*COMP6013-Project PRoposal*

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# Introduction

### **1.1 Background**

As an avid gym-goer or a large enthusiast of picking up heavy objects just to put them down again, I am no stranger to the positive effects that exercise can have on both the body and mind [1].

However, with the benefits being so apparent to someone such as myself, how come studies find that dropout rates for exercise to be around 50% [2]?

The intention of this project is to increase and sustain the adherence of gym users by creating a smartphone application allowing the user to track workouts. The application will allow users to record the sets, repetitions, and exercise selection during their workout session. The user will also be able to view a history of their workout along with other potential features, dependant on timescale, aimed at helping to increase and or sustain the adherence of the users to their workout.

### **1.2 Aims and Objectives**

The aim of this project is to understand if the use of a smartphone application which allows the user to record and track their workouts, can positively affect, and sustain workout adherence.

The objectives for this project are as follows:

1. Explore the current applications available regarding digital workout tracking.
2. Develop a mobile app that will allow the user to record and save their workouts.
3. Identify and collect suitable information regarding the current routine and workout adherence of members of the public.
4. Have volunteers test my application over a determined timescale and document their results.
5. Evaluate the effectiveness of my applications ability to positively affect the workout adherence of its users.
6. Present the work to a mixed audience.

## **1.3 Product Overview**

## **1.3.1 Scope**

I intend to program this application using the Java programming language in conjunction with the integrated development environment Android Studio.

## **1.3.2 Audience**

This app is aimed to help people who exercise primarily by lifting weights regularly, at any level of experience, that may struggle to adhere to a workout routine.

# BackgroundReview

## Summary of Existing Approaches

There are several apps in the Google Play store offering workout diary tracking, I have researched the top 3 results from searching “workout diary” on the google play store (on 02/10/23) and have compared the top features of each [3].

**App 1)**

Strong

Features:

* “The simplest interface of any fitness app on Google Play”
* Rest timer.
* Exercise database with instructions/videos on how to perform movements.
* Set tags for warmup/failure/drop sets.
* Premade workout templates.
* RPE tracker.
* Workout frequency tracker.
* Plate calculator.
* Graphs for 1RM and total volume progressions.
* Export all data in .csv format.
* Able to view workout history.
* Logs each workout in a calendar.
* Switch between lbs and kgs for weight recording.

[4]

**App 2)**

Fitnotes

Features:

* Focus on simplicity and a clean design.
* Rest timer.
* Exercise database.
* Premade workout templates.
* Ability to filter exercises in the database by muscles trained.
* User can export their workouts in.csv format.
* Plate calculator.
* Option to switch between resistance or cardio training.
* Logs workouts to on a calendar.
* Ability to see workout history.
* Switch between lbs and kgs for weight recording.

[5]

**App 3)**

Simple Workout Log:

Features:

* Options for weightlifting or cardio training.
* Very minimalistic user interface.
* Switch between lbs and kgs for weight recording.
* Cloud storage backup.
* View workout history.
* Export workouts as .csv files.
* Supplementary website with features not on the app.
* Exercise charts to track progress (website only).

[6]

## Summary of Related Literature

I have reviewed the following papers in relation to this project:

# [Comparing Diet and Exercise Monitoring Using Smartphone App and Paper Diary: A Two-Phase Intervention Study](https://doi.org/10.2196/mhealth.7702)

This investigated the use of a smartphone app to support healthy choices in adolescents, the investigation was more focused on eating habits rather than exercise.   
This study did initially start with the use of a paper-based tracking diary, however it then later switched to app-based to measure the adherence of the subjects when using each form of tracking.

When switching to the app-based tracker, this experiment implemented the use personalised messages to encourage health choices based on the in-app activity of the user [7].  
Implementing a similar system is worth considering in my project.

# [Gym Usage Behavior & Desired Digital Interventions: An Empirical Study](https://doi.org/10.1145/3421937.3422023)

This paper studied the behaviour of individuals who attended a campus gym and obtained insights using longitudinal data for 6513 unique individuals and their temporal visit patterns to said gym. The paper also looked at what digital tools people would desire for tracking gym exercises.  
Using a survey this paper discovered the key reasons for people ceasing their gym activity to be, lack of sufficient knowledge in using equipment and lack of appropriate personalised feedback.

The survey also found there is a desire for the use of digital tools to track exercises, there was a large reluctance (60%) if the individual had to wear a device [8].

I can use this research in my project by potentially implementing a feedback system based on workouts to encourage the individual to progress. This also supports my decision to develop a smartphone app as this removes the need for a wearable device.

# 3. Background Review

## **3.1 Approach**

As it is something I have studied in a previous year of my degree I intend to use Agile methodologies to aid with the development of my software.  
I will gather requirements using firstly, my own experiences of what I would want from a workout tracker, alongside utilising questionnaires completed by members of the public on what features or functionality they would like to have in a workout diary app.  
I will create QR codes to access these questionnaires that can be displayed for members of the public to use anonymously.

Using the information collected, I will create user stories from which I will derive my tasks for developing this piece of software. With this I will start the Agile development process.

Upon completing each phase of the development process my intention, if possible, is to test the functionality of my software by using it during my personal workouts. Provided my software functions well enough, I intend to allow other people who use the gym to perform real-world tests and provide feedback, which I can then evaluate and implement for the next stage of development.

## 3.1 Technology

For the development of my project, I will be using my personal computer and laptop to develop/implement my software, using an IDE to code my project. To test the software, I plan to use a smartphone emulator initially to check there is full functionality of the software. After which I have an Android smartphone which I can use to test the software in a real-world setting.

## 3.3 Version Management

For my version management I plan on using GitHub to manage the files of my project, as GitHub is an industry standard. This will allow me to create copies and backups of my files stored somewhere other than my main computer should something happen to the machine I am developing my code on.

# Project Management

# 4.2. Schedule

For my scheduling I have constructed a small basic Gantt chart to detail the first 8 weeks of my project plan which outlines the information collecting and evaluation phase. During this time, I will construct a full chart outlining my project.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | October | | | | November | | | |
| **Tasks** | | | Start Date | End Date | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week8 |
| **Research** | | |  | |  |  |  |  |  |  |  |  |
| Create Questionnaires | | | 01/10/2023 | 01/11/2023 |  |  |  |  |  |  |  |  |
| Evaluate Data Collected | | | 15/10/2023 | 01/12/2023 |  |  |  |  |  |  |  |  |
|  | | |  | |  |  |  |  |  |  |  |  |
| **Development** | | |  |  |  |  |  |  |  |  |
| Research Application Development | | | 01/10/2023 | 01/12/2023 |  |  |  |  |  |  |  |  |
| Create a Basic Application UI | | | 15/10/2023 | 31/12/2023 |  |  |  |  |  |  |  |  |
|  | | |  | |  |  |  |  |  |  |  |  |
| **Test** | | |  |  |  |  |  |  |  |  |
| Deploy Application for Testing | | | 01/02/2024 | 01/04/2024 |  |  |  |  |  |  |  |  |
| Collect Information Post Test Period | | | 01/04/2024 | 01/05/2024 |  |  |  |  |  |  |  |  |

### **4.3. Data management plan**

The storage of documents will initially be handled by google drive, with a move to GitHub once I start committing code to a repository.

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