SCHOOL OF COMPUTING (SOC)

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Title: SpryFitness

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SPRY FITNESS: TRACK YOUR FITNESS GOAL

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Abstract

The project is primarily focused on development of an integrated android application that would allow users to keep real time track of their exercise. The users would be provided information on how to start from scratch to attain different levels of accomplishment depending on personal goals, be motivated to attain them through tools like alert and community based sharing, monitor their own progress reports and keep a track of their goals. Android studio is the main software to develop this application.

Keywords: exercise, running, motivation, android studio

Introduction

SpryFitness is an android based mobile fitness app for runners, cyclist and the other people who aware about their health. SpryFitness will have the functions such as track workout using GPS, check statistics, and reach fitness goals.

User can easily share their fitness activities via social media and also can connect with family and friends while in track by using special technology which is called beacon. Beacon lets you select up to three safety contacts within the record screen of the Mobile Fitness Organizer app.

Problem Statement

There are a lot of fitness apps on play store and all of them have various features. So why do I want to develop a new one? After analysing more than ten (10) fitness apps I found some problems. Some apps have a lot of activities such as running, jogging, walking, cycling, swimming, football, hockey, cricket, badminton, aerobics, baseball, boxing and so on. But I realize that for fitness app we don't need all of these activities. Mostly users use the fitness app for running, walking and cycling. So my target is to make a fitness app which is especially for running and walking.

The main problem of all the apps I analysed is some have lot of activities but no heart rate measurement; some have step counter but no beacon. So I want to combine all the functions in my "SpryFitness". So the users can easily use the app and the app will fulfil all the basic requirements of the users. "SpryFitness" will be easy to use and will give users what they want.

Objective

The objectives of this android based mobile fitness app are to design and develop a specialized app only for runner and general user who aware about their health and to combine all useful functions and make it easy to operate.

Scope

SpryFitness will be an android mobile-based application. Only two sports activity will be added which are walking & running. This app will have sign in with email and password, notification, general settings such as entering body weight, height and birth date. This app will measure distance, space, calorie, counting steps and so on accurately.

Target users

This mobile application will be focused on runner and the general people who are using fitness apps.

Why only jogging/running

Running and jogging is important to health. Lots of improvement of body and fitness can be gained by running and jogging. Here are some:

Save your skin
Rutgers researchers found that mice who drank caffeinated water and then ran had fewer skin-cancer tumours than rodents who either just got caffeine or just ran. The caffeine-exercise combo caused fewer damaged cells to develop

Regenerate muscles
Muscles mass declines over time—or does it? University of Illinois researchers found that exercise triggers a type of stem cell (mesenchymal stem cells) to spur other cells to generate new muscle. That process could prevent age-related.

Reduce calories
Running makes you burn fat and thereby helps to lose weight. In addition to increasing metabolism, running is an effective way to burn more calories, which helps you lose weight. If calories consumed in food are less than calories spent during exercise and other daily activities, you will lose weight.

Current system

For now, customers always consider that the more money they spend, the better gear they would get which could help them to be much healthier. Nike+, one of the most popular technical tool, is well developed and widely used. Nike+ is worth of Nike"s reputation, accuracy and easy portability are its most unique characteristics. Lerunner, an application which is available on both Android and IOS platform, dominates the market of jogging monitoring in China. The most amazing feature of Lerunner is the distance and speed could be calculated in real time which could help our customers know whether they should speed up or speed down. Endomondo and Strava is also popular application.

The proposed system

In order to meet the customers' requirement, the mobile application will be provided for SpryFitness project. The main goal of this project is to make easy the application for the users when they go for a jog or run. As for Users, they may require alert system to remind them keeping exercising in case of there is too much works that they may forget their regimens. Jogging with accompany will be more joyful, users would like to meet people in their area who share the same interest. Additionally, users are interested in what they've achieved. Looking into their friends progresses is also needed for those users who want to make competition which would definitely motivate them. When they reach their goals, users may want to share their experience and happiness with others to help more individuals to reach their own target.
The fundamental requirement for any user who wants to join in SpryFitness is that his/her Android phone must collect coordinates data. Location data will be analysed to calculate distance, speed and calories consumption.

System Requirements

M – Mandatory requirements (Something the system must do)

D – Desirable requirements (Something the system preferably should do)

O – Optional requirements (Something the system may do)

Functional requirements

Function	Description
1. Sign up (M)	Sign up via email and password for the first time, get a confirmation email.
2. Sign in (M)	User must sign in through email and password.
3. Add personal details (M)	Add full name, date of birth, Units(metric)
4. Edit personal details (O)	Choose settings, show display, edit and save.
5. Switch to GPS (D)	User must on GPS before start activity.
6. Tap Start-Pause-Stop(D)	User must tap Start-Pause-Stop buttons to begin, pause and end activity.

Table 1. Functional requirements

Non-functional requirements

Function	Description
1. Maintainability	Add new functions and updates in future. (O)
2. Reliability	Algorithm perform accurate mathematical calculation. (M)
3. Usability	User understand all the functions of the application. (M)
4. Security	Personal data is secured. (M)

Table 2. Non-functional requirements

Methodology

There are several methods that can be used to develop SpryFitness. Based on the comparison between several method such as waterfall, incremental and RAD (Rapid Application Development), the RAD (Rapid Application Development) model was chosen in development this mobile applications. This is because the RAD method has several features that must be needed to build SpryFitness.

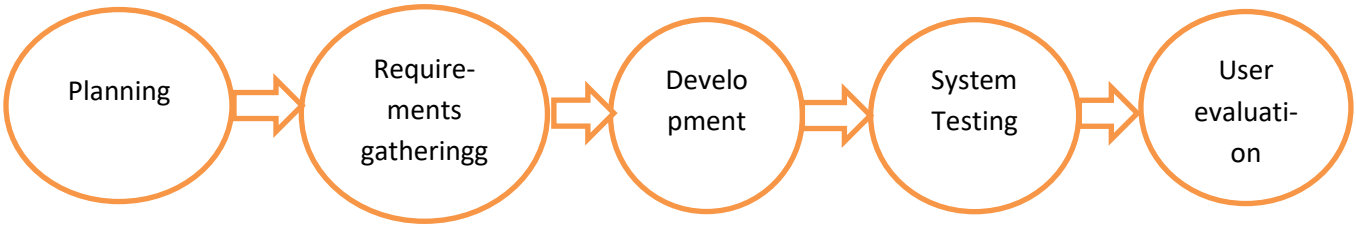


Figure 1. Project methodology

Planning

To build the android based fitness app “SpryFitness” at first it need to plan that how we can build the app. In this planning phase, we gathered the project requirements and then come out with all the designs and architectures. We wrote code for this project which was written in Java. Also Android Studio software was used to build the app.

Requirements gathering

In this phase checked similar apps on Google play store and tried to find the limitations of the existing apps. Also discussed with the athletes, runners, cyclist and the people who are using fitness apps. Then tried to understand what more is needed for a new android based mobile fitness app. We determined about how many users would be use the app.

Development

After completing the design phase I started to develop the app. To develop the app I used tools such as android studio and java source code. In this phase I developed the interfaces of the app.

System testing

Testing design is design techniques that add certain testability features to the system. Testing design is often viewed as executing a program to see if produces the correct output for a given input which wrongly implied that testing should postponed until late in the lifecycle. Actually, errors introduced during the early stages of the software lifecycle and testing activity should started as early as possible.

1. Sign-In

Unit to test	Sign-In
Assumption	The app displayed the sign-in screen and wait for user's action
Input	user ID, user Password, user information
Expect output	Register successfully with proper input, register unsuccessfully with improper, and make alter the same time.
Pass	Function fit for the requirement.
Error	Error occurred during second attempt.

Table 3. Sign in

Comment: This function is most important part of the application. So there is no doubt it is quite important to fix the bug.

2. Start training

Unit test	Start Training
Assumption	After user go to the workout screen, android app waiting for action
Input	Click on start button
Expect output	Training starts successfully and turns to other functions.
Pass	Show distance and calorie functions successfully
Error	Google map not working

Table 3. Start training

Comment: It is important to fix the google map problem.

3. End training and show progress

Unit test	End and progress
Assumption	After user click stop button
Input	Data collected by training
Expect output	Progress has made
Pass	Show progress correctly
Error	Not show the step counter properly

Table 4. End training and show progress

Comment: Bugs of Step counter must be fixed.

4. Exit

Unit test	Exit
Assumption	After user click exit button
Input	Touch on back button
Expect output	System exit
Pass	Exit worked correctly
Error	No error

Table 5. Exit

Comment: Done successfully.

User evaluation

In this section I calculated and analysed the testing data which I got from asking ten (10) questions to the users. There were thirty (30) users. They used the app and answered the questions. The questions were about the completion of tasks, easy to use, view, menu items, functions, understanding of functions, organization and functions of buttons, the system is helpful or not and the recommendations.

Here are the frequency of the user evaluation:

	Question1	
Values	Frequency (f)	Percentage%
Strongly agree(5)	19	63.33
Agree(4)	11	36.67
Neutral(3)	0	0
Disagree(2)	0	0
Strongly disagree(1)	0	0

Sucesfully completed all the tasks

	Question2	
Values	Frequency (f)	Percentage%
Strongly agree(5)	16	53.33
Agree(4)	14	46.67
Neutral(3)	0	0
Disagree(2)	0	0
Strongly disagree(1)	0	0

Easy to use

	Question3	
Values	Frequency (f)	Percentage%
Strongly agree(5)	14	46.67
Agree(4)	14	46.67
Neutral(3)	2	6.66
Disagree(2)	0	0
Strongly disagree(1)	0	0

View

	Question:4	
Values	Frequency (f)	Percentage%
Strongly agree(5)	5	16.66
Agree(4)	17	56.67
Neutral(3)	8	26.67
Disagree(2)	0	0
Strongly disagree(1)	0	0

Menu items

	Question:5	
Values	Frequency (f)	Percentage%
Strongly agree(5)	6	20
Agree(4)	18	60
Neutral(3)	6	20
Disagree(2)	0	0
Strongly disagree(1)	0	0

Functions

	Question:6	
Values	Frequency (f)	Percentage%
Strongly agree(5)	11	36.67
Agree(4)	13	43.33
Neutral(3)	6	20
Disagree(2)	0	0
Strongly disagree(1)	0	0

Understanding of the functions

	Question:7	
Values	Frequency (f)	Percentage%
Strongly agree(5)	10	33.33
Agree(4)	17	56.67
Neutral(3)	3	10
Disagree(2)	0	0
Strongly disagree(1)	0	0

Organization of butons

	Question:8	
Values	Frequency (f)	Percentage%
Strongly agree(5)	9	30
Agree(4)	19	63.33
Neutral(3)	2	6.67
Disagree(2)	0	0
Strongly disagree(1)	0	0

Understanding the functions of the buttons

	Question:9	
Values	Frequency (f)	Percentage%
Strongly agree(5)	15	50
Agree(4)	9	30
Neutral(3)	6	20
Disagree(2)	0	0
Strongly disagree(1)	0	0

System is helpful

	Question:10	
Values	Frequency (f)	Percentage%
Strongly agree(5)	16	53.33
Agree(4)	6	20
Neutral(3)	8	26.67
Disagree(2)	0	0
Strongly disagree(1)	0	0

Recomendation

Figure 2. User evaluation

Findings

This section is about to discuss on system sequence diagrams and the user interfaces of the system that was developed.

Use case Diagrams

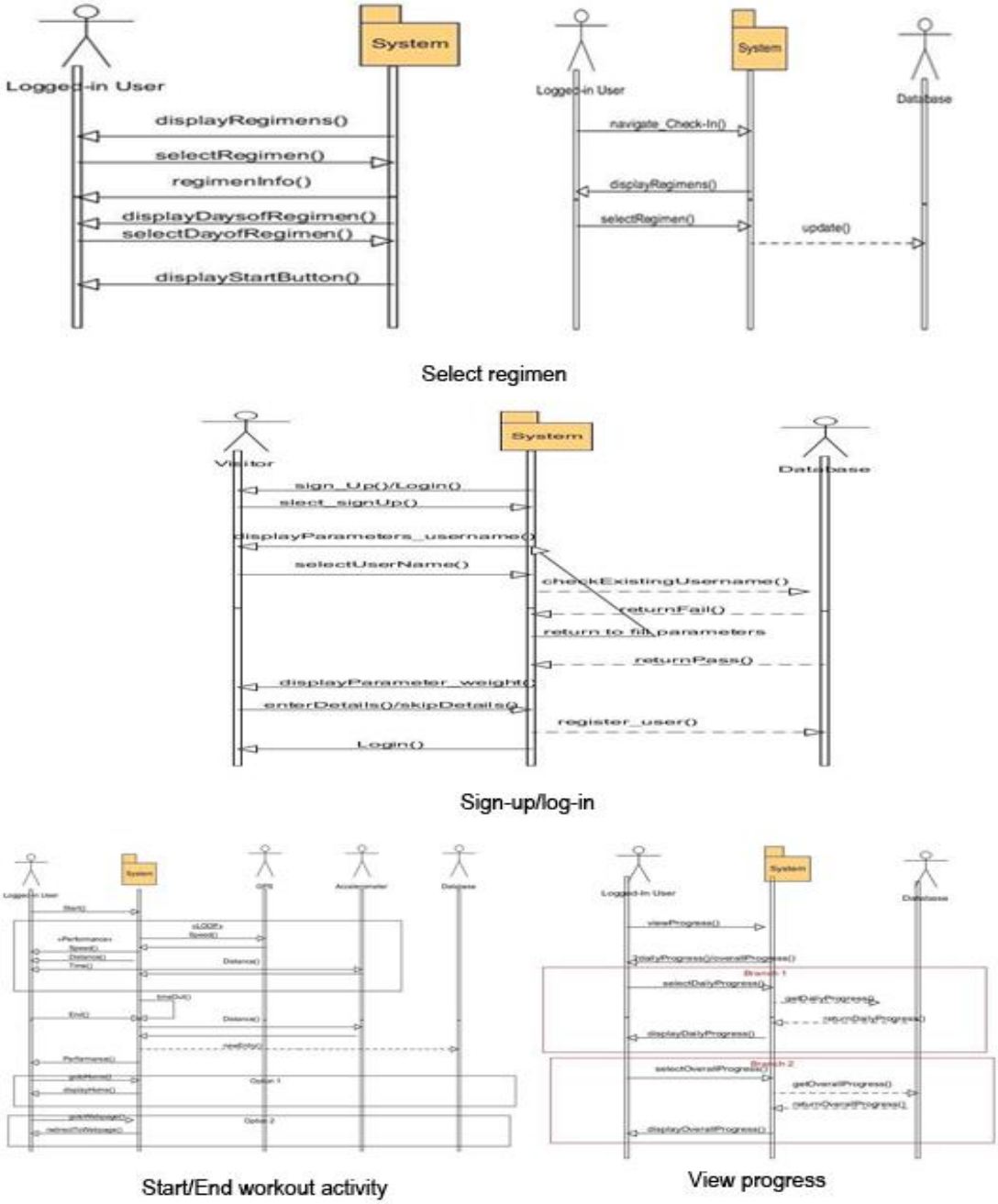
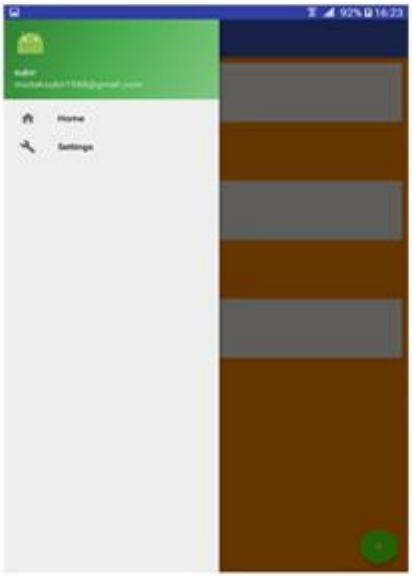


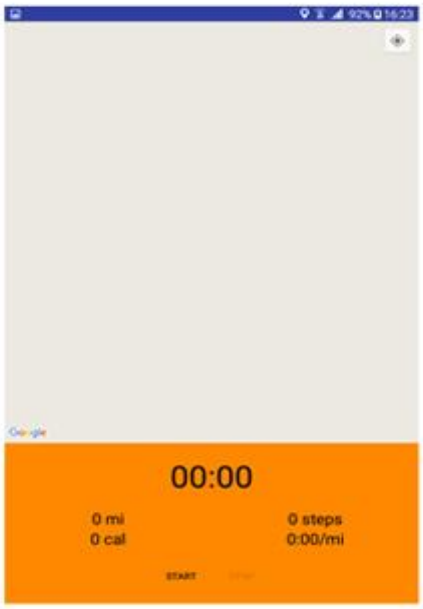
Figure 3. Use Case diagrams

User Interfaces

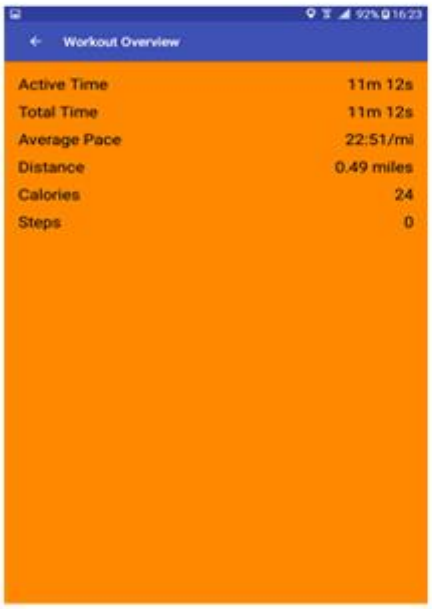
Start-up screen



Sign up/Sign in



Workout screen



Workout overview

Figure 4. User Interfaces

Discussion and conclusion

The project mostly kept me on its toes throughout the semester as it was pretty hard to meet up the goals that I had set for completion. It was a valuable experience of time management that I have learnt while trying to fulfil the goals. The first part of the project was mostly spent in planning, setting up targets, designing and documentation. As much as I disliked documenting, towards the end it did turn out to be very useful as I slowly realized how half the work of designing the functions and the interfaces had already been completed. I discussed with my lecturer and supervisor several times to develop this project. They helped me a lot by giving the right directions. We also discussed upcoming targets in these meetings. Even when our schedules did not allow us to meet we made it a point to meet online through tools like WhatsApp, Gmail and Facebook in order to maintain continuity and discipline. Towards the later part, when development kicked in the meetings became briefer and were barely short online or personal discussion sessions for updates and goal setting.
Looking back it is clear that there are certain compromises in implementation to achieve the required targets in time. This project has been no different. However, given the idea that I have been pursuing and uniqueness of some of its key features, I certainly want to implement some of the more advanced features like discussion forums, and include some extra sports like bicycle riding and treadmill based workouts for data acquisition through cell phones.

Acknowledgement

Being an undergraduate student it is hard to develop an android based fitness application alone. But I have some helping hands. I would like to thank my lecturer Madam Nuraziah binti Che Pa (who is my supervisor too) for her guidance and understanding about my hard work. She helped me a lot and she is also very kind. I would also like to thank my school friend Tanjil Abedin who is a computer engineer and CEO of Trends Bird, a start-up IT firm of Dhaka, Bangladesh. I met him and his office stuff, discussed about my project and they gave good suggestions and motivation. I would also like to thank all the athletes and people who responded when I requested them to test my app.

References

F., Di Marzio Jerome. Beginning Android programming with Android Studio. 4th ed., Wrox, 2017.

Yener, M., & Dundar, O. (2016). Expert Android Studio. Indianapolis: Wrox, a Wiley Brand.

Schildt, H. (2007). Java: the complete reference (7th ed.). New York: McGraw-Hill Education.

Bouton, G. D., Bouton, B., & Kubicek, G. (1997). Inside Adobe Photoshop 4. Indianapolis: New Riders.