WatFit

Project Proposal

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GitHub Repository: https://github.com/ufii4/ECE452-group6

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1 Project Overview

1.1 Project Description

The project aims to develop an Android mobile application that provides users with comprehensive assistance in managing nutrition, planning meals, monitoring physical conditions, and sharing fitness results. Additionally, the app will utilize advanced algorithms to generate personalized training plans, promoting a healthier lifestyle and simplifying wellness planning.

1.2 Project Motivation

This project is valuable for several reasons. Firstly, it addresses the growing societal concerns regarding health and well-being. With an increasing emphasis on maintaining a healthy lifestyle, our application becomes meaningful as it equips users with the necessary tools, information, and support to make informed fitness and dietary choices.

Secondly, the integration of various functionalities, such as calorie tracking, recipe generation, and exercise planning, offers a comprehensive and convenient solution. By consolidating all essential tools within a single application, users can streamline their health management process, eliminating the need to navigate multiple apps or platforms.

1.3 Project Selection and Rationale

Our group acknowledges the busy lifestyles and time constraints faced by individuals of our age, making it challenging to plan healthy diets and effective exercise routines. Understanding the widespread desire to embrace a healthier lifestyle, we have recognized the strong need for personalized guidance and recommendations in the domains of exercise and nutrition. To address this, WatFit is designed as a comprehensive platform that centralizes fitness-related data. It aims to provide users with valuable advice and insights to continuously improve their well-being and overall lifestyle.

1.4 Applicability of Mobile Form Factor

Firstly, fitness activities primarily take place outdoors, with participants often carrying only their mobile devices. The portability of these devices allows users to access fitness information conveniently while on the go. Additionally, our mobile application enables users to effortlessly share their fitness outcomes within the app after completing their exercises.

Moreover, mobile devices offer essential features that facilitate the realization of our project. For instance, users can easily track their daily food consumption and exercise routines within the mobile application. This data enables the application to generate personalized health advice and continuously monitor the user's health condition. In case the application detects unhealthy habits, it triggers a notification on the user's mobile phone to promptly alert them, ensuring they do not overlook it.

2 Project Details

2.1 Functional Properties

2.1.1 Daily Fitness Journal (Input)

- The system should accept the following fitness data as input:
    - Dietary intake details
    - Exercise activities and durations
    - Body measurements (diameters)
- The system should employ a notification system to remind users to input their fitness data daily.
- The system must also allow users to edit their past fitness data entries and enter fitness data for missed days.

2.1.2 Fitness Report and Health Indicator (Output)

- The system should generate and provide users with a comprehensive fitness report every week, which should include:
    - Total and average calorie intake for the week
    - Summary of exercise activities
    - Changes in body diameters indicating fitness outcomes
    - Weight forecast based on current data trends
- The system should allow user to share their fitness report to specific app user or publicly within the app.
- A health indicator should be always accessible, showing their fitness score based on fitness data. User should be alerted when the health score drops to certain limits.

2.1.3 Fitness Helper

- The system should include utilities to assist users with fitness planning:
    - Recipe Generator: suggests healthy recipes based on the user's dietary preferences, restrictions, and calorie goals
    - Training scheduler: recommends scientific training plans
- The system should stream fitness related content (e.g., news articles, tutorial videos) to prompt a healthy lifestyle to user.

2.2 User Scenarios

Scenario 1: Healthy Lifestyle Development

John, a 35-year-old individual, seeks to improve his overall fitness and lose weight. He has an unhealthy lifestyle due to his desk job and is looking for a fitness app to help him develop better lifestyles.

Upon launching the app, John is prompted to enter his personal information such as age, height, weight, and current workout situation. Additionally, he sets his primary fitness goal of losing 20 pounds. WatFit generates a health score, some health advice, a personalized workout plan and recommends a diet plan based on John's inputs and goals. The workout plan includes a range of exercise options, including cardio, strength training, and flexibility workouts. He selects a beginner-level workout routine that includes a combination of cardio exercises as well as strength training exercises. John begins tracking his daily workouts within the app, logging exercise duration and type of exercise performed to track the

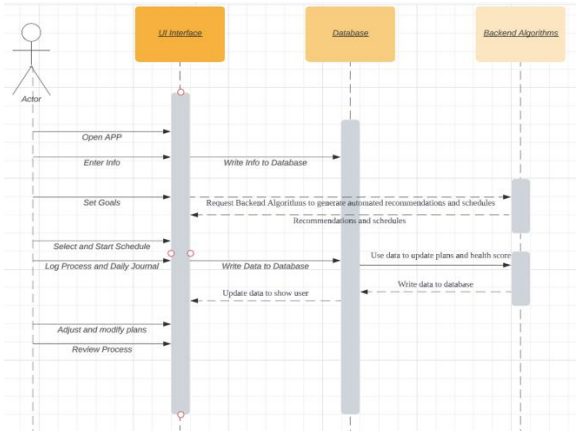
calorie burnt. Moreover, WatFit allows John to input his daily meals and track his calorie intake, helping him maintain a healthy diet and stay within the recommended limits calculated by the app. After a month of consistent use, John reviews his progress within WatFit, where he can visualize his weight loss progress, earned achievements, and an improved health score, further motivating him to continue his fitness journey.

Scenario 2: Social Fitness Challenges

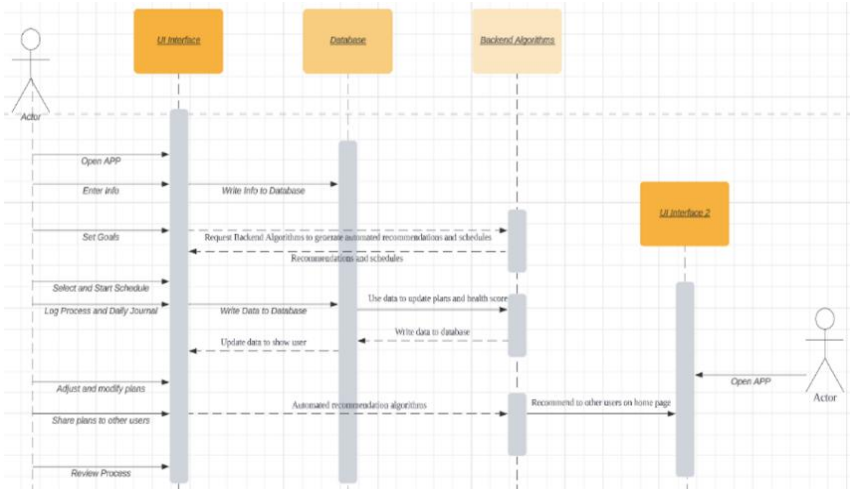
Sarah is a 25-year-old fitness enthusiast who enjoys sharing her workout and diet plans and staying motivated through sharing these with friends and the public. Seeking a fitness app with social features to connect with others, Sarah downloads WatFit and creates an account. Similar to John, Sarah provides her personal information as requested by the app, which generates tailored lifestyle advice and plans based on her input. As Sarah explores the app, she discovers options to personalize her workout and diet plan, experimenting with these features and realizing that WatFit offers functionalities to share her plans with friends and the broader user community. Additionally, workout and diet plans created by Sarah and other users have the opportunity to be showcased on the app's home page based on their popularity. Sarah feels a stronger sense of connection with her fitness-oriented friends and discovers new fitness enthusiasts from diverse locations. This increased sense of community and support further fuels Sarah's motivation to sustain her healthy lifestyle and inspire others to join her.

2.3 Architectural View

Scenario 1



Scenario 2



2.4 Non-functional Properties

1. Performance: Performance is a critical non-functional property (NFP) for our fitness app. Users have high expectations regarding the app's responsiveness and efficiency when they interact with it, whether it's navigating through different sections or tracking their workouts and calorie intake. To provide a smooth user experience, the app should be optimized to minimize delays and lags. For instance, the app should swiftly calculate and generate workout or diet plan recommendations, displaying them in the app within a maximum of 5 seconds.
2. Security: Security holds significant importance for our fitness app, considering the sensitive nature of the user data involved, such as personal information, body measurements, and workout history. The app should offer robust security measures, ensuring at least 90% protection against unauthorized access. This includes implementing 100% secure data storage and utilizing secure communication channels.

2.5 Human Values

This application embraces the fundamental human desire to nurture, maintain, and promote a healthy lifestyle. It serves as a valuable tool that empowers users to diligently monitor and efficiently manage their nutrition, health status, and regular physical activity, all with the ultimate goal of improving their overall well-being. By offering a comprehensive platform for tracking and guiding these vital elements, the application supports users on their path toward a healthier and more satisfying life journey.

2.6 Stakeholders

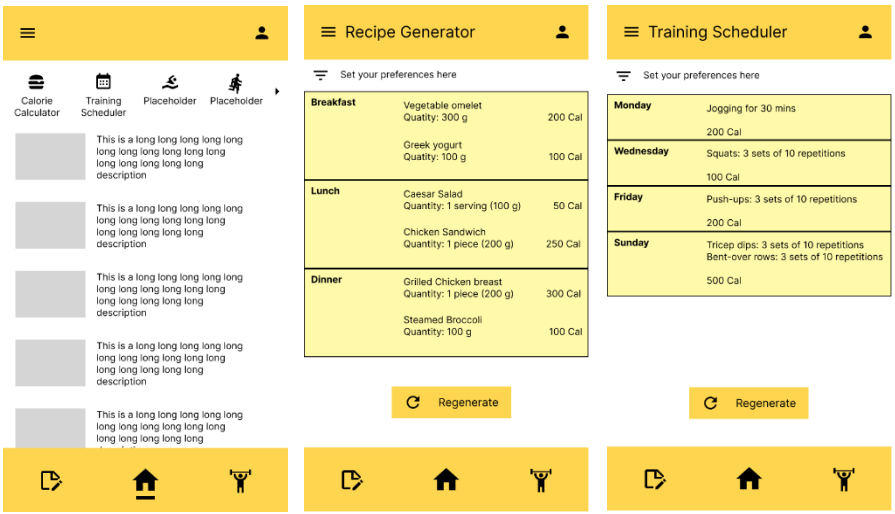
In this particular case, the stakeholders encompass the software developers of ECE452 Group 6, who are responsible for the vital tasks of designing, building, and extensively testing this application to ensure its functionality and high quality.

Additionally, individuals who install and utilize this application are also recognized as stakeholders in this context. These individuals represent a diverse range of users, including those seeking to adopt healthier diets, effectively manage their weight, pursue fitness objectives, and those enthusiastic about sharing their progress and accomplishments with others.

2.7 App Users

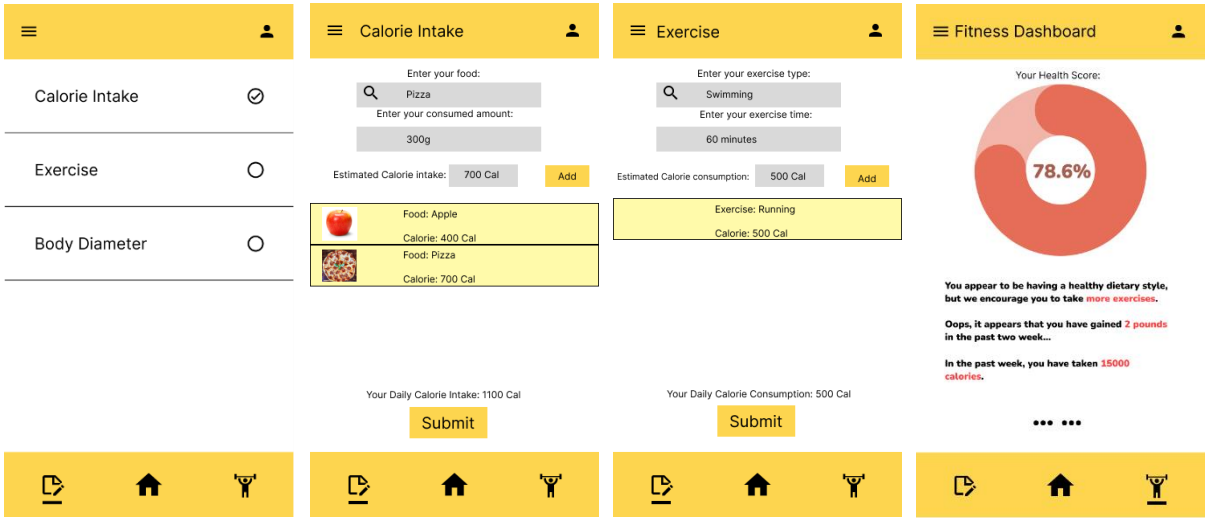
This application is designed for public use, targeting individuals who are actively interested in monitoring and managing their health condition, including aspects such as weight and diet. Therefore, any individual aspiring to maintain a healthy lifestyle and utilizing technology to enhance their overall well-being is considered a user of this application.

3 Project Mockups



Mockup 1 above is the home screen of the application that recommends fitness or wellness content to user (Functional Properties 2.1.3 bullet point 2).

Mockup 2-3 above demonstrate the recipe generator and training schedule (Functional Properties 2.1.3 bullet point 1) functionalities.



Mockup 1-3 above demonstrate how user would record the daily calorie intake/consumption (Functional Properties 2.1.1).

Mockup 4 above shows how the health score and the personalized fitness recommendations will be displayed (Functional Properties 2.1.2).