

**Software Engineering
Software Requirements Specification
(SRS) Document**

MUSCLE MENTOR

2/12/2024

[Version 1]

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Fady Eskandr, Bunroung Heak

WE HAVE ABIDED BY THE UNCG ACADEMIC POLICY ON THIS ASSIGNMENT.

Github project link
https://github.com/Bunroung/Final_Presentaion_340

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1. Introduction

1.1 Purpose

The purpose of this Software Requirements Document (SRD) is to outline the features and functions of our fitness application and workout planning software. The primary goal is to provide users with a comprehensive tool to use their weight, height and age to calculate their Body Mass Index (BMI), and allow each user to endeavor on a fitness journey. The software aims to cater to users with diverse fitness goals, offering different workout plans based on their gym goals, whether it's muscle gain or weight loss as well as provide meal plans for the applicatons' users to use.

1.2 Document Conventions

The purpose of this Software Requirements Document (SRD) is to provide a comprehensive and detailed outline of the requirements, features, and functions of our fitness tracking and workout planning software. This document serves as a foundational guide for the development team, project managers, and others involved in the project.

In it, we will have:

BMI Calculator: Provide a BMI calculation feature to assess the user's body mass index.

Personalized Workout Plans: Generate biweekly workout plans for the user's fitness goals, whether it's muscle gain or weight loss.

Motivational Incentives: Encourage regular software usage by rewarding users with coupon codes for healthy or high-protein meals.

Blog: A blog on the application allows the content creator to share their user experiences and images.
Live Chat Room: A live chatroom allows users to interact with each other to discuss any fitness tips or to make friends.

Definitions, Acronyms, and Abbreviations

Java	A programming language originally developed by James Gosling at Sun Microsystems. We will be using this language to build the Restaurant Manager.
MySQL	Open-source relational database management system.
.HTML	Hypertext Markup Language. This is the code that will be used to structure and design the web application and its content.
SpringBoot	An open-source Java-based framework used to create a micro Service. This will be used to create and run our application.
MVC	Model-View-Controller. This is the architectural pattern that will be used to implement our system.
Spring Web	Will be used to build our web application by using Spring MVC. This is one of the dependencies of our system.
NetBeans	An integrated development environment (IDE) for Java. This is where our system will be created.
BMI	Body Mass Index

1.4 Intended Audience

This Software Requirements Document (SRD) is designed to serve to a diverse audience, each with specific roles and responsibilities in the project. Each audience member should be able to find conclusive evidence on resources and integration requirements. One stakeholder will be Developers, which should be able to find detailed information on the functions to be implemented, technical specifications, and the overall system design, which includes, details on programming languages, frameworks, and tools to be utilized. Another are Project Managers. Project managers should be able to find insight to overall goals of the software, alongside any constraints. This as well includes the scope of the project, any potential challenges that can impact project timelines, and any benefits to the business. The User is another stakeholder since this document should allow the user to find features on the application as well as features that directly impact them. Examples of this can include BMI calculation, workout plans and fitness plans, and persuasive incentives. Since there can be a large audience in the fitness industry, the Software Requirements Document (SRD) can be useful for a Quality Assurance Team as well. QA teams will use this document to understand the expected behavior of the software, including functional requirements.

1.5 Project Scope

The goals of the software align with the broader business objectives of promoting user health and fitness. The scope of the project is defined by its key features like a BMI calculator, workout plans and fitness plans and an interactive webbase. These are all motivational incentives to help provide a competitive edge in the fitness application industry. The software's features encourage users to regularly engage with the platform by providing these key features. By Offering coupon codes as well for healthy meals aligns with the business's emphasis on promoting a healthy lifestyle. By providing the business with a competitive edge by addressing users' fitness goals, the software goals and the benefits to the business include improved user engagement, customer satisfaction, and promotion of a healthy lifestyle which can all increase brand loyalty.

1.6 Technology Challenges

Throughout the development of Muscle Mania, there may be a few technological constraints. For example, one of the most important constraints/challenges may be creating a diverse workout plan that is personalized to each user; however, a solution may be to collaborate with fitness experts to design effective workout algorithms. A huge challenge that the project will face will be its security, and safeguarding user data, especially considering the sensitive nature of health and fitness information. Finally, implementing a working coupon code system that encourages users to use the software regularly. Finally, a constraint that this software can face in the future can be scalability. Ensuring the software can handle a growing user base without sacrificing performance can be a large challenge this software faces.

1.7 References

- 1) Fitness Studio
https://discover.wellnessliving.com/capterra-fitness?utm_source=capterra
- 2) MindBody fitness software
https://www.mindbodyonline.com/business/fitness?landing=y&campaignID=207013i000000Iqs0AAC&referralSource=Paid%20Search&primaryMarket=Fitness&utm_campaign=Capterra+Fitness&utm_medium=thirdpartyreview&utm_source=capterra&utm_term=capterra
- 3) Dashboard templates
<https://www.mockplus.com/blog/post/dashboard-design>
- 4) HTML help video
https://www.youtube.com/watch?v=HD13eq_Pmp8&ab_channel=BroCode
- 5) HTML CSS and JS web design tutorial:
<https://www.youtube.com/watch?v=FazgJVnrVuI>
- 6) Login Page reference
<https://youtu.be/PlpM2LJWu-s?si=OZPKf8Z5zZnSoh8J>
- 7) CRUD Operations using Spring Boot
<https://youtu.be/6zfIxxgaVkQI?si=8HqSoK9KV4pXnyLG>

2. General Description

2.1 Product Features

The product features of Muscle Mentor include user registration for fitness enthusiasts and trainers, with administrative tools for account management. Users can use their weight age and height to track their BMI, and begin on personalized fitness journeys based on their goals. The app offers workout plans released by

the fitness coach, whether it's muscle gain or weight loss, with varying intensity levels. Also, regular users receive rewards such as coupon codes for healthy meals, and promotions to their fitness goals.

2.2 User Class and Characteristics

Our website application expects the user to have prior knowledge of a computer and calculations because it is needed in order to give the client/customer the appropriate fitness and workout plan. Our website application will ask the client for their measurements in regarding to health so we can take this information and provide them with what they are asking for like meal plans, workout plans, advice etc to help them gain the best experience possible.

2.3 Operating Environment

The application is designed to operate on the web across many different devices like phones, computers, watches, anything that can track you.

2.4 Constraints

For design Constraints----Data privacy and security, violations of HIPPA or GDPR for example will be a challenge because of the sensitive information that will be given to us, so we can provide a link to where the client will sign and consent to the information they are giving out and who will be accessing that information in the backend (us).

2.5 Assumptions and Dependencies

The software will be dependent on html and c/c++ and Apache Netbeans for the use of java Also mySQL and spring web with Thymeleaf for accessing the webpages. Finally the XXAMP controller was used to start the active servers.

3. Functional Requirements

3.1 Primary

FR1: The app will calculate the (BMI) of users based on their height and weight input. Users can view their BMI score and understand their current health status based on the BMI categories (e.g., underweight, normal weight, overweight, obese).

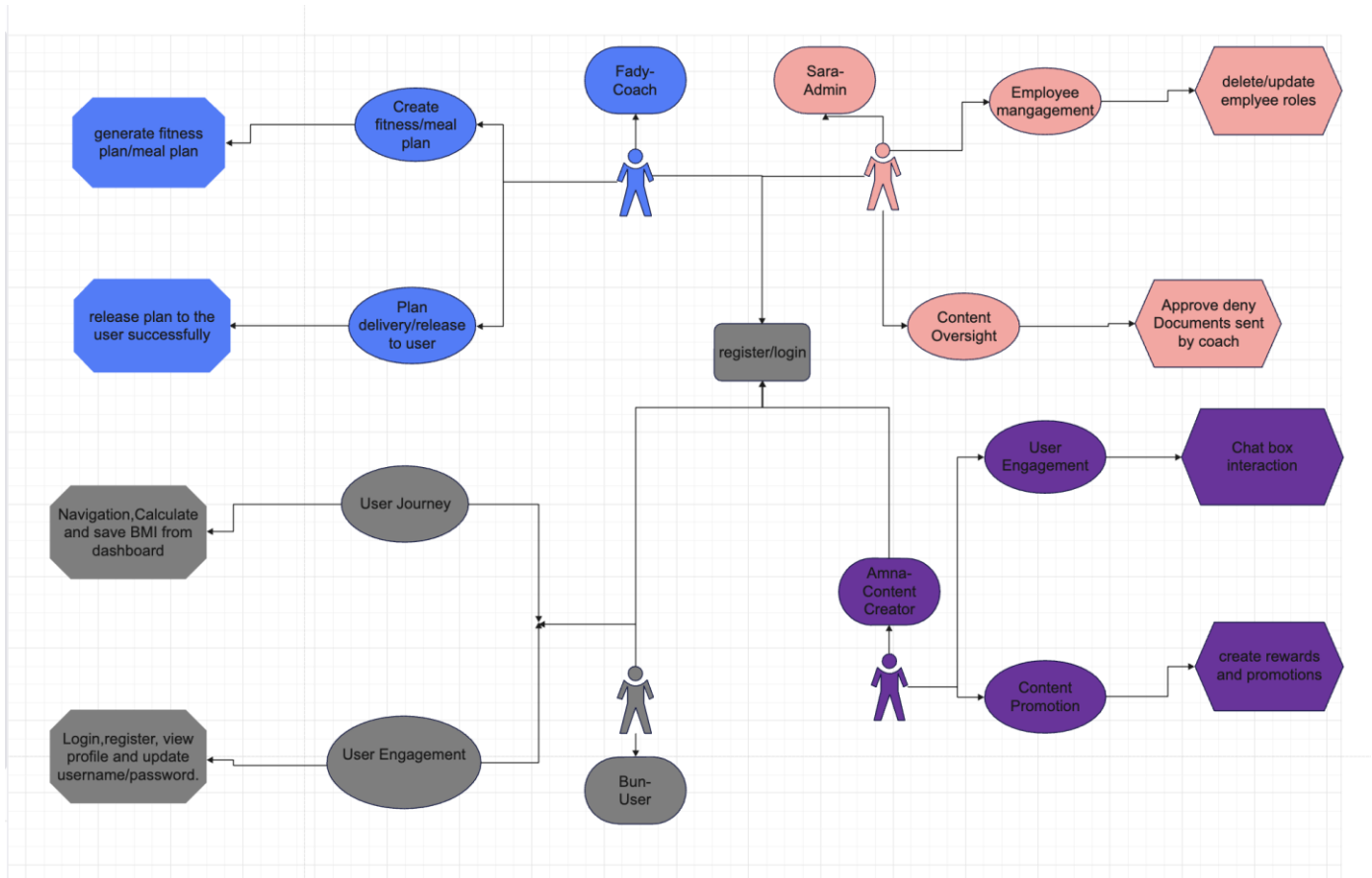
- FR2: The app will offer users personalized workout plans matched to their fitness goals and preferences. Users can specify whether they want to gain muscle mass, lose weight, or improve overall fitness. The app will generate daily workout routines consisting of exercises, sets, reps, and rest intervals from our fitness coach (Fady).
- FR4: The app will provide users with nutritional guidance and meal planning features. Users can access a database of healthy recipes and meal suggestions based on their dietary preferences, calorie intake goals, and macronutrient requirements to match their fitness goal/plan.

1.1. Secondary

- **User-friendly Authentication Interface:** an intuitive interface for users to log in with their credentials easily.
- **Personalized Workout Access:** Ensure users can only view and modify their own workout plans and progress.
- **Role Definitions:** Defining fundamental roles for trainers, administrators, and users with clear permissions.
- **Authorization scheme so that customers can only alter and see their information, tracking, meal plans and workout plans etc.**

1.2. Use-Case Model

1.2.1. Use-Case Model Diagram



1.2.2. Use-Case Model Descriptions

1.2.2.1. Actor: Administrator (Sara)

- **Employee Management:** update/delete employee roles (admin, coach, creator) also have access for users if needed
- **Content Oversight:** be able to view and approve or deny documents sent by coach

3.3.2.2 Actor: Fitness Coach (Fady)

- **Create fitness/meal plan:** generate fitness plan/meal upload it as a .txt file and see the status of the file when admin denies/approves it.
- **Plan delivery/release to user-** coach releases plan to the user successfully through user dashboard.

3.3.2.3 Actor: Content Creator (Amna)

- **User Engagement:** platform where users can interact with each other
- **Creation and Promotion:** create rewards and promotions

4.4.2.4 Actor: User/Client (Bun)

- **User Journey:** Navigate, calculate and view bmi from dashboard
- **User Engagement:** Login, register, view profile and update username/password

1.2.3. Use-Case Model Scenarios

1.2.3.1. Actor: Administrator (Sara)

- **Use-Case Name: User Management**
 - **Initial Assumption:** The administrator has access to the webapp and holds administrative privileges.
 - **Normal:** updates existing employee roles or deletes them and can search them.
 - **What Can Go Wrong:** Administrator attempts to delete a wrong employee account from mistyping or spelling.
 - **Other Activities:** oversees employees
 - **System State on Completion:** The accounts are managed according to the actions taken by admin.
- **Use-Case Name: Content Oversight**
 - **Initial Assumption:** The administrator has access to documents sent by coach to approve or deny them
 - **Normal:** Admin reviews fitness-generated content uploads, approves those that meet content guidelines, and denies other content for further review.
 - **What Can Go Wrong:** Admin accidentally approves a piece of content that violates content guidelines. The system should allow to revoke approval and correct it.
 - **Other Activities:** monitors documents to abide by guidelines
 - **System State on Completion:** The meal/fitness plan within the system is effectively overseen and managed, ensuring compliance with content policies and guidelines.

1.2.3.2. Actor: Actor Fitness Coach (Fady)

- **Use-Case Name: Create fitness/meal plan:**
 - **Initial Assumption:** Coach has access to client profiles and progress tracking within the application. Coach will have access to users requesting personalized meal or fitness plans.
 - **Normal:** Coach creates customized meal plans and workout routines for clients based on their goals, preferences, and dietary requirements.
 - **What Can Go Wrong:** Coach encounters a technical issue preventing him from accessing a client's dashboard.
 - **Other Activities:** Coach communicates with clients to provide feedback on their progress and adjusts their fitness plans accordingly.
- **System State on Completion:** The progress of clients is accurately monitored and tracked, and Coach has the necessary information to support their fitness journey effectively.
- **Use-Case Name: Plan delivery/release to user**
 - **Initial Assumption:** Coach has access to tools and resources for designing personalized meals and fitness plans within the application.
 - **Normal:** Upload approved files through user dashboard

- **What Can Go Wrong:** Coach accidentally assigns an unsuitable workout routine to a client with specific health considerations. The system should provide warnings or prompts to ensure Fady selects appropriate plans for each client.
- **Other Activities:** Coach regularly reviews and updates client plans based on their progress and feedback.
- **System State on Completion:** Clients have personalized meal and fitness plans tweaked to their needs, helping them achieve their fitness objectives effectively.

1.2.3.3. Actor: Actor Name Content Creator (Amna)

- **Use-Case Name: User Engagement**
 - **Initial Assumption:** Creator has access to content creation tools and engagement features within the application. Will be using Canva for graphics and client feedback for inspiring quotes/success stories.
 - **Normal:** The creator develops a chatroom feature within the blog section of the platform, facilitating a space where users can interact with each other. This feature aims to enhance user engagement by allowing users to discuss content, share experiences, and motivate each other on their fitness journeys.
 - **What Can Go Wrong:** Creator encounters difficulties in setting up the chatroom due to technical issues with the platform.
 - **Other Activities:** Creator adjusts social media marketing strategies based on user feedback and engagement levels.
- **System State on Completion:** The chatroom is successfully implemented and operational, enabling users to engage actively with each other, thereby enhancing their collective experience and motivation.
- **Use-Case Name: Content Creation and Promotion**
 - **Initial Assumption:** Creator is tasked with designing and implementing promotional tools within the application
 - **Normal:** The creator designs a promotions page within the application's dashboard. This page will display coupon and promotional codes for health-related products and services, such as healthy food brands or gyms, to attract and retain users by offering them tangible benefits.
 - **What Can Go Wrong:** Technical difficulties arise during the setup of the promotions page, hindering its launch or functionality.
 - **Other Activities:** Creator collaborates with other team members to align content creation and promotion efforts with overall marketing goals and strategies.
 - **System State on Completion:** The promotions page is fully functional and equipped with various promotional offers, thus driving user engagement and platform growth.

1.2.3.4. Actor: Actor Name User/Client (Bun)

- **Use-Case Name: updating/view user profile (user management):**

- **Initial Assumption:** Bun has registered an account and can access the full range of features within the application.
- **Normal:** Bun navigates to their profile settings to update personal information such as name, email, password and number.
- **What Can Go Wrong:** Bun experiences issues updating their profile due to server errors or data validation errors. If attempting to delete their profile, Bun might face challenges due to unresolved dependencies or delays in processing the request.
- **Other Activities:** While managing their profile, Bun may adjust security settings like changing passwords
- **System State on Completion:** Bun's profile is updated with the latest personal information or is successfully deleted from the application. If updated, the changes are reflected across all features requiring personal data, ensuring a personalized and seamless user experience. If deleted, Bun's data is securely removed from the application in compliance with data protection regulations, and they no longer have access to the account.

- **Use-Case Name: User Journey:**

- **Initial Assumption:** Bun has registered an account and can access the full range of features within the application.
- **Normal:** Bun logs in to the application, accesses personalized meal and fitness plans, tracks bmi and engages with motivational content and interactive features.
- **What Can Go Wrong:** Bun encounters difficulties accessing their personalized plans or experiences errors while tracking progress due to connectivity issues.
- **Other Activities:** Bun participates in workouts, earns rewards, and interacts with other users within the community to stay motivated and committed to their fitness journey and reaches their fitness goals through personalized dietary meals and workouts.
- **System State on Completion:** Bun's user journey within the application is fulfilling, leading to improved engagement and progress towards fitness goals.

2. Technical Requirements

2.1. Interface Requirements

2.1.1. User Interfaces

The app will feature a user-friendly interface with a clean and intuitive design. Screens will be organized to provide easy navigation, with dedicated sections for viewing workout plans, meal plans, BMI, etc. We will put emphasis on visually appealing graphics to enhance user engagement. There will be appropriate placement of essential buttons, such as "Change Weight," and "Edit Profile" to ensure user-friendliness. Special attention will be paid to a

vibrant color scheme to reflect the app's fitness theme. There will also be clear prompts for any user actions, such as successful log entries or goal achievements.

2.1.2. Hardware Interfaces

The web application will be designed to operate on diverse hardware devices with internet connectivity and the ability to interact with the page. Muscle Mentor will be accessible for a wide range of devices. This includes:

Desktop computers (Windows and macOS).

Laptops (Windows and macOS).

The app requires a stable internet connection for real-time data updates.

2.1.3. Communications Interfaces

Muscle Mentor relies on HTTP and HTTPS protocols to connect to the internet.

2.1.4. Software Interfaces

Muscle Mentor may unite with external fitness APIs to get additional data for exercises, nutrition, and other relevant information. This integration can enhance the app's content and provide users with a better fitness experience.

3. Non-Functional Requirements

3.1. Performance Requirements

- NFR0(R): The local copy of the user data and work out plan will consume less than 100MB of memory.
- NFR1(R): The usage of memory for BMI calculation and other calculations methods will consume less than 100MB.
- NFR2(R): The entire program will consume less than 200MB of memory
- NFR3(R): The interface should be simple enough to where it will take less than 10 minutes to create a new profile and custom workout.
- NFR4(R): Reacurring users should be able to start a new workout in less than 5 minutes.
- NFR5(R): The interface should allow the user to create a new workout routine in less than 10 minutes.

3.2. Safety Requirements

- NFR0(R): The progress of the user will be stored locally to help safeguard user data
- NFR1(R): The program will have proper handling error that will not expose private information when there is a failure
- NFR2(R): The program will regularly back up to prevent loss of data incase of a crash.

3.3. Security Requirements

- NFR0(R): The system will need user to enter in a username and password.
- NFR2(R): The system will run on an custom API.

3.4. Software Quality Attributes

3.4.1. Availability

The program will be on a webpage.

3.4.2. Correctness

3.4.3. Maintainability

The code should be detailed in comments to ensure ease of debugging and maintaince.

3.4.4. Reusability

The interface, ease of use, daily task, app design and the vast number of resources should keep user on track to their goals with daily use.

3.4.5. Portability

The program will be first ported to HTML page and a website will be created housing all of the app features.

3.5. Process Requirements

3.5.1. Development Process Used

3.5.2. Time Constraints

The app will start it's production late Febuary and it will be completed by early May

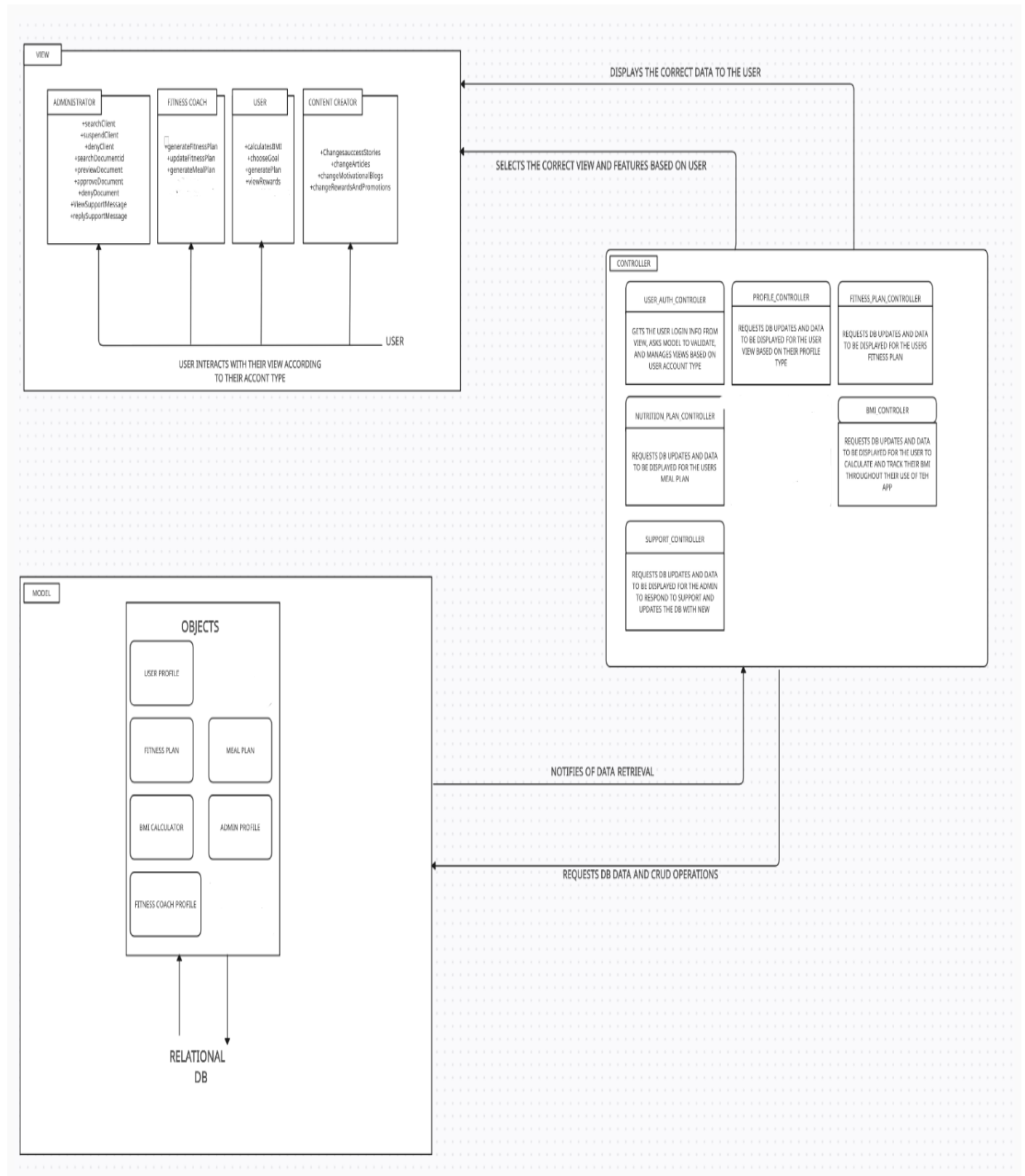
3.5.3. Cost and Delivery Date

The expected delivery date would be May.

3.6. Other Requirements

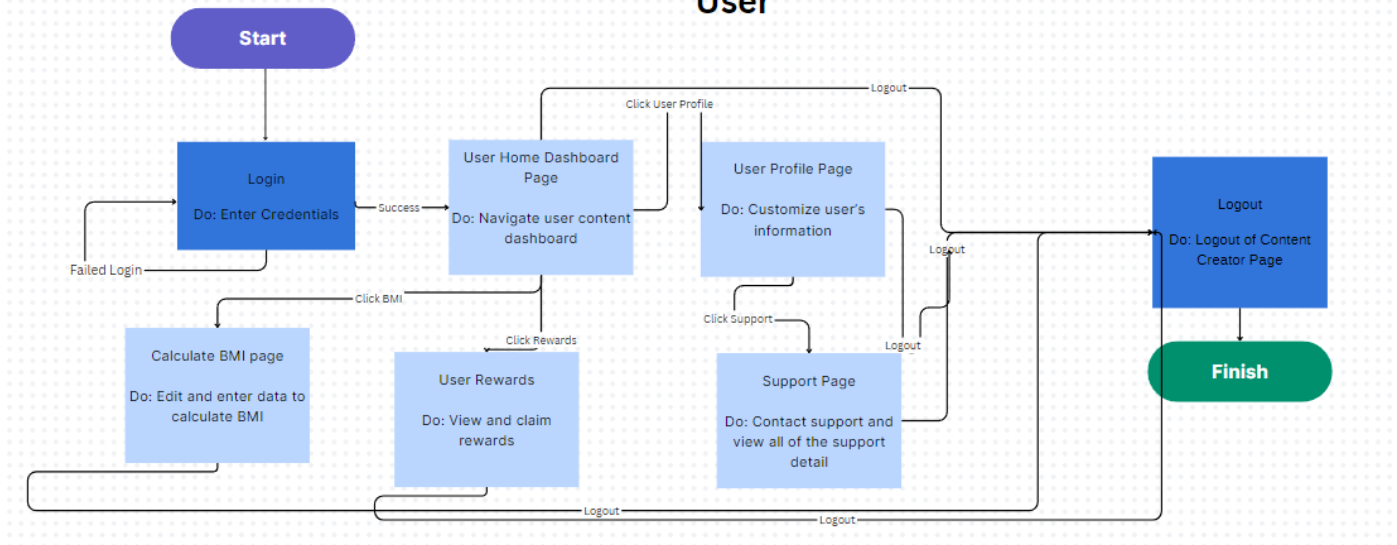
6. Design Documents

6.1. Software Architecture

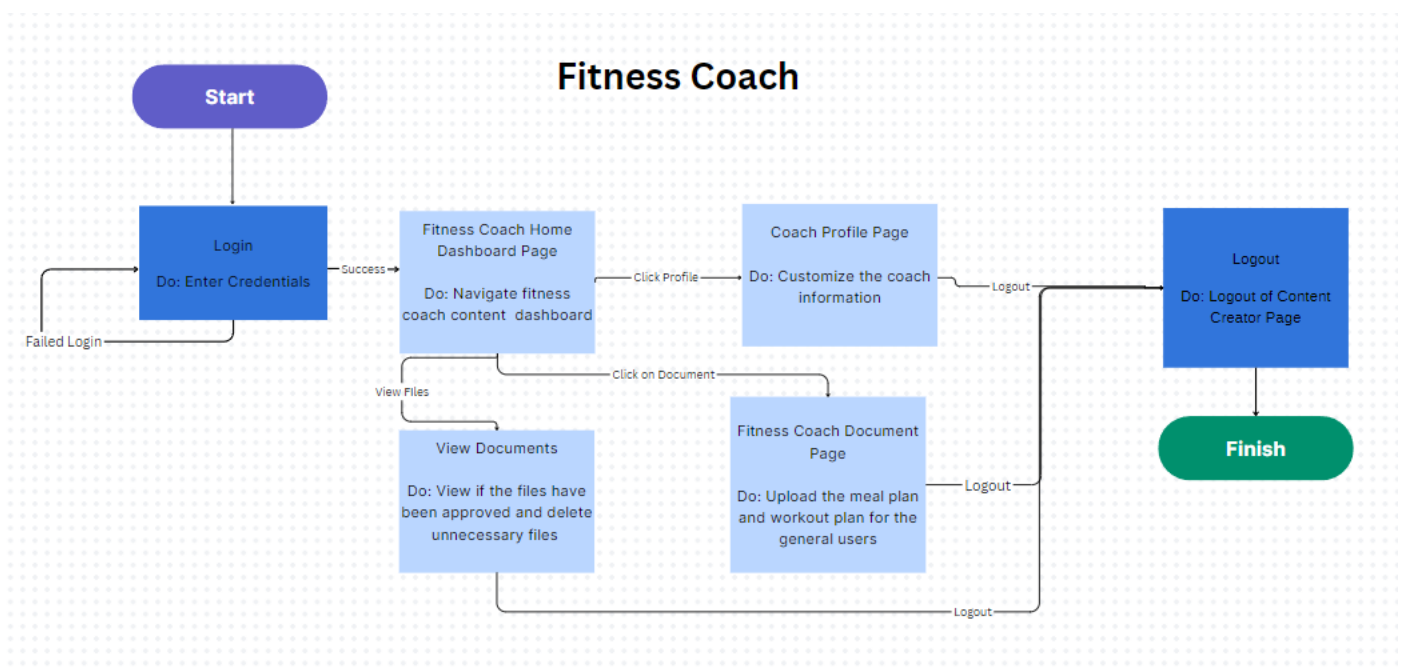


6.2. High-Level Database Schema

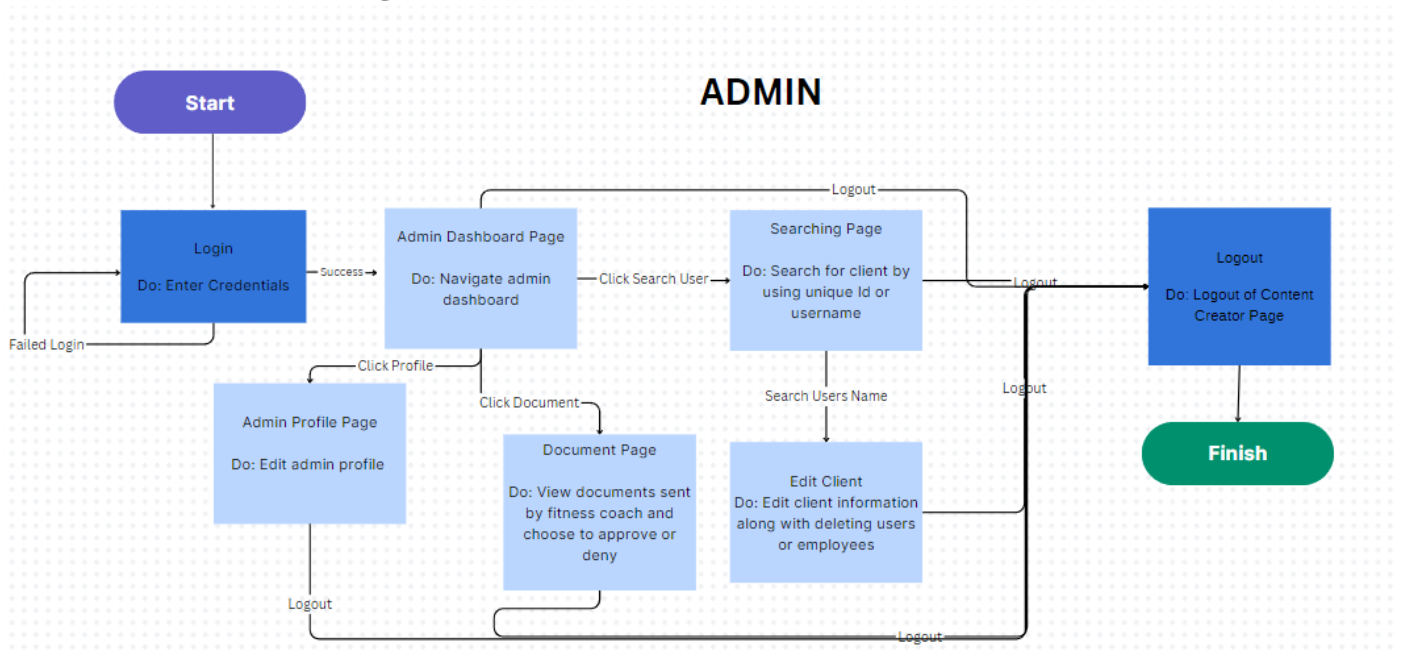
User



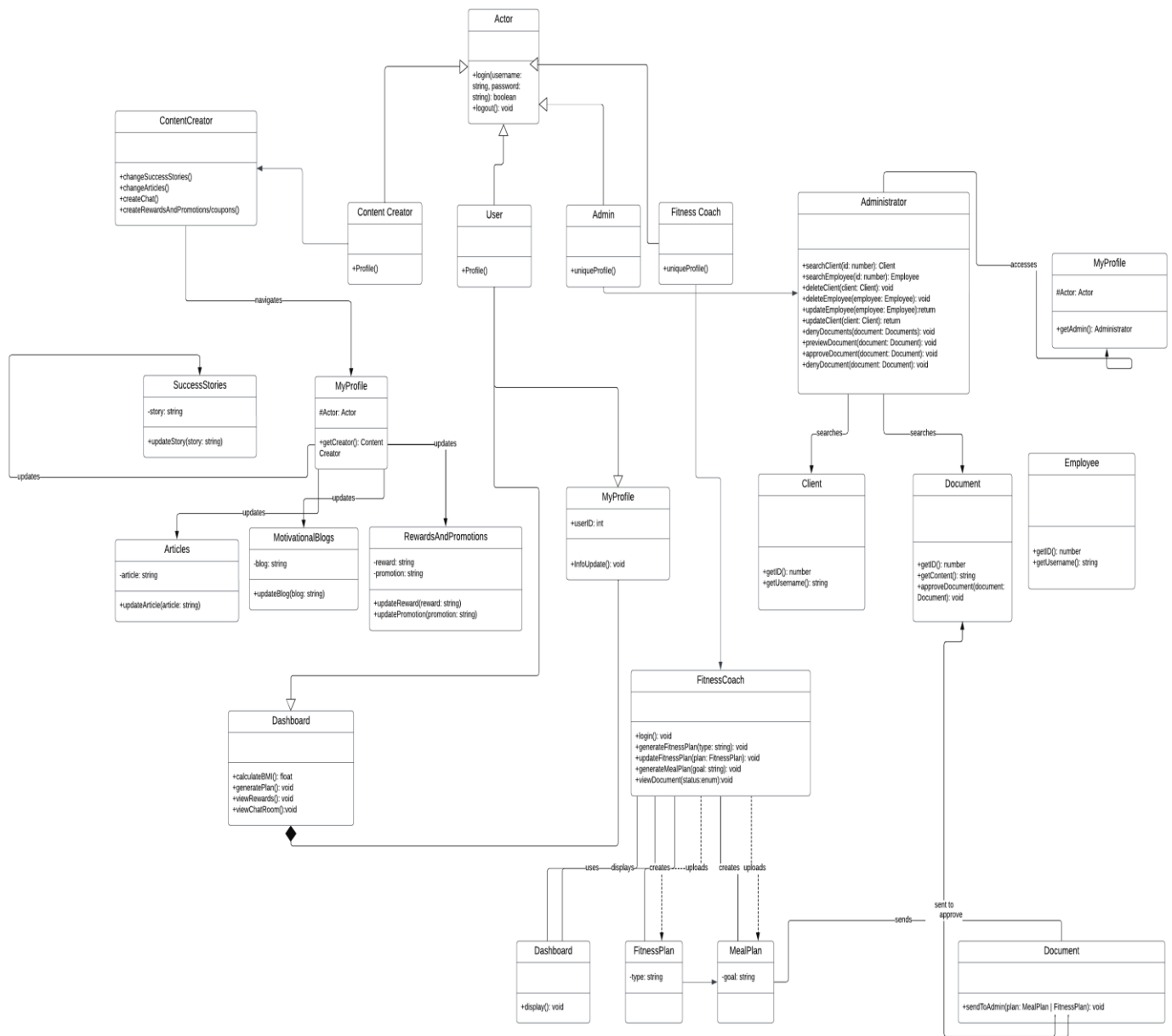
6.3.3. State Machine Diagram: Fitness Coach



6.3.4. State Machine Diagram: Admin



6.4. UML Class Diagram



7. Scenario

7.1 Brief Written Scenario with Screenshots

Administrator (Sara) - Use Cases: User Management & Content Oversight

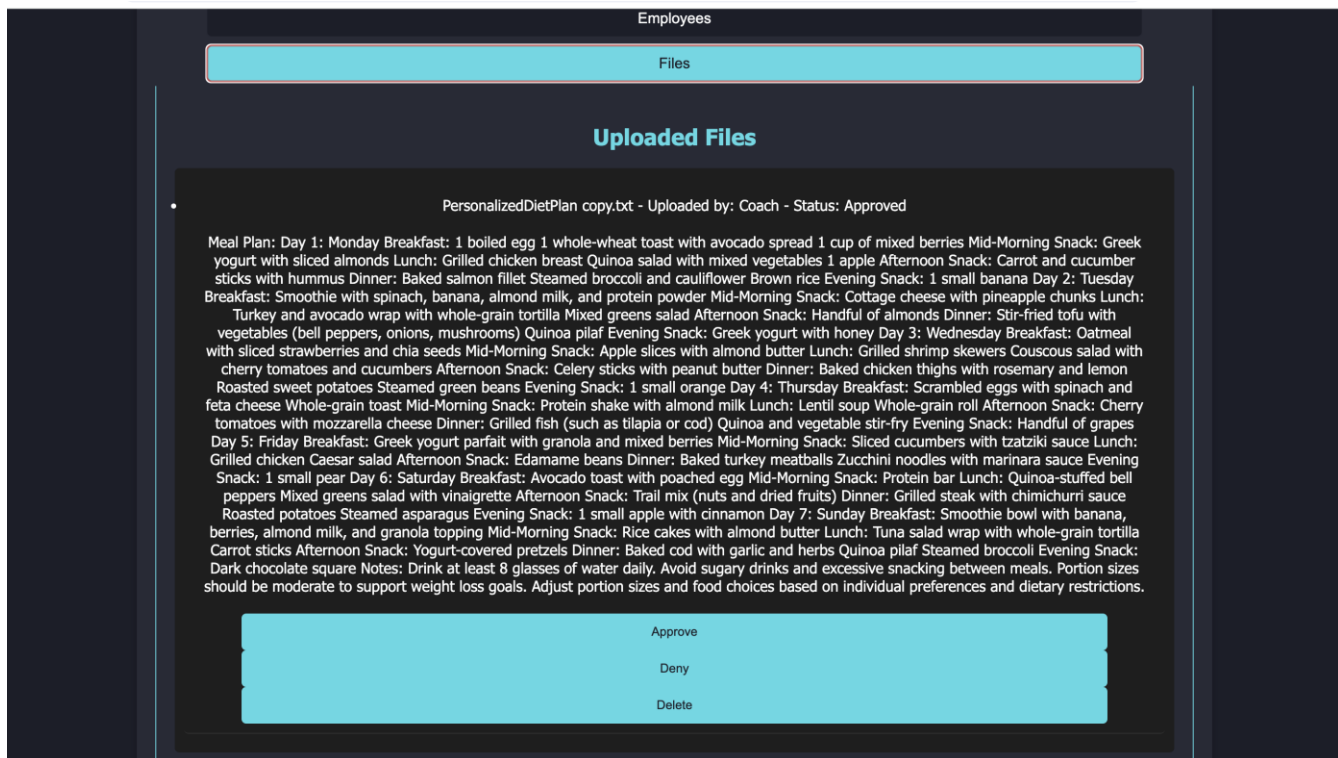
Sara login navigates to her admin dashboard.

Sara updates existing employee roles and searches employee accounts to ensure they're in the database and deletes an employee. Sara also shows she has access to users if needed.

Sara reviews newly submitted fitness documents, and denies one that fails to meet the guidelines, approves one that does meet the guidelines.

Sara exits after ensuring all content on the platform is compliant with guidelines.

Employee Management						
Search by username, email, or unique ID						
Search						
ID	Username	Email	Password	Role	Unique ID	Actions
202	Sara_admin	Saraadmin@gmail.com	*****	ADMIN	4847393	<div>Admin</div> <div>Update Role</div> <div>Delete</div>
204	Faeskandr	Fadyeskandr7@gmail.com	*****	COACH	2260188	<div>Coach</div> <div>Update Role</div> <div>Delete</div>
102	newuser	newuser123@gmail.com	*****	CREATOR	1246505	<div>Creator</div> <div>Update Role</div> <div>Delete</div>
203	Amna_creator	amnacreator@gmail.com	*****	CREATOR	8270573	<div>Creator</div> <div>Update Role</div> <div>Delete</div>

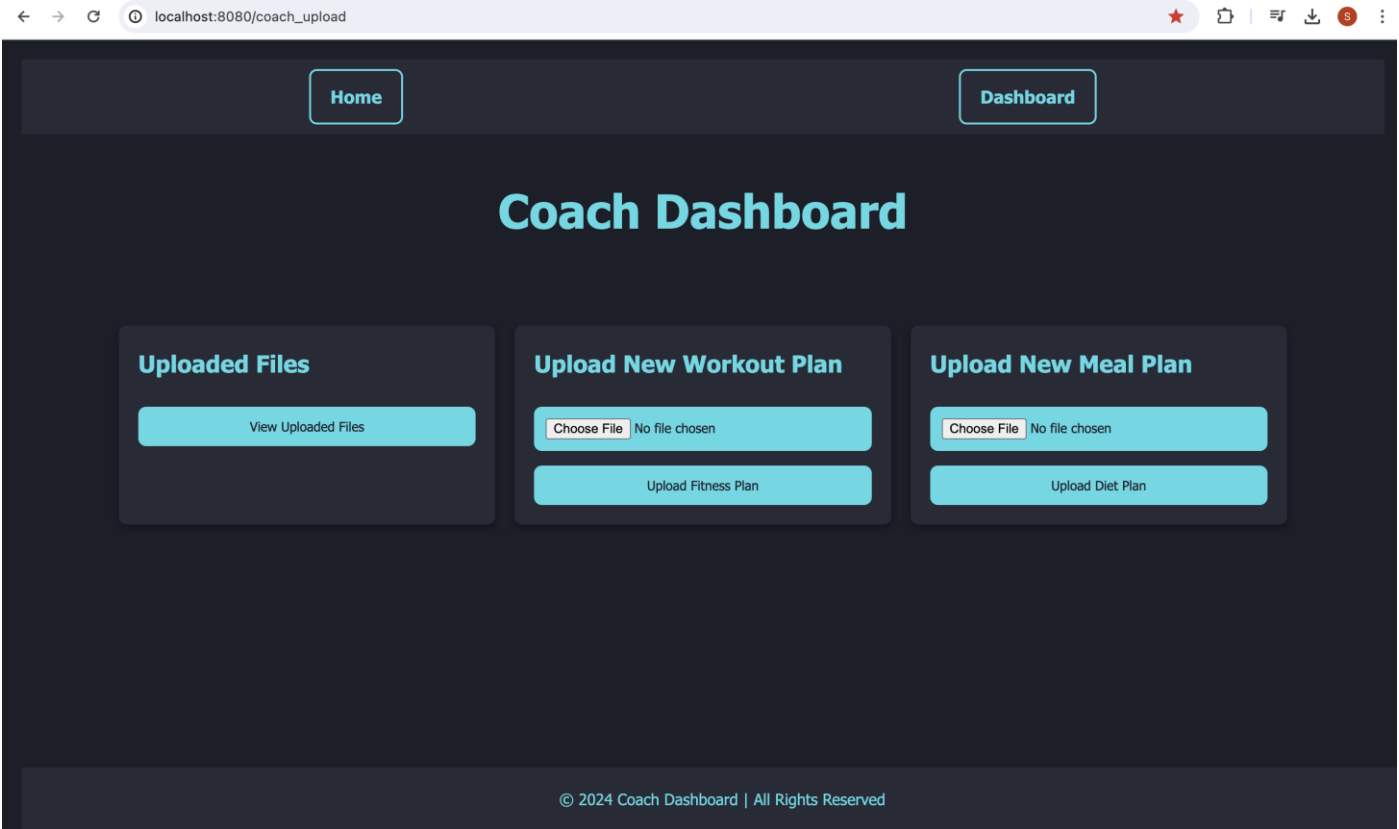
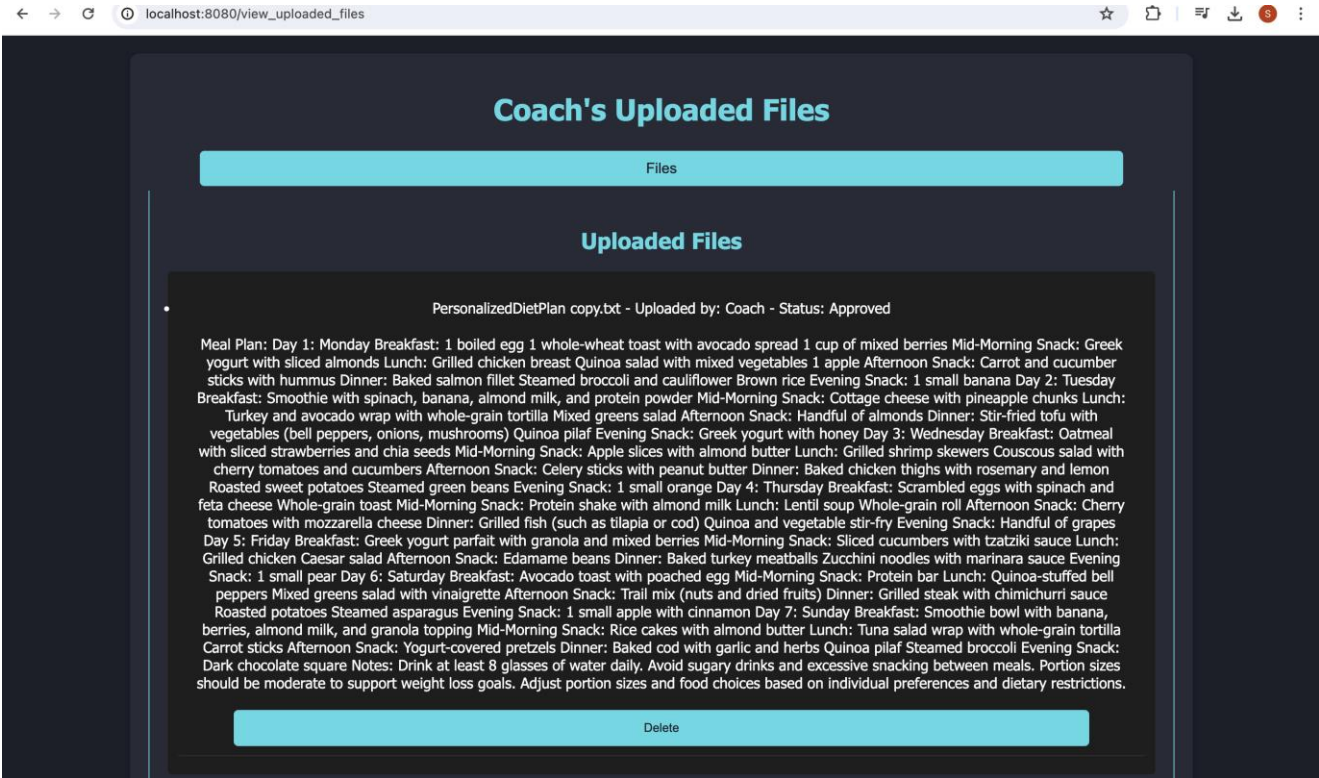


Fitness Coach (Fady) - Use Cases: Create Fitness/M meal Plan & Plan Delivery/Release to User

Fady login onto the coach dashboard.

Fady uploads the meal or fitness plan to the admin to wait for approval or denial

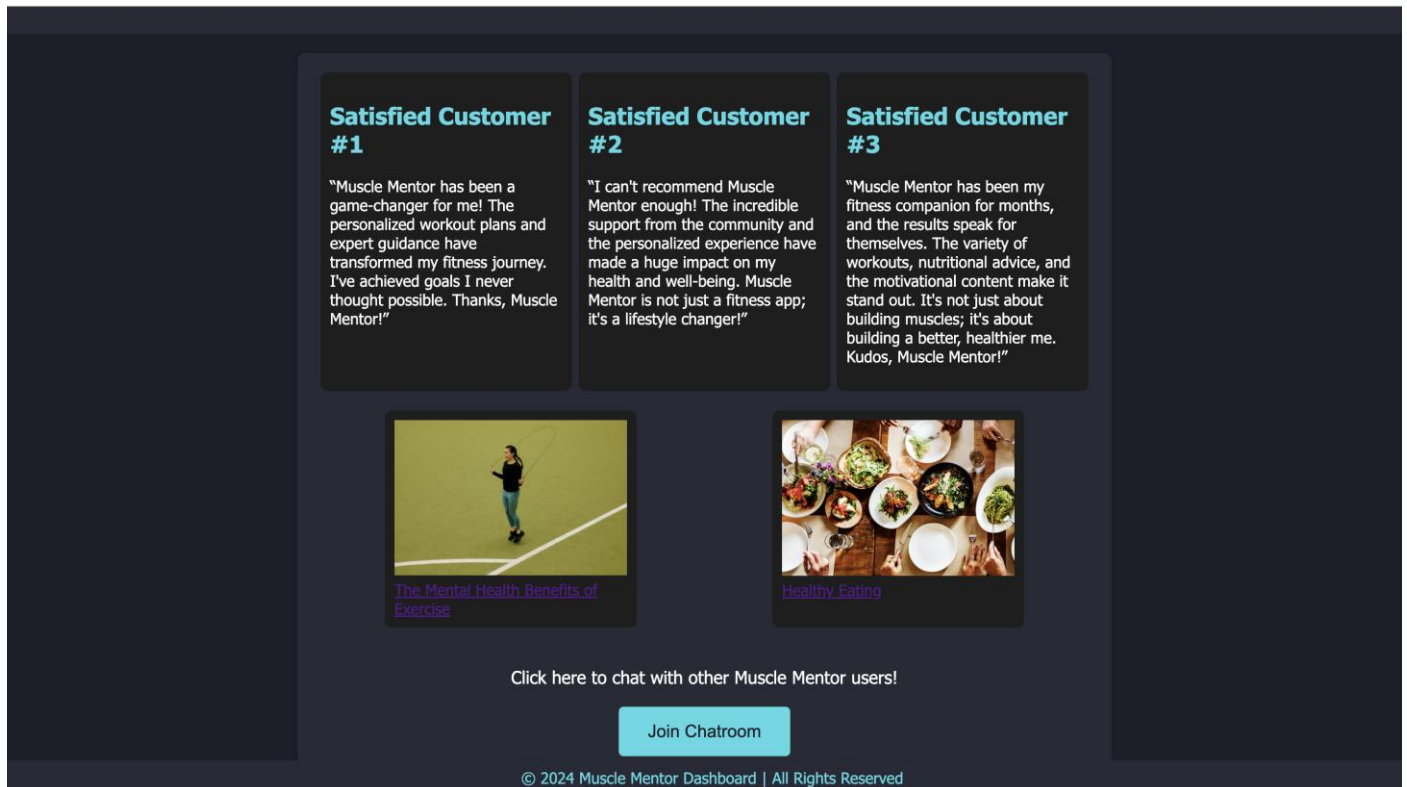
Fady waits for pending approval and when approved, uploads to user's dashboard to be accessed

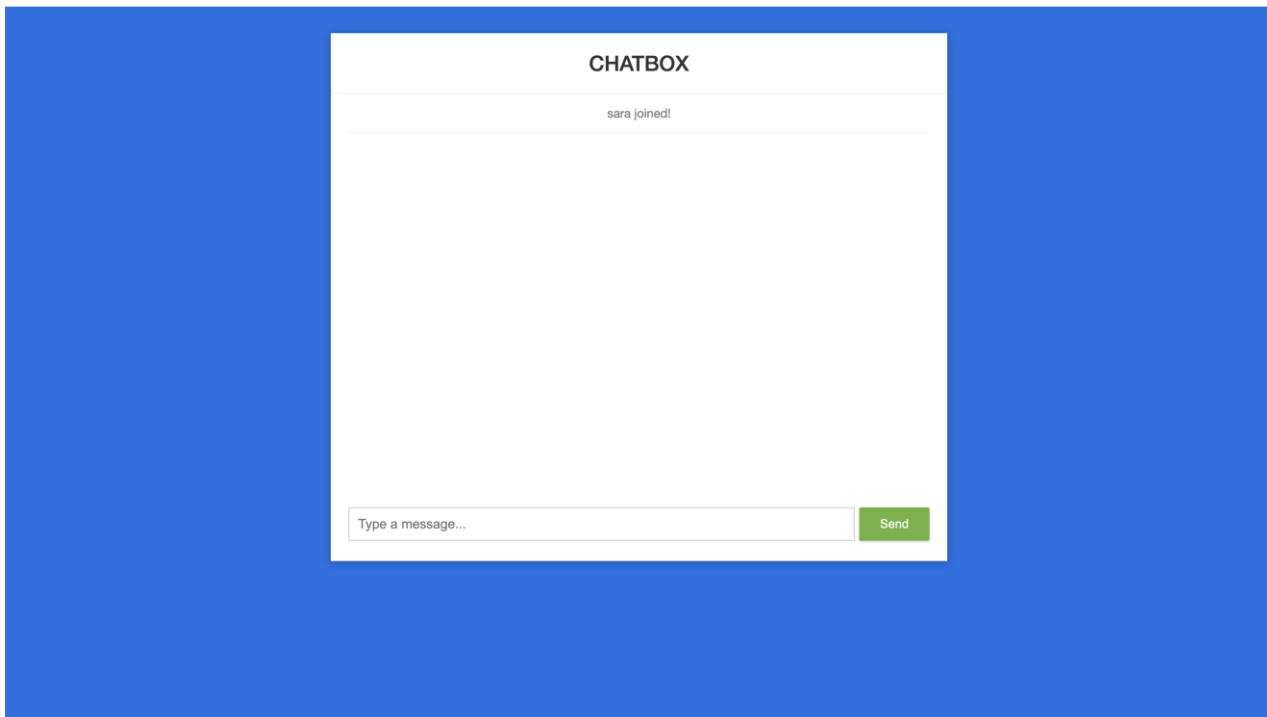


Content Creator (Amna) - Use Cases: User Engagement & Content Creation and Promotion

Amna showcases the chatroom feature in the blog section, demonstrating interactive user engagement. Amna navigates to the promotions page, displays various promotional codes for health-related products and services.

Amna exists after ensuring both features are operational and engaging for users.





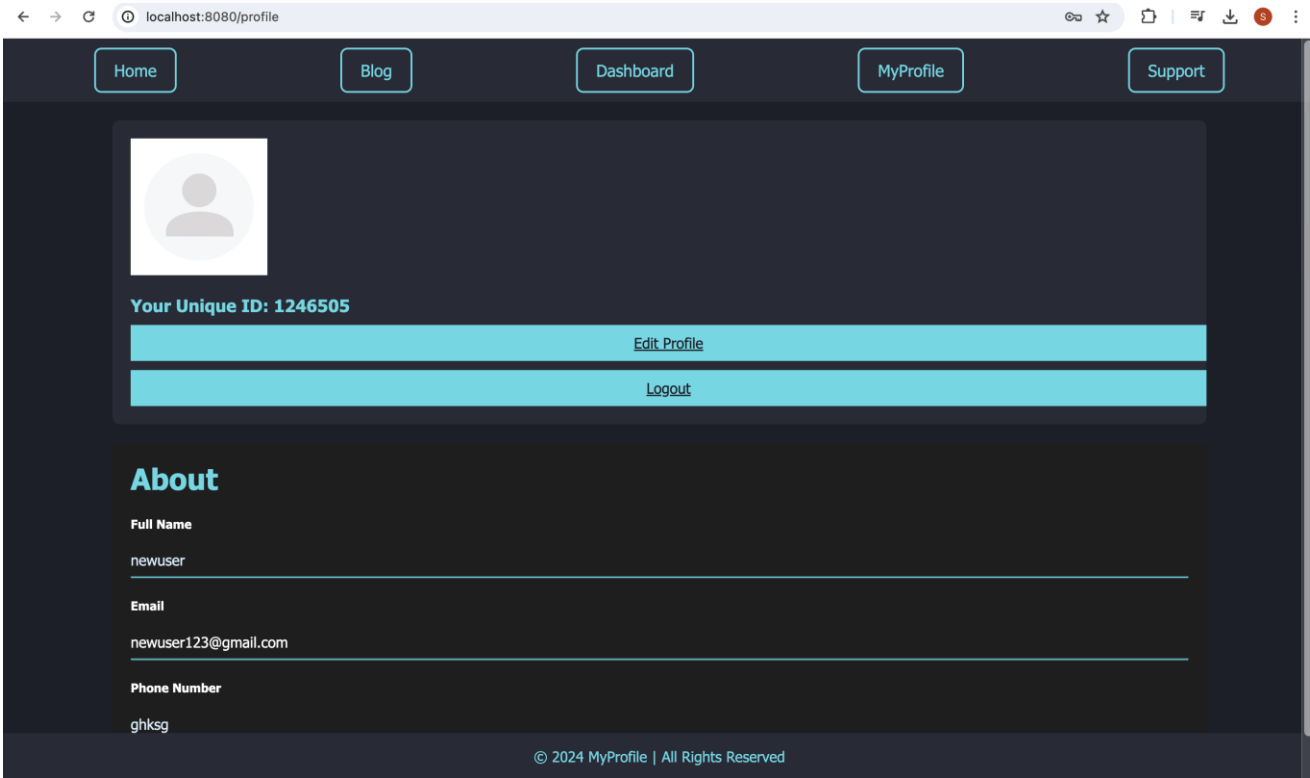
User/Client (Bun) - Use Cases: Updating/Deleting User Profile & User Journey

Bun registers and login from the user side successfully.

Bun then edit the personal information of the account.

Bun interacts with the promotions page, and navigates the dashboard and check BMI.

Bun logs out.



Home

Blog

Dashboard

MyProfile

Support

Calculate BMI

Height (cm):

Weight (kg):

Age:

Calculate BMI

Home

Blog

Dashboard

MyProfile

Support

MuscleMentor Rewards & Promotions

Navita's Organics: 30% Off Sitewide

Click to reveal your coupon code:

Reveal Code

Performix: Get 45% Off Sitewide

Click to reveal your coupon code:

Reveal Code

Magic Spoon: 10% Off Storewide

Click to reveal your coupon code:

Reveal Code

HelloFresh: 70% Off Storewide

Click to reveal your coupon code:

Reveal Code

Boom Chick A Pop: Free 2 Bags of Popcorn on Orders Over \$59

Click to reveal your coupon code:

Reveal Code

Sprouts Farmers Market: \$10 Off (Storewide) (Minimum Order: \$75)

Click to reveal your coupon code:

Reveal Code

Simple Mills: 25% Off Storewide

Click to reveal your coupon code:

Reveal Code

Plantix: Save 15% Off Storewide

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