer expected questions about the application.

6.2.5 Accessibility Requirements

- ACR1: The system will follow Apple's design guidelines regarding accessible applications.

6.3 Performance Requirements

- PR1: The system shall be capable of handling a minimum of 1000 simultaneous users and processing 200 transactions per minute while maintaining performance standards.
- PR2: The system shall achieve a minimum of 99.9% availability, ensuring services are accessible to users at all times, excluding scheduled maintenance windows.
- PR3: The system shall support a data throughput of at least 200 Mbps to ensure data transmission between the server and users is seamless and efficient under peak usage.
- PR4: The system shall deliver a response time of no more than 2 seconds for 99% of the transaction processed under standard operating conditions.

6.4 Operational and Environment Requirements

- OER1: The system shall be able to be used in a gym/workout facility or home workout room.
- OER2: The system shall be able to run on an iOS phone.
- OER3: The system shall allow the audio output to be transmitted through the device's speakers or a connected Bluetooth device.
- OER4: The system should connect to the internet for back-end services.

6.5 Maintainability and Support Requirements

- MSR1: The system shall automatically detect, log, and report any errors or system failures to the development and support team without requiring user intervention.
- MSR2: The system shall incorporate an accessible user feedback mechanism to enable users to easily report issues.
- MSR3: The system shall support periodic, backward-compatible software updates, notifying users of availability and enabling convenient download and installation while providing information about the changes.

6.6 Compliance Requirements

- COMR1: The application will adhere to all data protection laws in the region(s) it operates within.
- COMR2: The informed consent of users shall be obtained before collecting and processing their personal data.
- COMR3: Robust security measures will be put in place to safeguard user data.
- COMR4: The application will be transparent about its data collection.
- COMR5: The app shall always recommend safe and proven fitness guidance and information.
- COMR6: The system must state that the application is not responsible for any injuries or accidents resulting from its use.

6.7 Security Requirements

6.7.1 Access Requirements

- ACR1: The app shall enforce strong password restrictions to ensure users are properly protecting their own data.
- ACR2: Users shall authenticate themselves with their credentials securely.
- ACR3: Users will only have access to data and features for which they are authorized.

6.7.2 Integrity Requirements

- INR1: Sensitive data shall be restricted from the users of the app.
- INR2: Data between the app and the server should be encrypted when an API call is made.
- INR3: The system should regularly back up data automatically to prevent data loss in the event of database failures
- INR4: unstored data should be stored locally if the data cannot be updated
- INR5: The system must incorporate backend validation to enforce the uniqueness of primary keys associated with user accounts in the database.
- INR6: The system must have a mechanism to store the user's progress when completing a live workout, allowing them to resume their workout from the point of interruption when the application is reopened.
- INR7: The system should display clear and prominent warnings to users regarding exercise safety
- INR8: The AI model system should be constantly updated with accurate practices and the data should be reviewed

6.7.3 Privacy Requirements

- PRR1: Sensitive data should be encrypted both in transit and at rest to protect it from unauthorized access

6.7.4 Error Handling Requirements

- EHR1: The system should have robust error handling that doesn't reveal sensitive system information to users in error messages
- EHR2: The system should include a user feedback mechanism, allowing users to report issues, including unexpected application closures

7 Likely Changes

- LC1: The application may need to adapt to future versions of iOS to ensure compatibility and leverage new features.
- LC2: The integration of new APIs or third-party services to enhance functionality, such as adding a new payment gateway or integrating a new workout tracking device.
- LC3: Refinements in the UI/UX based on user feedback and usability testing may be required post-launch.
- LC4: The addition of new features or screens to accommodate evolving user needs and market trends, such as incorporating a new workout trend or social sharing capabilities.
- LC5: As the user base grows, enhancing the backend infrastructure to manage increased load, reducing latency, and ensuring smooth user experiences.
- LC6: Changes in data protection laws or health app regulations may require adjustments in data handling and user privacy features.
- LC7: Inclusion of new features or modification of existing ones to stay competitive and meet user demands.

8 Unlikely Changes

- UL1: The basic functionality and core features of the app, such as tracking workouts and providing workout plans, are fundamental and unlikely to change drastically.
- UL2: The primary target audience, being fitness enthusiasts, gym-goers, is unlikely to change.
- UL3: The platform choice (iOS) given that the styling, design, and functionalities, are deeply integrated with iOS features.
- UL4: The programming languages and core technologies used in development are unlikely to change unless a significant technological shift happens.

9 Traceability Matrices

Table 1 and Table 2 show the dependencies between the functional requirements. A requirement in the first column that is dependent on a requirement in the first row is marked by an 'X'.

	UA1	UA2	UA3	UA4	UA5
UA1				X	
UA2	X				
UA3		X			
UA4					
UA5	X				
AI1					
AI2					
AI3					
AI4					
AI5					
UC1					
UC2					
UC3					
UC4					
WH1					
WH2					
DB1					
AF1					
AF2					
AF3					
AF4					
AF5					

Table 1: Traceability Matrix Showing the Mappings Between Functional Requirements

	AI1	AI2	AI3	AI4	AI5	UC1	UC2	UC3	UC4	WH1	WH2	DB1	AF1	AF2	AF3	AF4	AF5
UA1																	
UA2																	
UA3												X					
UA4																	
UA5																	
AI1																	
AI2	X																
AI3							X					X					
AI4																	
AI5																	
UC1																	
UC2															X		
UC3												X					
UC4																	
WH1																	
WH2												X					
DB1																	
AF1						X											
AF2																	
AF3																	
AF4																	
AF5																	

Table 2: Traceability Matrix Showing the Mappings Between Functional Requirements Cont.

10 Development Plan

The development of the fitness application will follow a phased approach to ensure efficient progress and quality assurance. The order of requirements implementation is as follows:

10.1 Phase 1: Basic Functionality

In this initial phase, we will focus on implementing the core features required for the app's basic functionality. This includes:

- User account management (UA1 - UA5)
- AI Workout Generation (AI1 - AI5)
- User Workout Creation (UC1 - UC4)

10.2 Phase 2: User Experience Enhancement

During this phase, we will concentrate on improving the user experience by addressing usability and appearance requirements. Key tasks include:

- Implementing appearance and styling requirements (APR1 - APR5, STR1 - STR3)
- Enhancing usability and personalization (EUR1 - EUR2, PER1 - PER2)
- Implementing learning, understandability, and politeness requirements (LER1, UPR1 - UPR2)

10.3 Phase 3: Performance and Accessibility

In this phase, we will ensure that the app meets performance, accessibility, and compatibility requirements. This includes:

- Addressing performance requirements (PR1 - PR4)
- Ensuring operational and environmental compatibility (OER1 - OER4)
- Implementing accessibility guidelines (ACR1)

10.4 Phase 4: Security and Compliance

The final phase will focus on security and compliance with relevant regulations. Key tasks involve:

- Implementing security measures (SECR1 - SECR6)
- Ensuring compliance with data protection laws and user consent (COMR1 - COMR4)
- Addressing safety and health recommendations (COMR5 - COMR6)

10.5 Phase 5: Likely Changes and Post-launch Refinements

After the initial development and launch, we will continuously monitor user feedback and market trends. We will be prepared to implement likely changes (LC1 - LC7) and make refinements as needed to enhance the app's features and performance.

10.6 Phase 6: Unlikely Changes and Long-Term Maintenance

While the core features (UL1 - UL4) are unlikely to change significantly, we will remain committed to maintaining the app, ensuring its compatibility with future iOS versions, and providing ongoing support and updates.

References

Appendix — Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Lifelong Learning. Please answer the following questions:

1. What knowledge and skills will the team collectively need to acquire to successfully complete this capstone project? Examples of possible knowledge to acquire include domain specific knowledge from the domain of your application, or software engineering knowledge, mechatronics knowledge or computer science knowledge. Skills may be related to technology, or writing, or presentation, or team management, etc. You should look to identify at least one item for each team member.

   Fitness and Health Domain:
   Understanding the fitness and health domain, including workout planning, nutrition, and exercise physiology, is essential for designing effective and personalized fitness solutions.

   Machine Learning:
   Our team will need to gain expertise in ML and AI methodologies in order to develop SweatSmart. To train the AI model, we first need to collect quantitative and qualitative data. Using the data, we can build and train the algorithm to generate personalized workouts.

   Mobile App Development:
   Mastery of mobile app development for iOS will be necessary for our team. We plan on using React to develop the front-end and .NET for the back end. All team members will need to learn and/or refine knowledge in these development tools for this project to be successful.

   UI/UX Design:
   Understanding key principles of user interface and user experience design to create intuitive, visually appealing, and user-friendly interfaces will be important. We will use Figma to visualize pages of our app, making it more efficient to code.

   Database Management:
   Skills in database design, data storage, and retrieval are needed to manage user accounts, workout plans, and progress data securely.

2. For each of the knowledge areas and skills identified in the previous question, what are at least two approaches to acquiring the knowledge or mastering the skill? Of the identified approaches, which will each team member pursue, and why did they make this choice?

   Fitness Domain Research:
   Team Members: Sam and Jonny

   To ensure a comprehensive understanding of fitness practices, we will conduct research by:

- Reading at least 5 peer-reviewed articles on the latest fitness practices.
- Exploring 10 or more fitness-related blogs each.
- Analyzing 3 or more existing fitness applications/websites each.

This extensive research will provide us with diverse insights into the current fitness landscape, allowing us to make informed decisions during app development.

Consultation with Fitness Experts:
Team Members: Sophie and Daniel

We will consult with fitness experts, including those at McMaster University's kinesiology department, McMaster personal trainers, and potentially faculty members from the Physiotherapy department. This step is crucial for gaining insights and guidance from primary sources who are experts in the field of fitness.

Machine Learning Skill Development:
To gain proficiency in machine learning, we will:

- Utilize online resources for learning how to create and train AI algorithms.
- Seek assistance from professors and industry experts in the field.

Mobile App Development:

To enhance our mobile app development skills, we will:

- Develop a simple, bare-bones app to practice fundamental functions using React and .Net. (Team Members: Sophie Fillion, Sam McDonald). This will be suefil practice to ensure we understand all basic functions and practices for developing a mobile application using React and .Net.
- Practice writing code for mobile platforms (Team Members: Jonny and Daniel). We are already familiar with React and .Net for mobile development, so we will write smaller practice sections and assist Sophie and Sam in developing their basic apps, serving as mentors to ensure a strong understanding of these frameworks.

UI/UX Design Skill Development:
To improve our UI/UX design skills, we will:

- Create design mockups (Team Members: Jonny and Daniel). Justification: Collaborative tutorials and learning from fellow team members are highly effective ways to enhance skills. Jonny, with expertise in UI/UX design, will provide tutorials, allowing the team to align on design principles before commencing app development.

Database Management Skill Development:
To strengthen our database management skills, we will:

- Review class notes on SQL queries from our databases class.
- Utilize online resources for additional learning.