Project Research Document - Android Fitness Application

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1. Detailed Discussion

My project is an android fitness application that will be developed in android studio. The application will have many functionalities such as using the google fitness API which uses sensors to track movements and steps. The core functionality will be guiding the user into becoming more active and eating healthy by displaying various statistics about their diet and fitness levels. The users are anyone who is trying to become either more active or eat healthier than their current lifestyle. I will be also implementing a barcode scanner so that users can keep track of meals much easier and add them to their food diary so that they can see what meals they have been eating throughout the week.

Users will be able to create accounts or they will have the option to log in with Facebook to make it easier. Many applications have the log in with Facebook option and I think it will make the application more appealing to users.

The application will also provide users with multiple physiques in which they can select from. Lean, weight gain, weight loss will be the three main physiques that I will be implementing. The application will have the average calories needed daily for each physique to achieve the end goal.

For example, a male user enters their current weight, then selects their desired goal in this case weight gain. The application will suggest a daily consumption of 3000 calories which is 500 more than the average 2500 for a male. If the user selects weight loss the application will suggest 2000 calories. If the user selects lean, the application will suggest slightly less calories than 2500, but will prompt the user to consume more protein rather than carbs to achieve the lean physique.

Another key functionality of the application will be a route tracker. It will consist of the user selecting a start point when they go on a jog or a walk and when they finish up they will select end point and the application will generate a map of the route they took via GPS and will display the calories burned and distance covered along with motivational messages to encourage the user.

One functionality of the application that I will be going in depth with is various different exercises. For example situps, the application will know the calories burned on average for every situp and the user can select the amount of situps that they have done and it will display the calories burned. This will be very helpful for the user as they will not need to calculate the calories burned themselves. I would also like to incorporate youtube videos or image GIFS which show how each exercise is done. If the user clicks on the question mark beside the

exercise an instructional video or GIF will be displayed. When the user selects their desired physique suggested exercises will also be displayed which will be relative to their goal. For example “weight loss” will display high intensity workouts which burn more calories than other exercises.

2. Existing Applications in this domain

In your research have you found anything close to this idea? List these in table form and identify similarities and differences

Name of application	Similarities	Differences
My Fitness Pal	-Barcode Scanning system -Daily Calorie intake -Goal weight -Exercise library -Food diary -Progress graphs -Settings -Help -About	-Does not have a route tracker -There are no exercise tutorials -No login with Facebook ability -Shop
Fitness & Bodybuilding	-Exercise tracking -Exercise tutorial videos -Help -About	-Does not have suggested workouts -Cant track calories -No food diary
MapMyRun	-Route tracking -Calories burned -Map of run -Settings -Help -About	-No food diary -Cant track calories -Does not have instructions -Has add friends functionality -Shop

During my research of existing applications I found some similar applications but one in particular that’s most like my own application is “My fitness pal”. My fitness pal has everything that I would like to implement into my application but I would like to add even more than what it has. From looking at the above table data of similarities and differences you can see that each application has what the others don’t have but there is not yet an application that combines all of these key functions into a single application. This is what I would like to achieve.

3. Platform, Technologies and Libraries

Below are some sample libraries that I will be implementing although this list is not final and I may or may not choose to implement certain libraries listed. I will be adding to this list as I progress
with production.

-ZXing barcode scanner library
-AboutLibraries
-ACRA crash reporting
-AndroidViewAnimations
-AndroidImageSlider
-DialogPlus
-AndroidGraphView
-Android-ObservableScrollView
-Scrollable
-Retrofit
-Glide
-Butterknife
-LeakCanary
-Robolectric
-Espresso

The above libraries all provide some very useful functionality such as the ACRA crash reporting library which sends data of crashes or the Android-ObservableScrollView which will allow scrolling and make it much more appealing to the user with animations such as auto-hiding headers when swiped downwards or collapsing menu bars when swiping left or right. The retrofit library will provide a type-safe HTTP client for android which will also be very useful. Each library has its own unique functionality, and when combined with each other can be very powerful.

The platform I will be developing on will be Android. I will be creating the app using Android Studio and I will be experimenting with multiple different technologies that will either be added in the final version or I may choose to leave out depending on their usage. The main technologies that I will be adding will be barcode scanning, GPS and the google fitness API. Also integration with several libraries will increase the technologies performance. I am going to be looking into using multiple API’s and testing their compatibility with each other to see if errors occur.

4. The risks

There are plenty of risks in undertaking this project. One of which is using Android studio. As I have never used Android studio before I will have to learn how to use it myself and create the application from scratch. The risk in using an application that I am not familiar with is huge as i may encounter a problem that I have never seen before and project progression will come to a halt until I figure out how to fix the problem. While doing research into common error problems many users of android studio report many bugs such as “Error, could not access the package manager”. This error may not have any problem with the code but it is due to the project structure. I will need to do further research into multiple errors such as this one especially when I encounter them as the problem might not be with the code.

Another risk of this project is integrating API’s and libraries that I have never seen before into my application. I have not learned how to use API’s and import libraries into an application and undertaking this task is very risky as I will have to learn how to import them myself. Many problems can occur such as android studio throwing an error due to the code not being correct or when I use multiple libraries some might not be compatible with each other which can lead to huge implications.

I am using multiple libraries due to the fact that using only one key library can lead to massive problems if I can not fix the errors. But unfortunately I have to use one key library for barcode scanning and that is the ZXing library. This library is a major part of the application as it has everything I need to have efficient barcode scanning to track meals. I have looked into an alternative barcode scanning library but the ZXing library has the most functionality and will be the best one to implement into my application.