

**ADDIS ABABA UNIVERISITY**

**ADDIS ABABA INSTITUTE OF TECHNOLOGY**

**School of Information Technology and Engineering**

**Software Requirements Specification (SRS) OF**

***Fitness tracking system (based on Ethiopian food diet)***

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# Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

|  |  |  |  |
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# **Definitions, Acronyms, and Abbreviations**

#### **Definitions**

* **User**: An individual who interacts with the fitness tracking system to log and track workouts, food, and fasting.
* **System**: The Fitness and Diet Tracking System designed to help users log physical activities, food intake, and fasting periods.
* **Workout Log**: A feature where users record their workouts, including details like exercise type, duration, and intensity.
* **Fasting Tracker**: A tool for users to log and monitor their fasting periods.
* **Food Log**: A feature for logging and viewing nutritional information for food, including Ethiopian food items.
* **Dietary Goals**: Personal targets for daily caloric intake or macro-nutrient distribution set by the user.
* **Progress Tracker**: A component that displays the user’s progress over time based on logged data (e.g., calories burned, activities logged).

#### **Acronyms**

* **SRS**: Software Requirements Specification
* **UI**: User Interface
* **API**: Application Programming Interface
* **SHA**: Secure Hash Algorithm (used for password security)

#### **Abbreviations**

* **DBMS**: Database Management System
* **JWT**: JSON Web Token (used for authentication)
* **GDPR**: General Data Protection Regulation (data privacy law)

**Declaration**

We hereby confirm that this submission genuinely reflects our own ideas and thoughts. Any external sources or references used have been properly cited. We've committed to upholding the highest standards of academic honesty and integrity, ensuring that no part of this work involves misrepresentation, fabrication, or falsification of information, data, or sources. We recognize that any failure to follow these principles could lead to institutional disciplinary action and potential legal issues if sources are not properly acknowledged or used without permission.

**Team Fit eatopia 2024**

# **Introduction**

This Software Requirements Specification (SRS) document outlines the requirements for a fitness and diet tracking system, tailored to help users log workouts, track dietary and fasting progress, and access nutritional information on Ethiopian foods. This document specifies the software’s functional and non-functional requirements, use cases, constraints, and the change management process to maintain and adapt the system. It provides all necessary information for the development team to implement a user-centered, reliable, and secure fitness tracking solution.

## **Purpose**

The purpose of this Software Requirements Specification (SRS) document is to define the functional and non-functional requirements for the fitness and diet tracking system. This document serves as a comprehensive guide for the software development team to design, implement, and test the system effectively. It also provides stakeholders—including users, the development team, and Light Diet Nutrition Consultancy—with a clear understanding of the system's capabilities, constraints, and expected outcomes.

## **Scope**

The software product to be produced is a **Fitness and Diet Tracking System**, designed to enable users to log and track their physical activities, dietary habits, and fasting periods. The system will also allow users to monitor their progress toward health and fitness goals, providing a comprehensive platform for managing fitness and diet information.

#### **What the Software Will Do:**

* **User Registration and Login**: The system will allow users to create accounts and securely log in using a username and password.
* **Workout Logging**: Users can log their workouts, including details like activity type, duration, intensity level, and calories burned.
* **Dietary Logging**: The system will allow users to log their daily food intake, providing nutritional information for a wide variety of foods, including traditional Ethiopian foods.
* **Fasting Tracking**: Users can track fasting periods, including details such as start and end times, and monitor progress.
* **Progress Tracking**: The system will provide charts and reports that display users' fitness and diet progress over time.
* **Goal Setting**: Users can set and track specific fitness and dietary goals, including calorie intake and macro-nutrient targets.
* **Ethiopian Food Data**: The system will provide detailed nutritional information for Ethiopian foods, accommodating users with regional dietary preferences.

#### **What the Software Will Not Do:**

* The system will **not** provide meal delivery services or the ability to purchase food items.
* It will **not** support physical health tracking devices (e.g., smartwatches, heart rate monitors).
* The system will **not** generate diet plans for users; instead, it will focus on tracking and logging user data.
* The system will **not** integrate with third-party fitness tracking platforms.

#### **Application of the Software:**

* **Primary Users**: Health-conscious individuals who wish to track their diet, workouts, and fasting progress. The system is aimed at people who follow personalized fitness plans or have specific dietary needs.
* **Benefits and Goals**:
  + **Personalized Tracking**: Users can log workouts, food intake, and fasting periods to make informed decisions about their fitness and health goals.
  + **Comprehensive Progress Monitoring**: The system enables users to monitor long-term health and fitness trends through detailed progress charts and history.
  + **Support for Ethiopian Diets**: The system includes specialized nutritional data for traditional Ethiopian foods, addressing the needs of users following local diets.
  + **Custom Goal Setting**: Users can define their own dietary and fitness goals, such as setting daily caloric intake or macro-nutrient targets, and track their progress toward those goals.

This software system will be a user-centric tool, focusing on improving the user’s health through logging, tracking, and providing feedback on physical activities, nutrition, and fasting. The system is intended to work across web platforms and mobile devices, making it easily accessible for users in different environments.

## **Overview**

The remainder of this Software Requirements Specification (SRS) document provides a detailed description of the Fitness and Diet Tracking System. It outlines the system’s functionalities, user interactions, non-functional requirements, and constraints to guide the development and implementation of the system.

This document is organized into the following sections:

**Section 2: Overall Description**  
This section provides a high-level overview of the system, including its purpose, features, user characteristics, and system environment. It includes use cases for key user actions, such as logging workouts, tracking fasting periods, and viewing progress.

**Section 3: System Features and Requirements**  
This section describes the functional and non-functional requirements for the system. It specifies the behaviors, functionalities, and technical constraints that the system must adhere to. This includes detailed requirements for the user interface, security, performance, availability, and system behavior under different conditions.

**Section 4: Change Management Process**  
This section outlines the process for handling changes to the system during development, including how changes are proposed, evaluated, and implemented. It ensures that modifications to the system are systematically managed and communicated to all stakeholders.

**Section 5: Stakeholder Information**  
This section identifies the key stakeholders involved in the development of the system, with a particular focus on **Light Diet Nutrition Consultancy**, the primary external stakeholder, and their role in providing dietary consulting services.

Each section of the document is intended to provide a comprehensive overview of the system, ensuring that all requirements are clearly defined, understood, and agreed upon by the stakeholders. By following the specifications in this document, the development team can ensure that the system meets its intended goals and delivers value to users.

# **General Description**

The product and its requirements are influenced by several general factors that shape its design and functionality. These factors include the need for cultural relevance, ensuring the web platform supports Ethiopian foods, traditional dietary practices, and religious fasting periods. The web-based system must also be designed to accommodate varying user needs, from those with basic fitness knowledge to more advanced users, providing personalized, practical solutions that fit into the daily lives of Ethiopians. Affordability is also a key consideration, as many users may face financial constraints, so the platform offers essential features at no cost. Additionally, privacy and data security are critical, given the sensitive nature of health-related information. Overall, the system is user-friendly, accessible, and tailored to the specific cultural and dietary context of Ethiopia.

## **2.1 Product Perspective**

#### Through this platform, the Ethiopians are ensured that the unique cultural, dietary, and religious considerations which are not sufficiently served by the global fitness apps are addressed. However, this solution and other similar systems and products should be seen in relation to each other, pointing out their relative strengths and differentiation.

#### **System Interfaces**

#### This is in direct contrast to many global fitness tracking systems (e.g. MyFitnessPal, Fitbit, or Google Fit) which are no doubt all very Western-oriented. Thus, the platform is designed specifically for Ethiopian users. These global platforms do not have the full information regarding the traditional Ethiopian foods, religious fasting practices, and the local meal recommendations appropriate to the given audience, thus making them inappropriate for the targeting of the population.

#### This media-based program will meet the need of the potential customer by introducing a specific food database with Ethiopian dishes, measures of nutritional guidance based on the Ethiopian fasting traditions (e.g. Lent is forty days in the Ethiopian Orthodox Church; Ramadan is observed in the Muslim community) and culture-congruent meal planning tools.

#### **User Interfaces**

#### It will be a web-based solution, so it is more accessible and easier to use. The intent of the user interface (UI) would be to keep it very simple, user-friendly, and culturally adapted, through the options of local language (like Amharic) and the application of the icons of the Ethiopian culture.

#### The UI will be utilized by different members according to the level of fitness knowledge, so it can be used by beginners or more advanced users. Due to the fact that users are diversified, the system must offer clearly defined, easy-to-use sections for logging meals, exercise tracking, and progress monitoring, in order to make it easy for users to choose any of the sections based on their individual personal goals and preferences.

#### **Operating Environment**

The web-based solution will be optimized to work on modern web browsers (e.g., Chrome, Firefox, Safari) and will be compatible with a wide range of operating systems, including Windows, macOS, and Linux. Mobile users accessing the platform through mobile browsers should also have a smooth experience, ensuring that the website is responsive and mobile-friendly. The product will be built to work efficiently across different internet speeds and with minimal bandwidth requirements, making it suitable for users in areas with limited connectivity.

#### **Product Benefits and Differentiation**

The main distinguishing feature of the proposed web platform is its emphasis on the unique dietary requirements, religious customs, and cultural nuances of Ethiopia.

The key benefits include:

* **Localized Food Data**: Provides precise nutritional information for Ethiopian dishes and ingredients, allowing users to monitor traditional foods effectively.
* **Fasting Integration**: Offers tools to track religious fasting periods and suggests meals that comply with fasting guidelines.
* **Accessible**: A web-based solution with essential features available for free, designed to work seamlessly across a variety of devices.
* **User-Centric Design**: Features a straightforward, intuitive interface that accommodates different levels of fitness knowledge and is available in local languages, ensuring it is accessible to a wide range of users.

In conclusion, although there are similar products in the fitness and diet tracking market, this web platform is specifically tailored to address the unique needs of Ethiopian users by considering cultural, dietary, and religious aspects that other platforms often miss.

## **2.2 Product Functions**

The fitness and diet tracking web platform will offer a variety of features aimed at helping Ethiopian users manage their health, fitness, and nutrition effectively.  
Below is a summary of the main functions that the system will provide:

**Meal Logging and Nutritional Tracking**

* **Food Database**: Users will be able to log traditional Ethiopian foods, with each entry linked to its nutritional information (calories, macro-nutrients, vitamins, minerals, etc.). The database will feature popular Ethiopian dishes such as injera, doro wat, kitfo, and shiro, along with common ingredients used in Ethiopian cuisine.
* **Custom Meal Logging**: Users can manually input foods and meals that are not already in the database, and the system will calculate and display the nutritional information based on the available data.
* **Meal History**: The platform will enable users to track and review their previous meals, providing insights into their nutritional intake over time.

**Personalized Nutrition Plans**

* **Goal Setting**: Users can establish personal fitness and health goals, such as weight loss, muscle gain, or maintaining their current body composition. Based on these goals, the system will recommend personalized meal plans that incorporate Ethiopian food choices and nutritional needs.
* **Fasting Support**: The platform will allow users to log religious fasting periods (e.g., Orthodox Christian Lent, Muslim Ramadan) and offer meal suggestions that comply with fasting guidelines. It will provide recommended meal timings and portion sizes to help users maintain balanced nutrition during fasting.

**Exercise and Fitness Tracking**

* **Workout Logging**: Users can record their physical activities. The system will support customization workouts and provide recommendations based on individual fitness goals.
* **Progress Tracking**: The platform will monitor users' fitness progress over time, showcasing metrics such as weight, strength, endurance, and flexibility.
* **Exercise Plans**: The system will create personalized workout plans tailored to users' goals, fitness levels, and available equipment.

## **2.3 User Characteristics**

The fitness and diet tracking web platform is designed for Ethiopians who want to manage their health, fitness, and nutrition in a way that resonates with their culture. The user demographic will be diverse, encompassing various health goals and levels of technological proficiency, which will influence the platform's design and features.

**Demographics and Health Goals**

* **Age and Health Knowledge**: The user age range will span from young adults (18-24) to older adults (50+), with varying degrees of fitness knowledge, from novices to experienced users. The platform should provide adaptable solutions to cater to both ends of this spectrum.
* **Religious Fasting**: A significant number of users will observe fasting periods (such as Orthodox Christian Lent and Muslim Ramadan). The platform needs to accommodate these fasting practices and offer meal suggestions that align with these times.

**Technology Proficiency and Access**

* **Digital Literacy**: The platform should be designed to be user-friendly, appealing to individuals with basic to intermediate tech skills. Clear navigation and straightforward features will enhance accessibility for all users, regardless of their digital literacy levels.

**Cultural and Language Needs**

* **Language Support**: The platform will include support for local languages, especially Amharic, to ensure it is accessible to Ethiopian users.
* **Cultural Relevance**: The design and content must reflect Ethiopian dietary traditions, fasting practices, and fitness customs, making the system feel relevant and relatable.

**Privacy and Security**

* **Data Sensitivity**: As users will input personal health information, robust privacy protections and data security measures are essential to build trust and safeguard sensitive data.

Overall, the platform must address a diverse audience with varying levels of fitness knowledge, tech skills, and cultural practices. It is simple, intuitive, and culturally appropriate while also addressing privacy concerns and accommodating different dietary and fasting needs. These user characteristics will inform the platform’s development to effectively meet the needs of Ethiopian users.

## **2.4 General Constraints**

#### **Hardware Limitations**

* As the system is web-based, it must be designed to work efficiently across a variety of hardware, including low-end smartphones and computers. The platform must be optimized for devices with limited processing power and memory to ensure a smooth user experience even on older or less capable devices.

#### **Audit Functions**

* While audit functionality is not critical for the platform, basic logging of user activities (e.g., meal logs, workout tracking) may be implemented for user reference and troubleshooting. This will help track any potential issues with the system and ensure a reliable user experience.

#### **Criticality of the Application**

* The platform is not critical in terms of life-support or safety, but it is crucial for users' health and well-being. Therefore, the system must be available and accurate, especially during key periods like religious fasting, where users rely on the platform for nutritional guidance.

## **2.5 Assumptions and Dependencies**

This section outlines the key assumptions and dependencies that may affect the requirements of the fitness and diet tracking web platform. These factors are not design constraints but are important to consider as they could impact the development, functionality, or deployment of the system.

#### **Assumptions**

1. **Availability of Internet Access**
   * It is assumed that users will have access to the internet, although it is understood that internet speeds may vary, especially in rural areas. The platform must be optimized for lower bandwidths to ensure accessibility across different regions of Ethiopia.
2. **Availability of Devices**
   * It is assumed that users will have access to devices such as smartphones, laptops, or desktop computers with a basic web browser. The platform will be designed to be responsive and optimized for use on various devices.
3. **Access to Nutritional Data**
   * It is assumed that comprehensive nutritional data for Ethiopian foods will be accessible or can be gathered during the development phase. This data will be essential for the accurate tracking of meals and will require collaboration with local nutrition experts or access to relevant food databases.
4. **User Familiarity with Technology**
   * It is assumed that most users will have a basic understanding of how to use web-based applications, though some may have limited experience. The platform will need to be user-friendly and offer simple navigation to ensure accessibility for users with varying levels of digital literacy.
5. **User Participation in Religious Fasting**
   * The system assumes that a significant portion of users will observe fasting practices such as those observed by Orthodox Christians and Muslims. These fasting periods will require integration into the platform to provide meal suggestions and ensure users' nutritional needs are met during fasting.
6. **Accuracy of User-Entered Data**
   * It is assumed that users will input accurate personal information, such as their height, weight, age, and fitness goals. While the platform can offer guidance and suggestions, the accuracy of health tracking relies on users providing correct data.
7. **Language Support**
   * It is assumed that Amharic will be the primary language for the platform, though support for other Ethiopian languages may be added in the future. The initial version will prioritize Amharic to cater to the largest segment of the user base.

#### **Dependencies**

1. **Availability of Local Nutrition Experts**
   * The quality and accuracy of the food database depend on collaboration with local nutrition experts or research into the nutritional content of Ethiopian foods. This collaboration will be critical for ensuring that the platform provides reliable nutritional data for Ethiopian meals.
2. **User Acceptance and Adoption**
   * The success of the platform depends on user adoption, which is influenced by how well it meets the needs of Ethiopian users, especially in terms of cultural relevance and ease of use. User feedback and early testing phases will be crucial to validate the system’s functionality and make necessary adjustments.
   * modifications to the platform's data management practices.
3. **Technological Advancements**
   * The platform’s technology stack (web frameworks, back-end systems, APIs, etc.) depends on the continued availability and stability of the tools and libraries used in development. Changes in these technologies, such as deprecation or updates, may require modifications to the system.

# **Specific Requirements**

## **3.1 External Interface Requirements**

### **3.1.1 User Interfaces**

This section specifies the required characteristics for the user interface. The system shall be implemented as a Graphical User Interface (GUI) to allow users to interact with core functionalities, including food logging, workout tracking, progress monitoring, and fasting support. Due to resource limitations, accessibility accommodations, such as those required by the ADA (American with Disabilities Act), are currently out of scope.

#### **(1) Logical Characteristics of the Interface**

**Visual Layout**:

* The system shall present a simple and organized layout. Visual components shall be limited to essential elements required for users to perform actions effectively.
* The system shall label each section clearly, with labels for Food Logging, Workout Tracking, Progress Tracking, Body Composition Calculations, and Fasting Support.
* The system should include clearly labeled navigation links to direct users to main sections.

**Navigation**:

* The system shall include a navigation bar visible on every page. The navigation bar shall contain links to core sections, including Home, Food Logging, Workout Tracking, Progress Tracking, and Fasting Support.
* The system shall allow users to return to the homepage from any page and provide a “Back” function to allow users to navigate to the previous page.

**User Actions**

* The system shall allow users to log Ethiopian foods and view nutritional values.
* The system shall enable users to record details of workouts and monitor progress over time.
* The system shall provide tools to calculate Body Mass Index (BMI), Basal Metabolic Rate (BMR), and macro-nutrient requirements based on user data.
* The system shall allow users to log fasting start and end times and track fasting history.

#### **(2) Optimization for Usability**

The system shall prioritize ease of access and clarity, ensuring that users can navigate and complete tasks effectively without guidance.

**User Experience Elements**:

* The system shall provide labeled buttons and input fields to facilitate user actions, including food logging, workout entry, and fasting logs.
* The system shall display confirmation messages upon successful task completion, such as logging food or calculating body composition.

**Quick Access to Functions**:

* The system shall display frequently used functions on the homepage, with links or buttons for direct access to Food Logging, Workout Tracking, and Fasting Support.
* The system should provide intuitive section labels and navigation links on every page to reduce the time required to access main functionalities.

**Responsiveness**:

* The system shall include a responsive design that adjusts layouts, font sizes, and button sizes for optimal usability on desktop, tablet, and mobile devices.

### **3.1.2 Hardware Interfaces**

*The system has no hardware interface requirements.*

### **3.1.3 Software Interfaces**

1. ***Food Database***

The system shall include a secure database to store and manage data related to Ethiopian food nutritional values, user logs, workout tracking, and fasting periods.

* **Data Management**: The system shall support standard data management operations (e.g., create, read, update, delete) to interact with the database.
* **Query Language**: The system shall use SQL or a compatible query language to facilitate data retrieval and storage.
* **Data Format**: Data exchanges between the system and database shall use JSON format to maintain a structured and consistent response format for user-facing interfaces

1. ***Communications Interfaces***

The system shall use **HTTPS** for all data transmissions between the client’s browser and the web server.

HTTPS will ensure that all data exchanged between the user and the system remains encrypted, protecting sensitive user information from unauthorized access. The system shall enforce SSL/TLS encryption on all pages that handle user data, including login, registration, and personal data entry sections, to maintain data privacy and integrity.

## **3.2 Functional Requirements**

### **3.2.1 Food Logging and Nutritional Value Display**

**Introduction**

The system shall allow users to log Ethiopian foods consumed during meals and retrieve nutritional information for each food item. This feature will enable users to track their food intake and monitor their dietary goals.

**Inputs**

- User-selected food item(s) from a predefined list of Ethiopian foods.

- Portion size or quantity of food consumed, as entered by the user.

**Processing**

- The system shall retrieve the nutritional data (calories, protein, fat, carbs) for each selected food item based on the entered portion size.

- The system shall calculate the total nutritional values for the meal, considering all logged items.

**Outputs**

- A breakdown of the nutritional values (calories, protein, fat, carbohydrates) for the logged meal.

- An updated daily nutritional summary with cumulative values.

**Error Handling**

- If the user enters an invalid portion size, the system shall display an error message and prompt the user to enter a valid quantity.

- If the system cannot access the food database, the user shall receive a notification that suggests trying again later.

### **3.2.2 Workout Logging and Progress Tracking**

**Introduction**

The system shall allow users to log workouts, including exercises, duration, and intensity. The system will track user progress over time, showing performance metrics such as calories burned and total workout time.

**Inputs**

- Exercise type (e.g., running, weightlifting, cycling).

- Duration of the workout in minutes.

- Intensity level (optional, e.g., low, medium, high).

**Processing**

- The system shall calculate the total calories burned based on the exercise type, duration, and intensity.

- The system shall track cumulative progress by updating the user’s workout history and statistics.

**Outputs**

- A summary of the logged workout, showing exercise details, calories burned, and total duration.

- A progress chart displaying total calories burned and workout time over time.

**Error Handling**

- If the user enters invalid workout data (e.g., a non-numeric value for workout duration), the system shall prompt the user to enter a valid number.

- If an error occurs while calculating calories, the system shall display a message indicating a calculation issue and suggest retrying later.

### **3.2.3 Body Composition Calculations**

**Introduction**

The system shall calculate body composition metrics such as BMI (Body Mass Index), BMR (Basal Metabolic Rate), and macro-nutrient needs based on user inputs and activity levels.

**Inputs**

- User’s weight (in kg).

- User’s height (in cm).

- User’s age (in years).

- User’s gender (male or female).

- Activity level (e.g., sedentary, active, very active).

**Processing**

- The system shall calculate BMI using the formula: BMI = weight (kg) / height (m)^2.

- The system shall calculate BMR using the Mifflin-St Jeor Equation (for both males and females).

- The system shall recommend daily macronutrient needs (protein, fats, carbohydrates) based on activity level and BMR.

**Outputs**

- Display of BMI and BMR values.

- Suggested macronutrient breakdown for the user (e.g., how many grams of protein, fats, and carbs they should consume).

**Error Handling**

- If any input fields (weight, height, age, etc.) are left blank or contain invalid data, the system shall prompt the user to provide valid inputs.

- If the system fails to calculate any metrics, it shall display an error message and suggest re-entering the data.

### **3.2.4 Fasting Period Tracking**

**Introduction**

The system shall allow users to track fasting periods, including the start and end times of fasting intervals. The system will provide visual feedback to help users monitor their fasting progress.

**Inputs**

- Start time of the fasting period.

- End time of the fasting period (optional).

- Fasting type (e.g., intermittent fasting, religious fasting).

**Processing**

- The system shall calculate the duration of the fasting period based on the start and end times entered by the user.

- The system shall update the fasting history.

**Outputs**

- Display of fasting duration, showing start and end times.

- A fasting history page showing all past fasting periods and their durations.

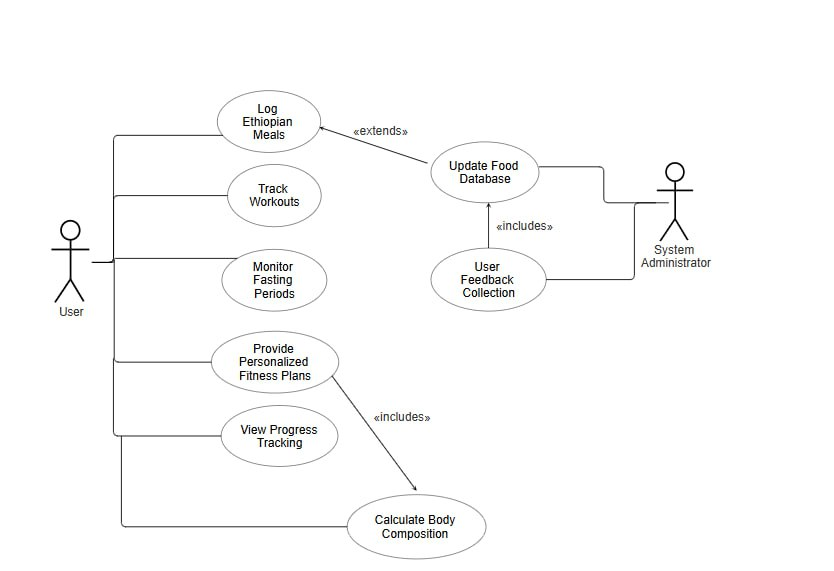
**Error Handling**

- If the user enters an invalid start or end time (e.g., end time before start time), the system shall prompt the user to correct the input.

- If the fasting period is not entered correctly, the system shall display an error message asking the user to try again.

## **3.3 Use Cases**

**Figure: Use Case Diagram**



**3.3.1 Use Case #1: Logging a Workout and Tracking Progress**

**Goal**: User wishes to log a workout and track their progress over time  
**Primary Actor**: User  
**Scope**: Fitness and diet tracker website  
**Level**: User  
**Precondition**: User is logged into the system  
**Success End Condition**: Workout is successfully logged, and progress is tracked  
**Failure End Condition**: Workout is not logged, and progress is not updated  
**Trigger**: User selects the option to log a new workout

#### **Main Success Scenario:**

1. User navigates to the "Workout Log" section of the website.
2. User selects the type of exercise performed (e.g., running, cycling).
3. User enters the duration of the workout in minutes.
4. User optionally selects the intensity level (Low, Medium, High).
5. User clicks the "Log Workout" button.
6. The system calculates the calories burned based on the exercise type, duration, and intensity level.
7. The system saves the workout information in the user’s workout history.
8. The system updates the progress chart with the user’s total calories burned and total workout time.
9. The system confirms the workout has been logged successfully and returns to the "Workout Log" screen.

#### **Extensions (Error Scenarios):**

* **Invalid data entered**  
  - System displays an error message prompting the user to enter valid data (e.g., a non-numeric value for workout duration).  
  -User corrects the data and proceeds.
* **Unable to calculate calories burned**  
  -System displays an error message informing the user that there was an issue calculating calories.  
  -User is advised to retry later.

#### **Variations (Alternative Scenarios):**

* **User skips intensity level**:  
  -User does not select an intensity level. The system defaults to "Medium" intensity for calorie calculation.

**3.3.2 Use Case #2: Logging Fasting Periods**

**Goal**: User wishes to log a fasting period and track their fasting progress over time  
**Primary Actor**: User  
**Scope**: Fitness and diet tracker website  
**Level**: User  
**Precondition**: User is logged into the system  
**Success End Condition**: Fasting period is successfully logged and tracked  
**Failure End Condition**: Fasting period is not logged, and fasting progress is not updated  
**Trigger**: User selects the option to log a new fasting period

#### **Main Success Scenario:**

1. User navigates to the "Fasting Tracker" section of the website.
2. User selects the fasting type (e.g., 24-hour fast, intermittent fast).
3. User enters the start and end time for the fasting period.
4. User clicks the "Log Fasting" button.
5. The system calculates the total duration of the fasting period in hours.
6. The system saves the fasting period and updates the user's fasting history.
7. The system displays a summary of the fasting period and a progress chart showing the total hours fasted.
8. The system confirms that the fasting period has been logged successfully and returns to the "Fasting Tracker" screen.

#### **Extensions (Error Scenarios):**

* **Invalid fasting period entered**  
  -System displays an error message prompting the user to correct the start and end time.  
  -User corrects the times and proceeds.
* **Fasting duration exceeds system limits**  
  -System displays a warning message and asks the user to shorten the fasting period.

#### **Variations (Alternative Scenarios):**

* **-User logs fasting with only start time**:  
  -User only enters the start time, and the system automatically calculates the end time based on the user's typical fasting duration.

**3.3.3 Use Case #3: Viewing Nutritional Values for Ethiopian Foods**

**Goal**: User wishes to view nutritional information for Ethiopian foods  
**Primary Actor**: User  
**Scope**: Fitness and diet tracker website  
**Level**: User  
**Precondition**: User is logged into the system  
**Success End Condition**: Nutritional values for the selected food are displayed  
**Failure End Condition**: Nutritional values are not displayed  
**Trigger**: User selects a food from the food log or searches for a specific Ethiopian food item

#### **Main Success Scenario:**

1. User navigates to the "Food Log" section or the "Food Search" feature.
2. User enters the name of an Ethiopian food item in the search bar (e.g., injera, shiro).
3. The system searches the Ethiopian food database for the item.
4. The system retrieves the nutritional information for the selected food (e.g., calories, protein, fat, carbs).
5. The system displays the nutritional values on the screen along with serving size and any other relevant details.
6. The system confirms the food's nutritional details have been successfully displayed.

#### **Extensions (Error Scenarios):**

* **Food item not found**  
  -System displays a message informing the user that the food item is not available in the database.  
  -User is given the option to add the food item manually or try another search.

#### **Variations (Alternative Scenarios):**

* **User searches using a food category**:  
  -User searches for foods by category (e.g., grains, meat) rather than by specific food item, and the system displays a list of foods from that category.

**Table 1: Use case #1**

|  |  |
| --- | --- |
| **Name** | **User registration** |
| Goal | register a new account |
| Primary actor | user |
| Precondition | The user possesses the necessary data to register. |
| End result | The user is logged in and their account has been created. |
| Failed conditions | Due to inaccurate or missing information, registration failed. |
| Main success scenario | 1. User access to the page for registration.  2. The user enters the necessary information (password, username). 3. Users fill out the form.  4. The system logs the user in and creates a new account after validating the input. |
| Extensions | 1. Display an error message and ask the user to fix any missing or invalid mandatory fields.  2. Request that the user log in or use another username if the current one is already in use. |

**Table 2: Use case #2**

|  |  |
| --- | --- |
| **Name** | **Login** |
| goal | allow users to login to their account |
| Primary actor | user |
| precondition | user has an existing account |
| End result | users are successfully logged in |
| Failed conditions | Login unsuccessful because of invalid credentials. |
| Main success scenario | 1. users go to the login page  2. Users provide their credentials.  3. Users submit the login form.  4. system checks credentials  5.The system logs the user in when the credentials are valid. |
| extensions | 1. If the credentials are wrong, display an error message and ask the user to attempt again.   1. if the user forgets their password,offer a link to reset it by using the forgot password option. |

**Table 3: Use case #3**

|  |  |
| --- | --- |
| **Name** | **Fitness tracking activity** |
| goal | log daily physical activity data |
| Primary actor | user |
| precondition | user is logged in and on the activity tracking page |
| End result | activity data is recorded and displayed on the dashboard |
| Failed conditions | Activity data is not logged because of a system malfunction. |
| Main success scenario | 1. The user goes to the page for tracking activities.  2. The user provides information about the activity (type of activities, number of sets, duration).   1. User provides the activity date. 2. The system stores and presents the information on the dashboard. |
| extensions | if a system error occurs while saving data, display an error message and ask the user to attempt again later. |

**Table 4: Use case #4**

|  |  |
| --- | --- |
| **Name** | **set dietary goals** |
| goal | allow users to set dietary goals |
| Primary actor | user |
| precondition | user is logged in and are on log food page |
| End result | dietary goals are are saved and displayed on the dashboard |
| Failed conditions | Dietary objectives are not recorded because of validation problems. |
| Main success scenario | 1. users go to the dietary goals section  2. user inputs dietary choices (daily caloric intake, macro-nutrient targets)   1. Users provide their dietary objectives. 2. The system records goals and shows them on user profiles. |
| extensions | 1. If the input values surpass the system limits, show an error message to modify the inputs. 2. if a server error occurs, advise the user to attempt again later |

**Table 5: Use case #5**

|  |  |
| --- | --- |
| **Name** | **View progress** |
| goal | allow users to view fitness progress over time |
| Primary actor | user |
| precondition | user has logged at least one activity |
| End result | users progress is displayed on the dashboard |
| Failed conditions | Progress data cannot be obtained because activity data is not available. |
| Main success scenario | 1. The user goes to the progress page.  2. system fetches recorded activity information   1. The system computes and shows progress graphs derived from the user's activity history. |
| extensions | 1. If no activity data exists, present a message stating that the user must log activities to see progress. 2. If a system error occurs, display an error message and ask the user to attempt again. |

## **3.4 Non-Functional Requirements**

### **3.4.1 Performance**

* The system shall process 95% of user actions (such as logging workouts or food items) in less than 3 seconds.
* The system shall support at least 100 simultaneous users without significant performance degradation.

### **3.4.2 Reliability**

* The system shall have an uptime of at least 99.5% each month.
* System errors (e.g., failed logins, broken links) should not occur more than 2 times per 1000 actions.

### **3.4.3 Availability**

* The system shall be available 24/7, with no planned downtime longer than 1 hour per month for maintenance.

### **3.4.4 Security**

* The system shall encrypt all user passwords using at least SHA-256 or a similar hashing algorithm.
* The system shall require users to log in using a username and password.
* All sensitive user data (e.g., food logs, fasting periods) shall be stored securely with proper access controls.

### **3.4.5 Maintainability**

* The system’s code shall be modular, with clear documentation to allow future developers to make changes or add new features.
* Any new feature or update shall not interfere with existing functionality unless specified.

### **3.4.6 Portability**

* The system shall be accessible on modern browsers (Chrome, Firefox, Safari) and on mobile devices.
* The system shall be compatible with both Windows and macOS for its web interface.

## **3.5 Inverse Requirements**

* The system shall not support physical health tracking devices like smartwatches or heart monitors.
* The system shall not offer meal delivery services or shopping capabilities.
* The system shall not automatically generate diet plans for users.

## **3.6 Design Constraints**

* The system shall be designed to be simple and intuitive, with minimalist UI/UX.
* The system must support Ethiopian food data and fasting tracking based on the Ethiopian calendar.
* The system should not require advanced hardware resources—should run on typical consumer computers or mobile devices.

## **3.7 Logical Database Requirements**

* The system shall use a relational database (e.g., MySQL or PostgreSQL) to store user data, workout logs, food logs, and fasting periods.
* Data integrity must be maintained, ensuring no duplicate records and proper relationships between user and log data.
* Data retention policies: User data will be kept for at least 6 months after the last active login, then archived for potential future access.

## **3.8 Other Requirements**

* A README file will be provided to guide setup and basic usage.
* The system must comply with basic copyright and data protection laws.
* Users must agree to a privacy policy and terms of service before using the system.

# **Change Management Process**

**Purpose**

The Change Management Process ensures that modifications to the requirements of the fitness tracking system are systematically handled. This process aligns with Agile methodology, allowing our team to iteratively respond to changes based on feedback and evolving needs, while keeping all stakeholders—including users, instructor, and team members—informed.

**Steps in the Change Management Process**

1. **Change Request Submission**
   * **Initiation**: Any stakeholder, including team members, instructor, or users, can propose a change. Change requests can be raised during sprint reviews, team meetings, or through direct communication with any of our team members.
   * **Documentation**: Each change request will be documented in a **Change Request Form**,

which includes:

* + - A clear description of the proposed change.
    - The reason for the change (e.g., based on user feedback or new feature ideas).
    - Initial considerations on how the change may impact the project scope, timeline, or resources.

1. **Review and Prioritization**
   * **Scrum Team Review**: The Scrum team, comprising all five students of the team in developer and owner roles, will review each change request together. This review often takes place during sprint planning or backlog refinement sessions.
   * **Evaluation Criteria**: The team evaluates each change based on:
     + **Alignment with Project Goals**: Whether the change supports project objectives, such as improving user experience or system functionality.
     + **Feasibility**: The technical, time, and resource feasibility of implementing the change within the current or upcoming sprint.
     + **Impact on User Experience**: Whether the change will enhance or simplify the experience for end users.
   * Approved changes are prioritized in the product backlog, with high-priority changes planned for the next available sprint.
2. **Impact Analysis**
   * For significant change requests, a detailed impact analysis will be conducted to assess:
     + Required adjustments to existing requirements, project scope, and sprint timelines.
     + Any potential risks or challenges that may arise from the change.
   * This analysis is documented to ensure transparency and to serve as a reference for team members and stakeholders.
3. **Decision and Sprint Planning**
   * **Approval or Rejection**: Based on the impact analysis, the team decides on approval, modification, or rejection of the change request. Decisions are documented to maintain a clear record.
   * **Backlog Update**: Approved changes are added to the backlog, prioritized based on urgency, and scheduled for an upcoming sprint.
   * **Stakeholder Communication**: The team communicates decisions to all stakeholders, providing a summary and next steps for approved changes.
4. **Implementation**
   * **Sprint Execution**: Approved changes are implemented in the current or subsequent sprint. The development team ensures that the changes are seamlessly integrated without disrupting other project functionalities.
   * **Testing and Validation**: Each change undergoes testing within the sprint to verify it meets quality standards and does not impact other features.
5. **Monitoring and Post-Implementation Review**
   * **Sprint Review**: Following implementation, the team presents the changes during the sprint review, gathering feedback from stakeholders, including users and instructor.
   * **Continuous Improvement**: Feedback from stakeholders is documented and used to inform future improvements, aligning the system with evolving user needs.
6. **Documentation and Record Keeping**
   * **Change Log**: All change requests, decisions, implementation details, and feedback are recorded in a Change Log, which serves as an audit trail and helps with future reference.
   * **Periodic Updates**: The team provides regular updates on change statuses and impacts during project meetings and sprint retrospectives, maintaining transparency and alignment.

**Stakeholder Engagement**

* **Routine Communication**: Stakeholders receive updates on change requests, implementations, and project progress during sprint reviews and periodic meetings.
* **Open Feedback Channels**: Continuous feedback channels, such as surveys or direct feedback forms, encourage stakeholders to suggest improvements and address necessary changes.

**Conclusion**

This Change Management Process enables the team to manage requirement modifications efficiently within an **Agile** framework. By integrating change management with each sprint, the team can adapt flexibly to stakeholder needs and evolving project goals, ensuring that the fitness tracking system remains relevant, functional, and user-centered.

# Stake Holder:

***Light Diet Nutrition Consultancy***

Light Diet Nutrition Consultancy is a professional dietary consultancy dedicated to helping individuals achieve optimal health through personalized nutrition plans. Their mission is to improve overall well-being by addressing various health needs with evidence-based dietary advice. The consultancy provides specialized services for clients aiming to manage conditions like obesity, diabetes, hypertension, and high cholesterol. They also offer weight gain and weight management solutions, tailored diet plans for children and teenagers, and support for individuals with kidney or liver issues.

Additionally, Light Diet Nutrition Consultancy offers tailored nutrition plans for pregnant and breastfeeding women to ensure they and their babies receive essential nutrients. The consultancy also addresses gastrointestinal health by providing dietary support for people with digestive issues.

With a commitment to promoting a balanced and healthy lifestyle, Light Diet Nutrition empowers clients to achieve their health goals through sustainable dietary habits. Their expert guidance is designed to improve clients’ quality of life and support them in managing chronic health conditions effectively.

**Contacts:-**

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+251 91 137 5678

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# Appendix

#### **A. Change Request Form**

The **Change Request Form** is used for submitting proposed changes to the system. It includes the following fields:

* **Change Description**: Clear explanation of the proposed change.
* **Reason for Change**: Justification for the change (e.g., user feedback, new feature needs).
* **Impact Considerations**: Initial thoughts on how the change will affect project scope, timeline, and resources.

#### **B. Stakeholder Contacts**

**Light Diet Nutrition Consultancy**:  
A professional dietary consultancy offering personalized nutrition plans.

* **Phone**: +251 91 137 5678
* **Email**: info@lightdietncc.com

#### **C. Glossary of Terms**

* **Fitness and Diet Tracking System**: The main software product being developed.
* **User**: Individual who logs and tracks their fitness, diet, and fasting information using the system.
* **Admin**: System administrator who manages user accounts and system settings.

#### **D. System Architecture Diagram**

A visual representation of the system's architecture, including the main components such as:

* **Front-end**: User interface for interaction with the system.
* **Back-end**: Handles logic, data storage, and processing.
* **Database**: Relational database (e.g., MySQL, PostgreSQL) for storing user data and logs.

#### **E. References**

* **IEEE Guide to SRS**: For standard practices and guidance in writing software requirements specifications.
* **Agile Methodology**: Framework used for managing project development in iterative cycles.