Resistance Exercise Mobile App

# Project Overview

In this project, we design a fitness and workout mobile app for the general user who hopes to boost physical health under a clarified instruction to lead them doing physical activity, or wants to personalize activities as their preferences. We also build it to enhance mental well-being, reduce stress and improve mood for the user through gamification to motivate them to keep exercising. We hope the client can gain valuable insights into their performance by reviewing their workout records. This app serves as a personal fitness diary, enabling users to effortlessly record their workouts, track their progress over time, and adjust suitable activities as their preferences and needs. We hope this app allows users to have control over their privacy and their workout’s data as they want, to exercise safely.

# Project Scope

## Inclusion

In our mobile app design, it includes some predefined activities and provides some weekly workout plans to guide users for doing activity day by day. This app also allows users to customize the predefined activities based on their needs and preferences. For example, if some exercise doesn’t have the specific equipment they need, they can modify the exercise with another equipment. Of course, users are able to personalize their activities by creating them into a template list where users can edit, archive, or delete their personal activities. During customizing an activity, users can define focus areas, enable or disable warm-up or stretching parts, add, replace and remove exercises, as well as reset timer for startup and resting freely. Each exercise has educational content via animation to guide users step by step.

After the user completes the activity, the app reviews their performances like how much calories burned, BMI and heart rate zone based on their weight and height, as well as adjusts the activity’s content and save it as template for future use according to their satisfaction (i.e. easy, fitting, and hard). This fulfilled activity is recorded into history where users can search, edit, or delete their own activity records. Users can decide to attach photos, videos, or audio recordings to their records, then share it with friends in this app. The app provides a calendar view that records the dates on which activities were completed. The workout record can also be exported in TSV format and that data can be imported in a predefined TSV format into the history list.

This app has the option for users to follow other registered users as “friends” that they can see their workout records. The user has control over the privacy of their personal data and activity records. For example, a user can share activity records with friends only.

In terms of languages, This app supports traditional Chinese and English.

Users have a choice to synchronize their workout data to Apple Health and Google Fit apps where they will appear as part of their daily activity.

## Exclusion

Our project doesn’t include the following features for the mobile app. First, this app can only share workout records with other users under the system without crossing any social media platforms like Whatsapps, Facebook, and so on. Second, the system can’t upload any predefined and customized activities to other users. Moreover, all workout plans are predefined and can’t be created by users. Finally, the app does not support OAuth authentication which permits users to share information about their accounts with third-party applications, users must register and log in directly without using any third-party accounts.

# Project Objectives

In this project, we aim to design and develop a fitness and workout mobile app that meet the needs of general users who want to improve their physical and mental well-being. After deployed the app, we want to ensure that users can easily learn exercises, enjoy the activity moment according to their preferences without any pressures, stay motivated while gaining a sense of accomplishment, gain clear performance insights by reviewing detailed workout records to help them access their growth and achievements for improvement, as well as easily manage their personal data and privacy. The key objectives of the project are as follows:

* To provide clear instructions in each exercise to guide users in performing physical activities effectively, helping them boost their overall physical health.
* To enable users to personalize activities based on their individual preferences and needs, creating a tailored fitness experience.
* To enhance mental health by incorporating gamification features that reduce stress, improve mood, and motivate users to stay committed to their exercise routines.
* To serve as a personal fitness daily by allowing users to effortlessly record their workouts, tracking their progress over time, and make adjustments to their activities as needed.
* To provide valuable performance insights to users through detailed activity records, helping them access their progress and celebrate achievements.
* To ensure user privacy and control over their workout data, enabling them to exercise safely and confidently, and modify their health data easily if something gets wrong or missing during the workout progress.

# Stakeholders

There are three kinds of stakeholders : The end users, the investors, the developers.

End Users

The target end users are the people that wish to play the workout exercises. They may not know the name of the exercises.

Developers

The parties that develop the apps to fulfill the requirements of the investor as well as the needs of the end users.

Investor

The investor is the one who starts the app development project.

**Project Team**

Brucy is the product owner. He makes the decision of the product scope. The project objectives are determined by him.

Dave is the scrum master. His responsibility is to ensure the project follows the sprint goals. Also, he makes sure the project follows the schedule planning.

**Timeline**

**Research**

**Proposed Solution**

**Work Breakdown Structure(WBS)**

Gather Client Requirement

Preparing Low Fiderlity Prototype

Preparing High Fiderlity Prototype

Writing the Project Plan and Design Specification

Development

Testing

Implement

**Resource Plan**

Human:

Development team conisists of 2 persons. Brucy is the product owner. Dave is the scrum master.

Financial:

HKD680 / month for renting the cloud server

Equipment :

Front end : Using Java in Android Studio

Back end : SQLite is used since the client had previously stated that the health data should be saved on users＇own mobile device. The flow is: use SQLite to save the user data (including health data). Then use Retrofit to sent JSON. After that, use Spring Boot to receive JSON. Use MSSQL for “Friend Management”function. Thus, SQLite and MSSQL communicate through a Spring Boot RESTful API.

**Risk Management**

Security Risk

Schedule Risk

**Communication Plan**

Maintain weekly meeting with the team and scheduled meeting with the client on a regular basis.

Use Trello to record all the sprints, minutes, to do list, ... , etc.

Use Github to sustain version control.

**Quality Management**

Regularly review outcomes to ensure they meet the client needs.

**Monitoring and Evaluation**

Create Trello kanan board for tasks and catagorize them into “To Do”, “Doing”, “Done”so the development team can refer to it frequently.

**Budget**

HKD680 / month renting the cloud server fee (“Business Serever” plan). The microsoft SQL expression edition installed in this cloud server.

(https://www.communilink.net/p192-en-dedicated\_server\_plan.html)

**Approval Process**

Show the low fidelity prototype and high fidelity prototype to the client. Let the client comment on them. We keep on communicating our ideas with our client.

**Change Management**

In Java programing in Android Studio, we will use the Liskov Substitution principle (LSP) to design the “Inheritances”. Therefore, use extend rather than modify, which also adheres to the principle of Open-Closed Principle(OCP). The goal is to write once change when dealing with changes.

**Closure and Evaluation**

**Appendices**

Github Link:

Trello Link:

Figma

Showing the

Link:

https://www.figma.com/design/YgzlW25d6M77GmqhL4T23c/Computer-Science-Group-Project?node-id=0-1&t=Pnxu84u0Svhx9HJk-1