

FIGHT DIABETES

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This Report Presented in Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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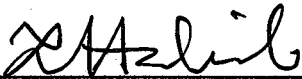
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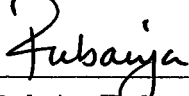
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Rubaiya Hafiz, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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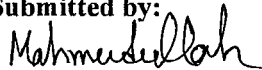
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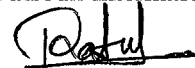


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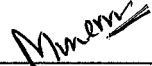
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ABSTRACT

This is an android application named FIGHT DIABETES which provides mainly nutritional treatment to the typed 2 diabetes patients. Lot of peoples in our country suffer from this type of diabetes and they tries different methods and treatment to control the sugar level. Which doesn't works properly maximum time. The reason behind this failure is lacking of proper food habit. There are other application in the market but those are not compatible in our country because those app suggest foods that are not available in our local market. Here we come out with this application which is made especially for our local peoples so that all the foods are available in the market. The formulas and the methods that we used to give the food list is highly authentic and collected form well known books of MBBS course which a lot of doctors study to give treatment. Patients can also be benefited by the other feature of this app. There is an Exercise feature which allows the user several warmup technics and a 12 weeks walking routine prescribed by doctors. By following the nutrition treatment and the exercises a patient can control type 2 diabetes very easily. We hope that peoples will be benefited from using this app. Moreover the app is tested in different devices with different android versions and it works perfectly okay.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This is an android application which is built to provide nutritional treatment to the patients suffering from Type 2 diabetes. The methods used in the app to provide daily proper food chart to control diabetes are actually taken from a professional book which every doctors studies and follows in Bangladesh. The most amazing thing about this application is that it provides a food chart which is relevant to our daily life foods means it contains numerous foods available in our nearby market whether the user is in a rural area or in a town. Users can create their own food chart by selecting foods from the suggested list by the app and later they can see the food list they generated for that day and also can delete that list after the day ends. This app also brings a very interesting and helpful exercise routine to burn their extra fat to stay fit and joyful. There is a 12 weeks walking routine prescribed by famous doctors in medical books which will definitely help the patients to control the diabetes faster. Users also can count their footsteps even if they are using low-end smartphones. So we hope that this app will bring a very positive change among the users and it will be a happy journey to fight against diabetes.

1.2 Motivation

The sorrow that touches us is that in almost every family nowadays a type 2 diabetes patient is suffering. They can't enjoy the life as they want. They are not going to the doctors properly for regular check-ups. They don't have clear idea about what to eat and what not to where food habit is one of the most important thing to take control over diabetes. Patients also doesn't understand the proper way to do exercise which causes pain in muscle and less effectiveness on decreasing the sugar level and body fat.

So here comes the initiative to make an android application which will provide nutritional treatment and proper exercise to take a good control over the type 2 diabetes. The platform is android is because this is the only medium by which we can provide the service to maximum peoples.

1.3 Objectives

An easy user experience and maximum positive outcome is our main motive. The users of this application can generate food charts for their other family members or for their friends and relatives too. It just needs a Gmail id to use this application and there is no other formalities, which makes this super easy to use. Patients need to know their weight and their height to generate the BMI amount. There is a BMI calculator in the application so that the users doesn't needs to open another app or browser to calculate his or her BMI status. There is also a step counter feature in the app to provide users a unique service to count their steps very easily.

1.4 Expected Outcome

From the building quality and the accuracy of the methods used in the app to provide food chart the expectation is really very high that users will take control over the type 2 diabetes. The tendency of injecting insulin in patient's body will reduce. The sugar level will be in a normal state and it will cause a healthy and joyful life to the patients. The 12 week exercise program in the app will make a patient feel much better and strong. This walking exercise is what keeps the heart strong in pumping blood and make the muscles more flexible and strong so a patient will be safe from small fall and hit in the bones.

1.5 Report Layout

Chapter 1 contains the basics of the report for our proposed system. The introduction, Objectives, Motivation to make the project and what is going to be the outcome from the project. Chapter 2 contains the description about all the works we have done so far to start building the system. The comparative studies the background works and the challenges that we faced to develop this system is also added here. Chapter 3 is about collecting the requirements and implementation and also the use case model, bpm model and the activity diagram for the user. Chapter 4 contains the specification of the front-end and back-end design of the application with the screenshots. Chapter 5 contains all the testing process of the application to run well. The results of testing etc. Chapter 6 is finally the conclusion of the project and it also contains future plans about our proposed system.

CHAPTER 2

BACKGROUND

2.1 Introduction

The moment we finalized that this application will give service to the diabetes patients right at that moment we decided to not to put any misinformation or any wrong data or any wrong method in the app. So we started to look forward on what are our doctors studying to give treatment to the type 2 diabetes patients and some online resources which gives authentic data. We also researched other application on the play store to see what kind of feature we need to give emphasize on. We followed a book “A Practical Guide to Diabetes Mellitus” publish by Department of Endocrinology, Diabetes and Metabolism Christian Medical College, Vellore - 632004, INDIA [1].

2.2 Related Works

We selected the book after talking to couple of MBBS students studying in Rangpur Medical College. Before we start to build the application we decided to study the book. After researching the book we found the treatment of type 2 diabetes by nutrition and exercise. The methods were more like theory which is okay if a doctor himself or herself prescribe to a patient but here we have to teach the app how it can take the decision when suggesting foods for patients. Beside studying the book and forming new methods we had to learn a lot of new things to build the application.

Check BMI feature works:

$$\text{BMI} = \text{kg}/\text{m}^2$$

Now are calculating the BMI value both in “kg and lbs” and “meter and feet-inch”. So we have to convert the lbs into kg and the feet-inch to meter for the calculation.

Ft-inch to meter conversion:

$$(\text{Ft} \times 0.3048) \text{ m}$$

Lbs to kg conversion:

$$(\text{Lbs} \times .4535924) \text{ kg}$$

Now as we know the value of BMI we can compare it to the standard BMI model to know whether the BMI is normal or underweight or obese. BMI standard Model for ASIA [1]:

Underweight	< 18.5
Normal range	18.5–22.9
Obese	>=30

Load Food Chart Feature Works:

The first thing the app need is the calorie requirement for every person. When the app know the needed calorie for the patient then it can go forward to provide the chart. The method for calculating the calorie for each person is [1]:

Obese inactive, sedentary men/women	20 kcal/kg
Normal BMI, sedentary men/women	22–25 kcal/kg
Normal BMI, active men/women	30 kcal/kg
Thin/Very active	40 kcal/kg

Problem: An obese and inactive women, weight 90 has type 2 diabetes mellitus. How much calorie does she needs in one day? Prepare a diet chart for her.

$$\text{Total calorie: } 20 \times 90 = 1800 \text{ kcal}$$

Now we know how much calorie she needs. The second thing is in this 1800kcal how much of calorie we need from protein and carbohydrate and fat?

Method [1]:

Carbohydrate needed	50-60% of total calorie
Protein needed	15-20% of total calorie
Fat needed	25-35% of total calorie

Now we can calculate how much of calorie needed from each nutrition:

$$\frac{\text{percentage} \times \text{total calorie}}{100}$$

Calorie from carbs:

$$\frac{55 \times 1800}{100} = 1080 \text{ Kcal}$$

Calorie from protein:

$$\frac{20 \times 1800}{100} = 360 \text{ Kcal}$$

Calorie from Fat:

$$\frac{25 \times 1800}{100} = 450 \text{ Kcal}$$

Third thing we need to know is how much (gm) carbohydrate we need to get the required calorie:

Carbohydrate needed:

$$\frac{\text{calorie from carbs}}{4}$$
$$\frac{1080}{4} = 270 \text{ Gm}$$

Protein needed:

$$\frac{\text{calorie from protein}}{4}$$
$$\frac{360}{4} = 90 \text{ Gm}$$

Fat needed:

$$\frac{\text{calorie from Fat}}{9}$$
$$\frac{450}{9} = 50 \text{ Gm}$$

And now all we need is to look for foods which can fulfil this amount of nutrition. So we started to insert data on database. 1 gm of any food contains how much of carbs, protein and fat. As not much website provides 1gm food nutrition so we calculated it to 1gm food nutrition.

2.2.1 Table Description

The table on the next page contains all the foods that are saved in the firebase database. The table contains the food names and the amount of Protein, Carb and Fat amount per gram. The data's are taken form internet [2] [3] [4].

TABLE 2.2.1.1 AVAILABLE FOOD NUTRITION /GM CHART FOR DATABASE

Food Name	Protein	Carbohydrate	Fat
White bread	0.085	0.5	0.03
Whole wheat bread	0.105	0.4	0.03
Biscuits (2 ½’’ diameters)	0.07	0.47	0.10
Noodles	0.04	0.23	0.01
Macaroni	0.03	0.22	0.007
Oatmeal	0.02	0.11	0.01
Milk	0.03	0.04	0.04
Egg (Boiled or Poached)	0.12	0.01	0.12
Egg (scrambled , omelet or fried)	0.10	0.00	0.12
Yogurt	0.07	0.10	0.04
butter	0.0	0.0	0.7
Soy	0	0	1
olive	0	0	1
Beef	0.27	0	0.18
chicken	0.27	0	0.10
Duck	0.16	0	0.28
Lamb or Goat	0.20	0	0.30
Turkey	0.27	0	0.15
Catla fish	0.19	0.03	0.02
Rohu Fish	0.17	0.04	0.01
Hilsa fish	0.24	0.03	0.22
Tilapia fish	0.26	0	0.027
Beans	0.008	0.04	0
Broccoli	0.03	0.05	0
Carrots	0.006	0.06	0
Cauliflower	0.025	0.05	0
Cucumber	0	0.02	0
corn	0.03	0.21	0.01
Eggplants	0.011	0.05	0
Leaf cabbage	0.03	0.07	0.0
Lentils	0.07	0.19	0
Lettuce	0.01	0.02	0
Mushrooms	0.01	0.033	0
Okra	0.01	0.17	0

peas	0.03	0.13	0
Potatoes	0.02	0.22	0
Radish	0	0.04	0
Tomato	0.006	0.04	0
Spinach	0.03	0.03	0
Sweet potato	0.01	0.32	0
Banana	0.01	0.15	0
Blackberry	0.01	0.13	0
Dates	0.02	0.75	0
grapes	0.0	0.16	0
Lemon	0	0.08	0
Orange	0.1	0.08	0
Papaya	0.005	0.09	0
Watermelon	0.00	0.03	0
Pineapple	0.0	0.13	0.0
Apple	0	0.13	0
Mango	0.0	0.11	0
Jack fruit	0.0096	0.15	0.002
Almond	0.18	0.18	0.54
Peanuts	0.26	0.18	0.5
Cashews	0.17	0.28	0.45
Coconuts	0.02	2.52	0.4
Walnuts	0.14	0.16	0.64
Tea	0	0.004	0
Coffee	0	0.004	0

Step Counter Feature Work [5]:

- Sensor Manager (class)
- Step Detector(class)
- Sensor
- SENSOR_SERVICE
- TYPE_ACCELEROMETER

2.3 Comparative Studies

Nowadays before starting to build an app this is must to look around on the internet that is it unique or someone else already did it. If this is unique than building application is okay but if it is not then it needs to add different feature or making the app more faster user friendly etc. When we looked around we have found very few apps which can help the patients in our country. All of those were unauthenticated data and the food list they provided is not available in our country or in our local market. So we decided to add a complete prescription which a doctor would provide. Only this can be more authentic and also adding all the foods that we eat regularly and can be found easily in our local market.

The features that we used finally:

- Login with Gmail
- Calculating BMI
- Warmup exercise
- 12 weeks walking exercise with timer
- Step Counter
- Creating food chart from the suggested foods
- Can watch the food chart anytime and can delete the chart at the end of the day

2.4 Scope of the Problem

In the time we planned about all the feature that we were going to use in our application was amazing and we felt so happy that these feature are really going to help many people. But when we started to build the app there were several problems that we faced. We took help from online to learn those things and applying different codes to work which resulted sometime success and sometime failure. The vast problem was in inserting data into firebase and retrieving them into the application and then again calculating those data in different activity and fragments and insert and retrieve them into another activity, class or fragments. We are still facing problems in database related work. Hope these will be solve before the final submission. Another problem was working with recycler view with card view to display data into the app. In Exercise part of the feature there is a warmup part where different GIF used to show the users properly that how they should do those exercises and it took a lot of time to work with GIF which can be played in different versions of android devices.

2.5 Challenges

The whole project was a challenge for us. We learned totally new things to do the project. We researched all over the internet to find authentic data. We studied a whole book from MBBS course of Bangladesh to find out more accurate formula to suggest food to the patients. The most important and the big challenge was and still is to give accuracy level a 100% shot. Still it is not capable of giving an accuracy of 100%. And therefore we are working hard on it to resolve this issue. There was several version issues and deprecated libraries. There were few times when we used a function or class and later it turned out to be deprecated by the android. The step counter was sometimes working on low-end smartphones and sometimes didn't worked in high-end smartphones. But we resolved that problem later.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Introduction

Before making an android application the need of customers and the needs of the app itself must be fulfilled. In this section the requirements that we collected will be described specifically.

3.2 Requirement Collection and Analysis

Collecting requirements and then analysing them was a fun and tough task also. Requirements that we found after talking to few diabetes patients and reading through internet and also studying the current application regarding this topic was

- User friendly
- Fast browsing
- Authentic data
- Available food collection
- Authentic formula
- Exercise materials
- Security issue
- Online data storage
- Able to find nearby hospitals
- Appointments with doctors

After analysing the requirements we decided to develop all other features except finding nearby hospitals and setting appointment schedule with doctors. Cause these can be done manually. When all the other requirements will be done only after that we have plan to build these two features also. There is and will always be a place for doing things better.

3.3 Use Case Modelling

Use case model describes all the relations of each and every feature and pages with the user. In this case there are two user of the app. One is Admin and the other is all users who will use this application. User must login to the app in order to use the facilities of the app. The reason behind keeping login as compulsory.

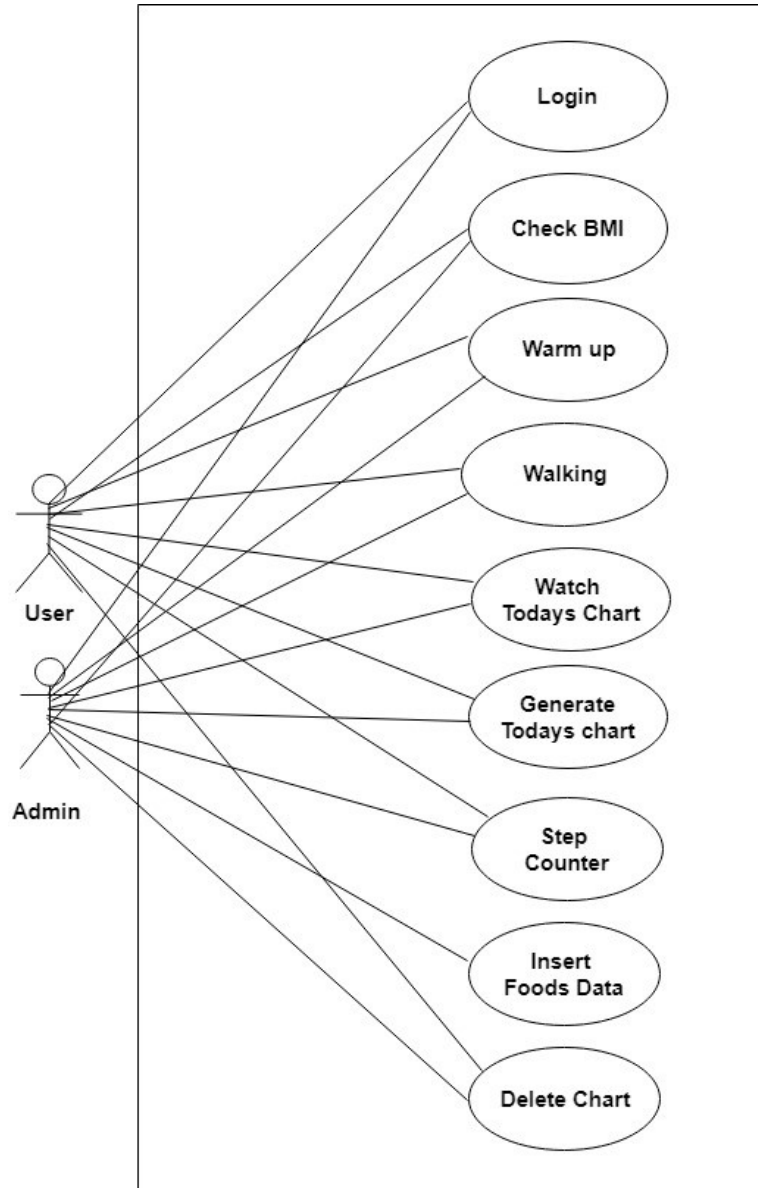


Figure 3.3.1: Use Case Model

3.4 Business Process Modelling

This is a graphical representation of a business process. This is the easiest way to represent all the features and the flow of work so that the developers can build the project more accurately.

Figure 3.4.1 shows the overall Business Process model of our proposed system:

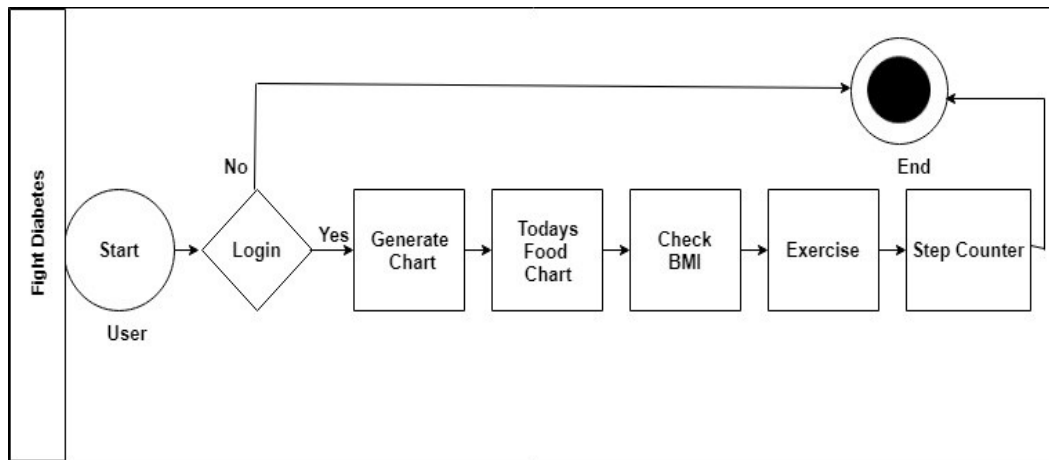


Figure 3.4.1: Business Process Model

3.5 Design Requirements

Design requirements process is the vital for designing in order to be successful. It makes an application more users friendly. To meet an application's goal forward and easy we must need Design requirement. The requirements for this project is given below.

Design requirements for User:

1. Login.
2. Generate food chart
3. Watch Food Chart
4. Exercise
5. Warmup
6. Step Count
7. Logout

Activity

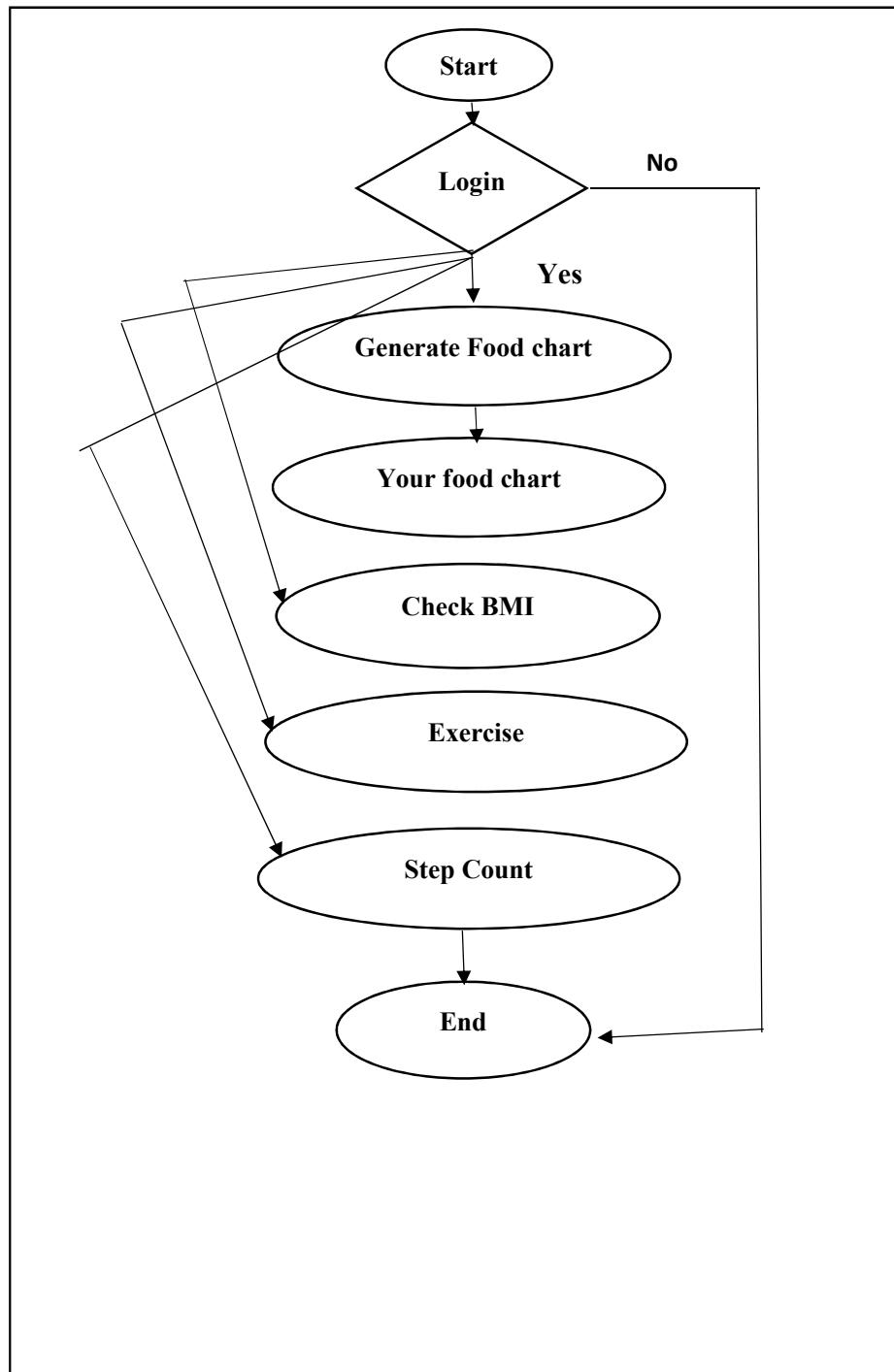


Figure 3.5.1: Activity Diagram

CHAPTER 4

DESIGN SPECIFICATION

4.1 Introduction

This chapter contains the graphical user interface of this application. By which it will get easier to understand how the app feature looks like and how these really work. The implementation, backend design and the database details will also be describe later on this chapter.

4.2 Front-End Design

The specification of each feature with the screenshot from a device where the app is running will be described from here.

The following figure 4.2.1 and 4.2.2 is the page which comes first when the app opens.

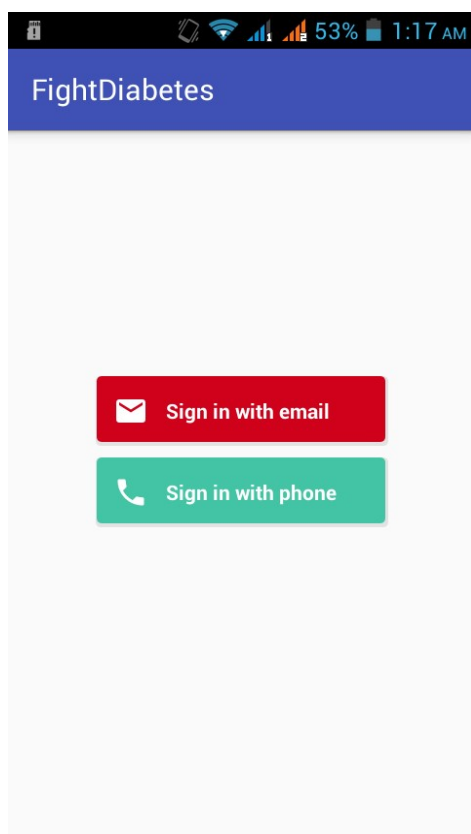


Figure 4.2.1: Login Option

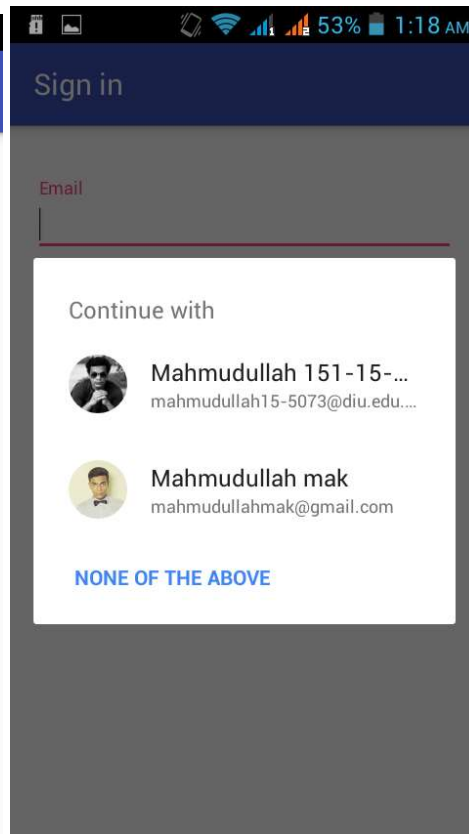


Figure 4.2.2: Login Option

The user can choose whether he/she wants to login and sign up with email or phone number. In the sign up page with email user needs to put his first and last name and a password with minimum 6 character. The pass word will be saved and an email will be sent to the users email for verification. User must login to use the application.

The following figure 4.2.3 is shows the graphic

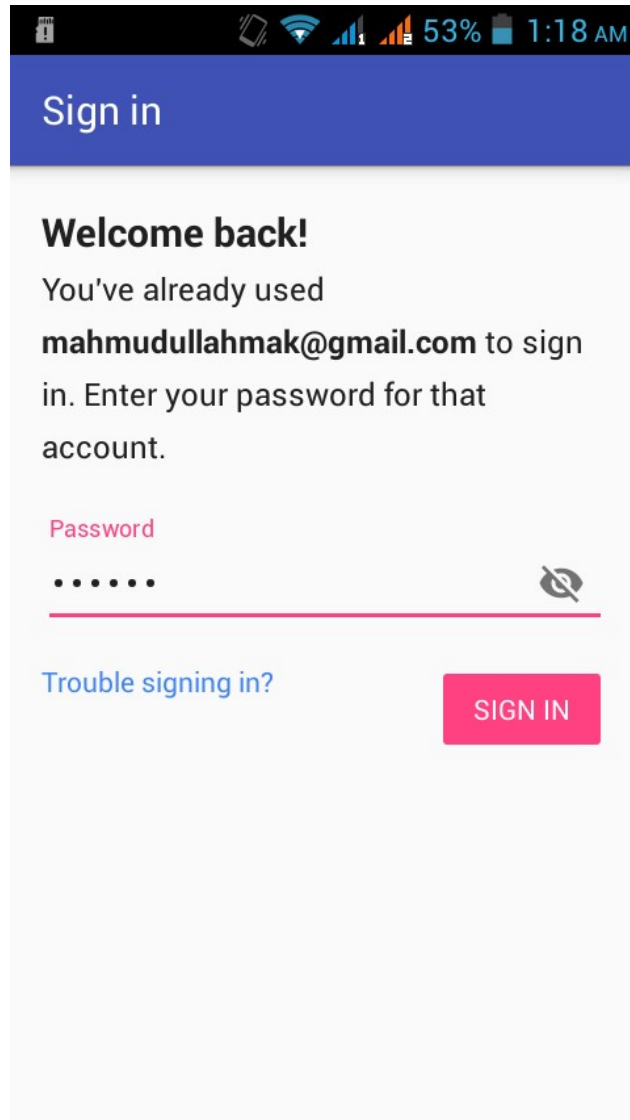


Figure 4.2.3: Sign In Page

The following figure 4.2.4 is the drawer layout with a toggle button which contains all the feature names. User will select the features to work.

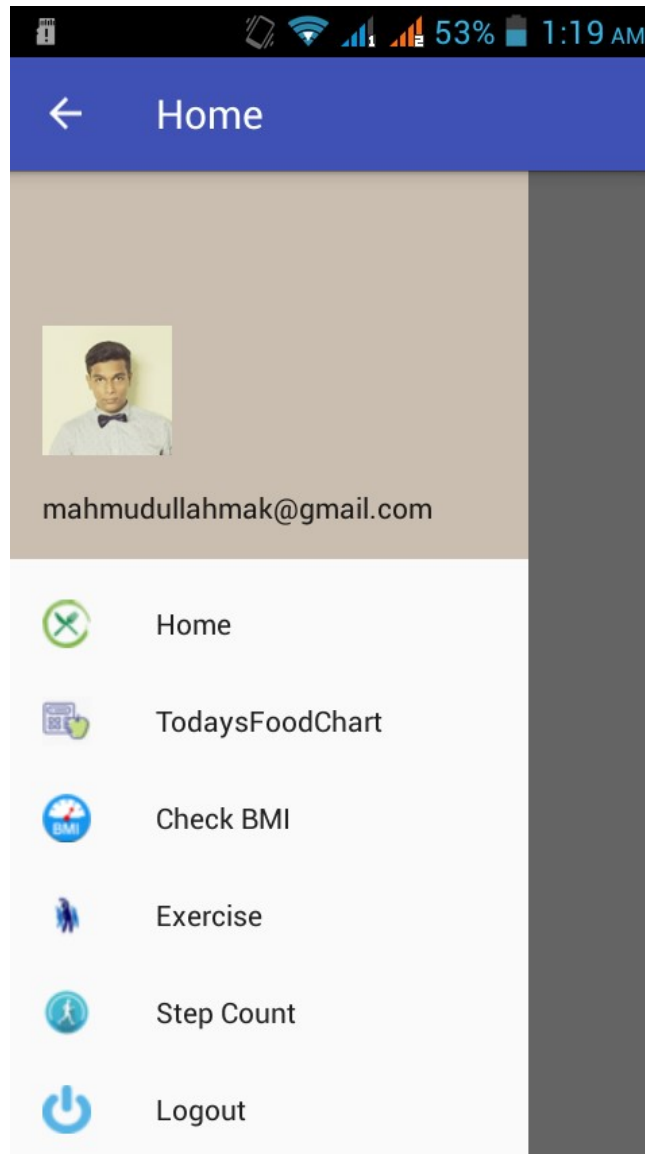
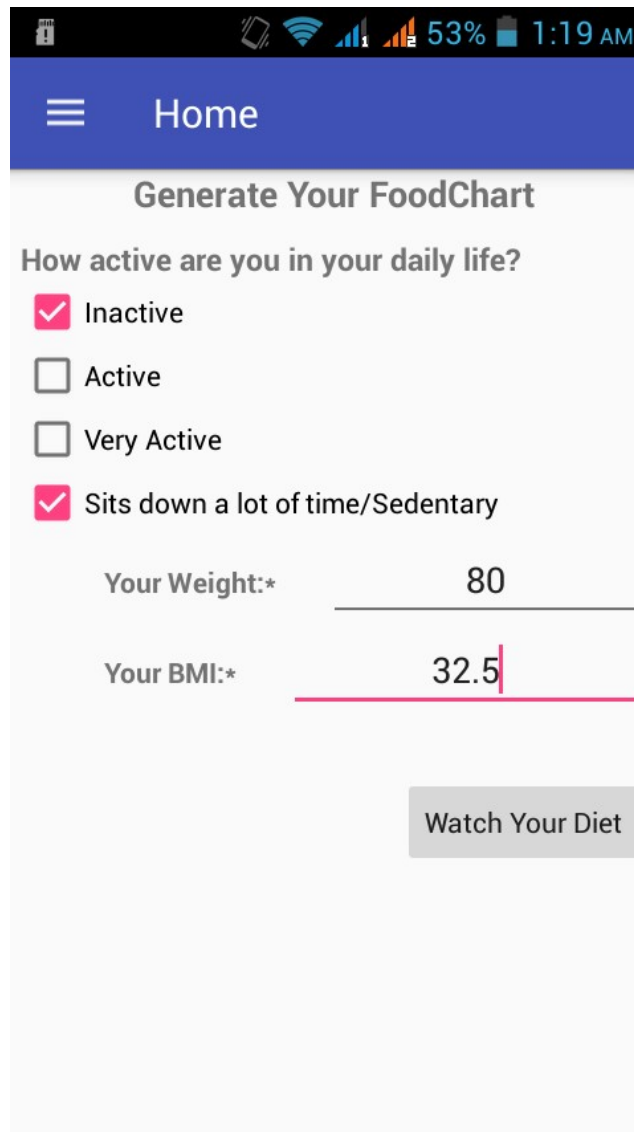


Figure 4.2.4: Drawer layout

The following figure 4.2.5 shows the page when user touch the Home option in drawer. This is the page were user inputs few information about them and clicks the watch diet button to generate the food list for the day.



The screenshot shows a mobile application interface. At the top, there is a status bar with icons for signal, Wi-Fi, and battery at 53%, along with the time 1:19 AM. Below this is a blue header bar with a hamburger menu icon on the left and the word "Home" in white text. The main content area has a title "Generate Your FoodChart" in bold. Underneath is the question "How active are you in your daily life?". There are four radio button options: "Inactive" (checked), "Active", "Very Active", and "Sits down a lot of time/Sedentary" (checked). Below the activity options are two input fields: "Your Weight:*" with the value "80" and "Your BMI:*" with the value "32.5". A grey button labeled "Watch Your Diet" is positioned at the bottom right of the form area.

Figure 4.2.5: Home

The following figures 4.2.6, 4.2.7, 4.2.8 shows the food chart and the total calorie requirement for the patient and also it provides the specific needs of Carbohydrate, Protein, Fat for that day. User needs to select the foods that he/she likes to eat and the app will calculate this with the total requirement of the calorie.

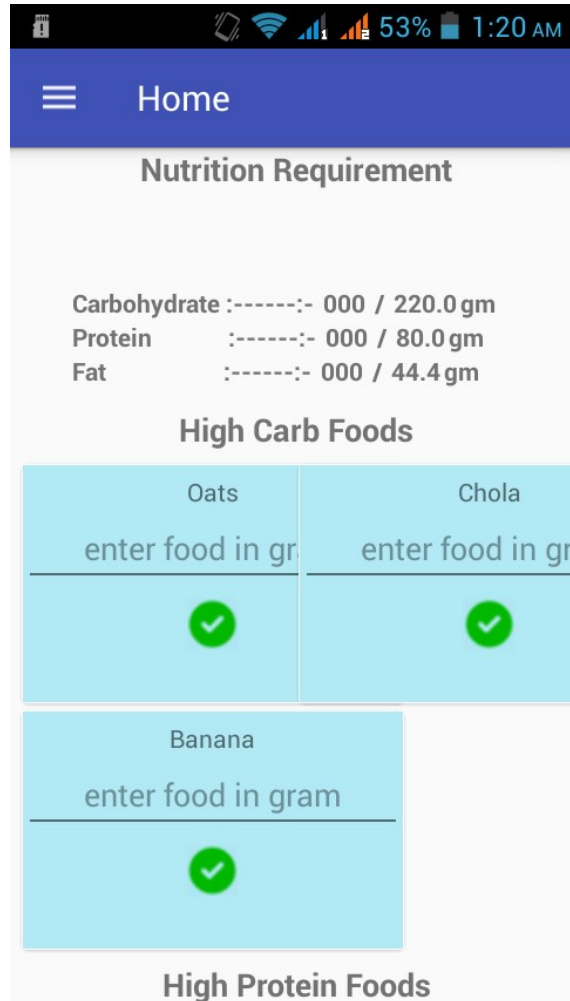


Figure 4.2.6: Food Suggestions and Chart generate

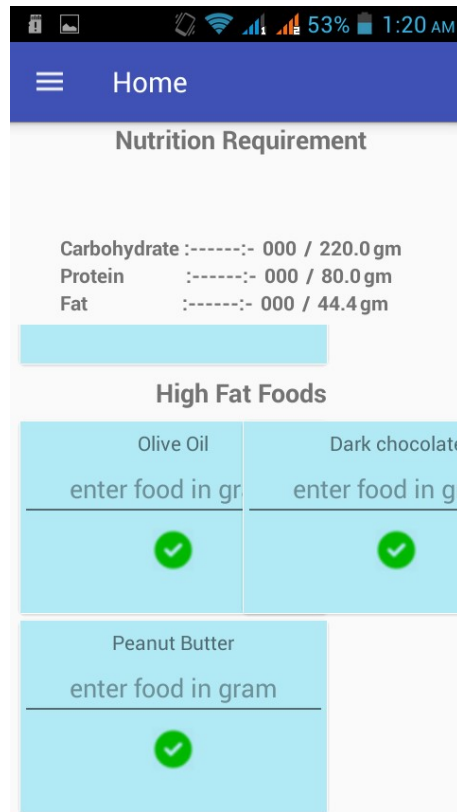


Figure 4.2.7: High Fat Food List

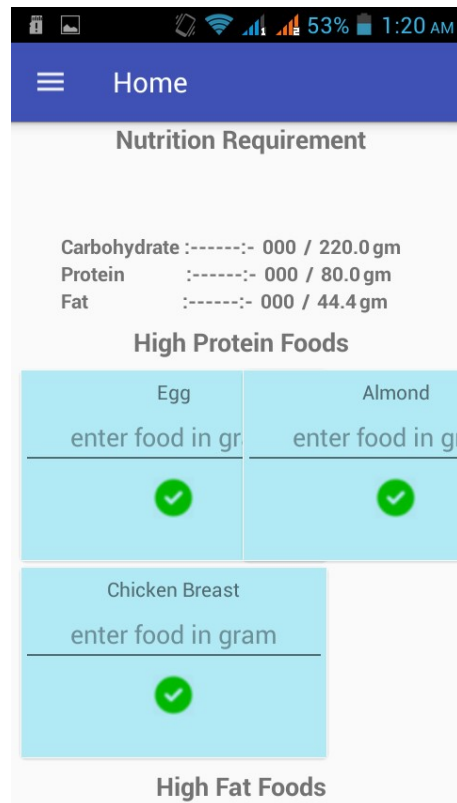


Figure 4.2.8 High Protein Food List

The following figure 4.1.9 shows a text that the food generate process is successfully done and now user can watch the food chart by clicking the watch food chart text.

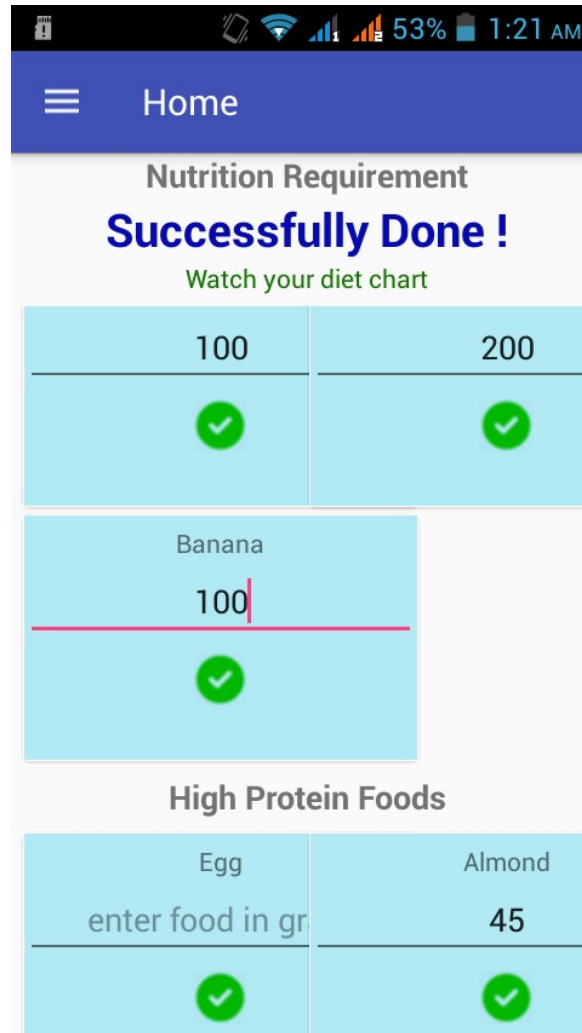


Figure 4.2.9 Food Generate Successful

The following figure 4.2.10 shows the generated food chart by the user which user can see anytime by tapping the “TodaysFoodChart” from the navigation drawer. There is also a delete option so at the end of the day user can delete the food chart or any time and can generate a food chart for someone else.



Figure 4.2.10: Food chart

The following figure 4.2.11 shows the page to calculate the BMI of patient. After selecting the “Check BMI” option this page arrive and patient can calculate his BMI by both kg and lbs and the height in meter and feet-inch.

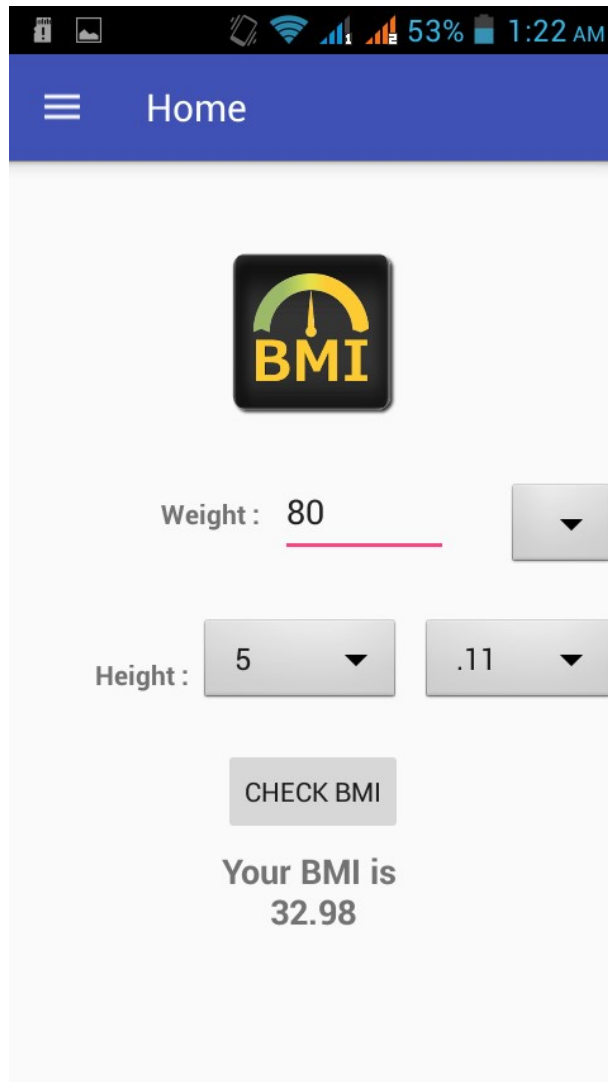


Figure 4.2.11: Check BMI

The figures below 4.2.12-4.2.16 will appear one after another when the exercise feature is selected. First it will show some tips to user and then it requires to warmup as a must before starting walking. The warmups comes with gif which shows the proper way and name of the warmup exercises.

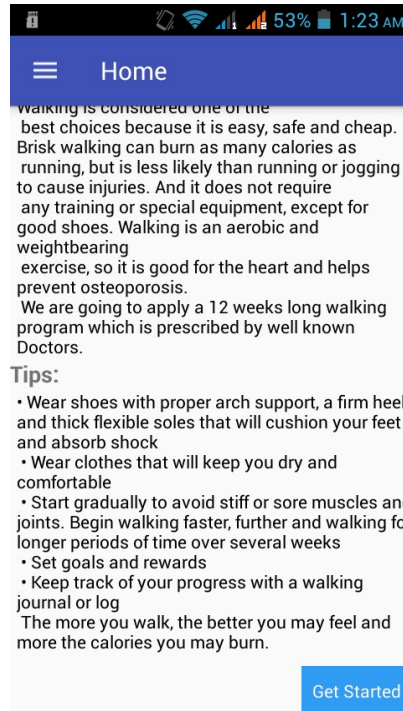


Figure 4.2.12: Exercise Tips



Figure 4.2.13: Warm up

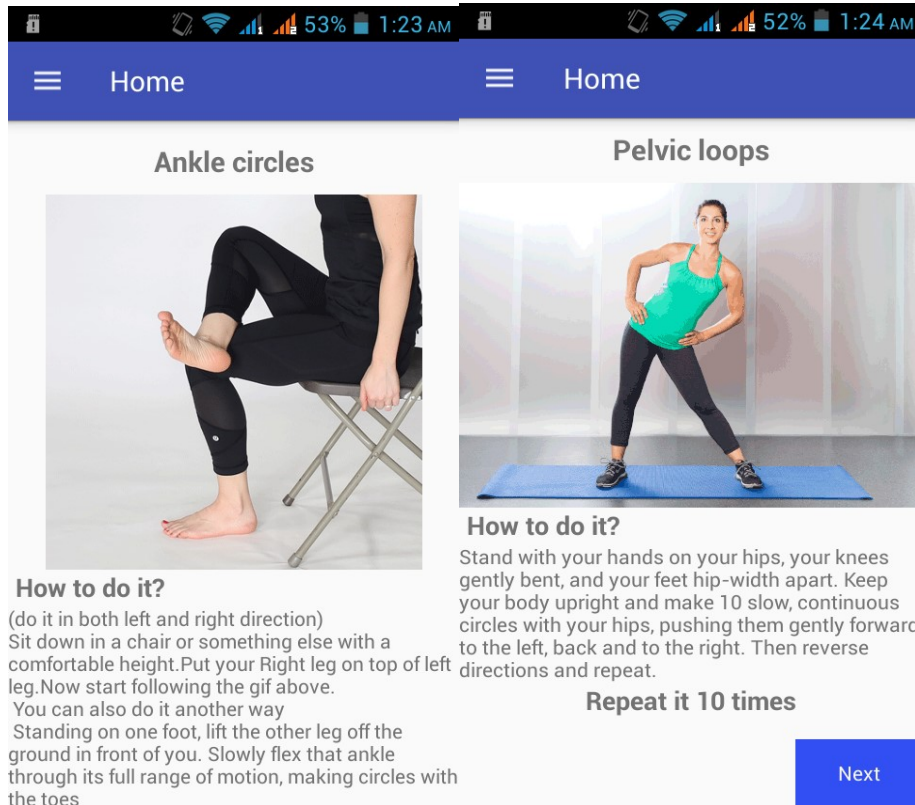


Figure 4.2.14: Ankle Circles

Figure 4.2.15: Pelvic loops

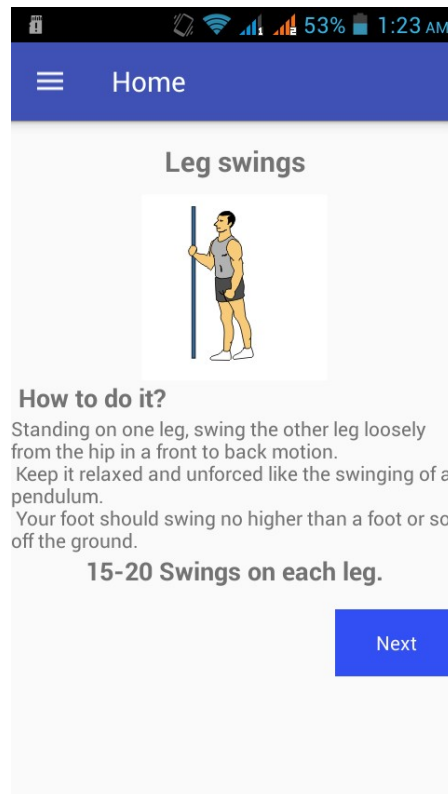


Figure 4.2.16: Leg swings

After the warmup there is an option called take a walk. Here the walking exercise starts and there is twelve weeks exercise. This walking exercise have 3 part. First one is walking normally than walking briskly and then again walking normally but the duration is not same. The more weeks it counts the duration rises. There is a timer in the app. User can start the timer when he starts walking.

The pictures bellow shows the graphic of the details above.

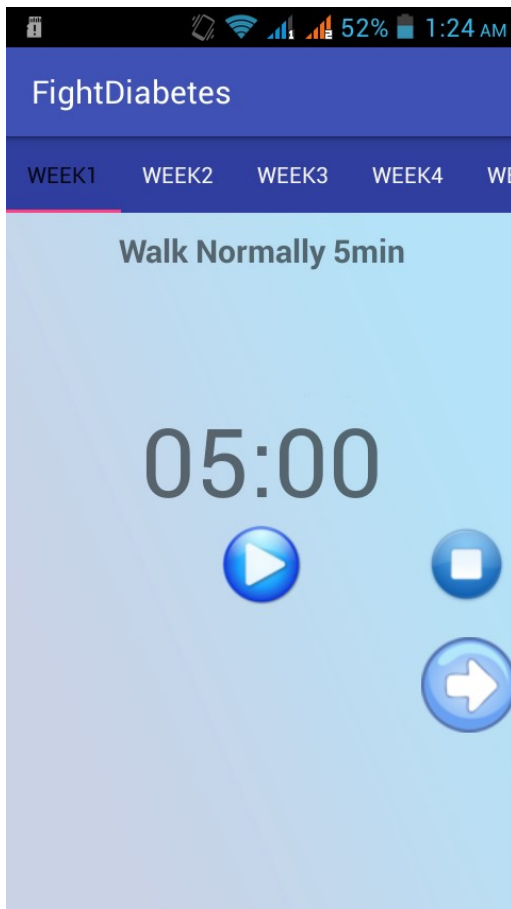


Figure 4.2.17: Walk Normally

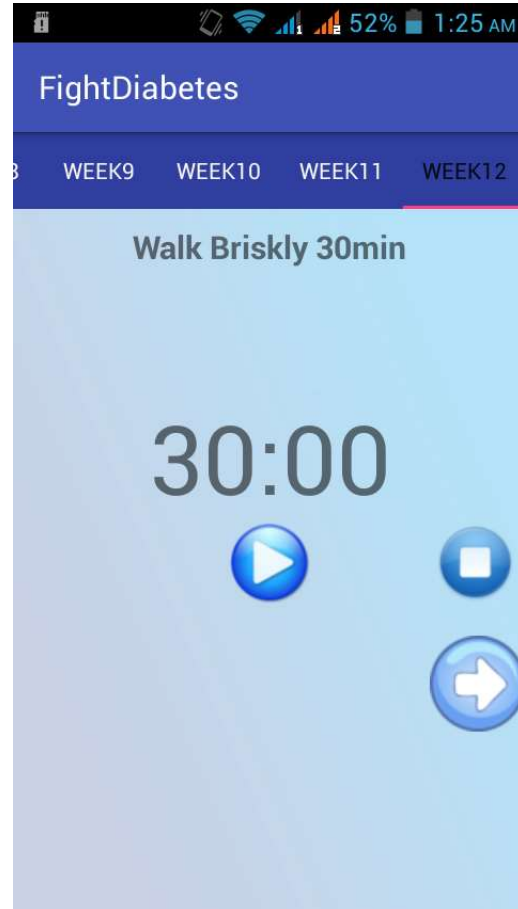


Figure 4.2.18: Walk Briskly

The pictures bellow appears when the step count option is selected from the drawer. It counts the steps of patient. User can start walking with the step counter feature to count steps. The app uses accelerometer of phone to calculate the shake level and it counts as a step when it matches its shake value. User should set the phone in such place of body where the phone can feel the shake of walking.

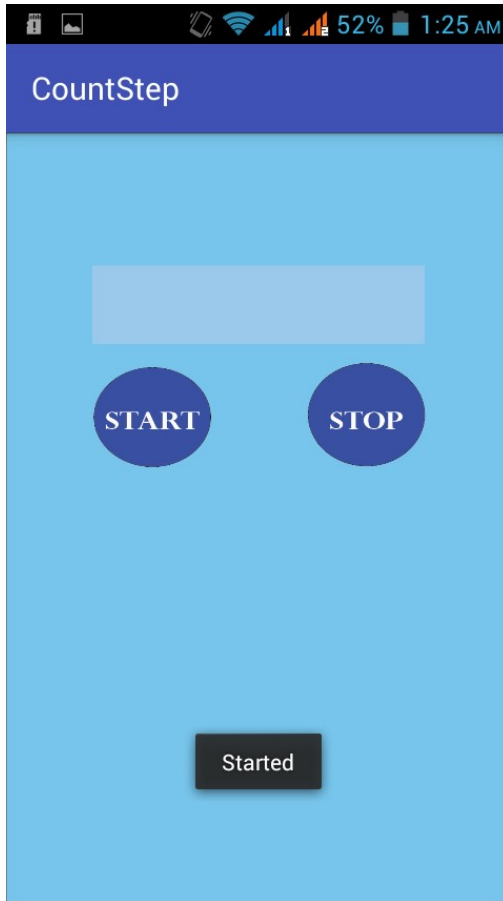


Figure 4.2.19: Start Step Count

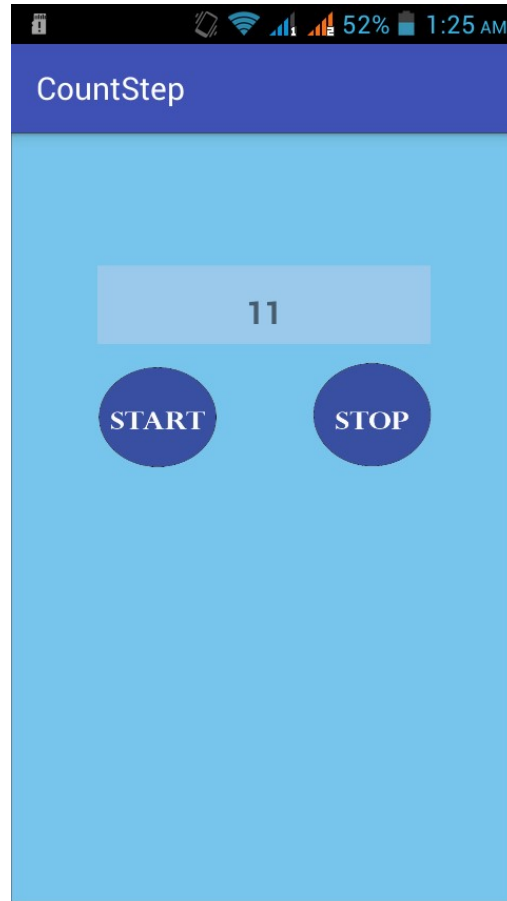


Figure 4.2.20: Count of Step

The page below appears only when the admin login to the app. Users cannot get access to this page. Admins insert new food items to the database through this page of the application.

The screenshot shows a mobile application interface titled "FightDiabetes". At the top, there is a status bar with icons for signal, Wi-Fi, and battery (48%), and the time 2:45 AM. Below the title bar, the text "Select Database :" is followed by a dropdown menu currently showing "Carbohydrate". Below this is a text input field labeled "Food Name" with a red vertical cursor. Underneath are three more text input fields labeled "Carbohydrate amount", "Protein amount", and "Fat amount". At the bottom, there is a grey button labeled "INSERT" and a blue link labeled "Go Home".

Figure 4.2.21 Insert to Database

And then finally the feature logout to exit the app. If one person in the family have the phone then by log out user can keep other family members data in the application.

4.3 Implementation Requirements

As we have gone through all the features of the application now we need to implement the app and for that there are few minimum requirements obviously. This app is designed easily with light weight design so that it can run on low-end android devices too. It takes a very few space on phone memory as the database is online. Below is a list of minimum things someone needs to use this application:

- Android 4.2 Jelly Bean



- Internet
- Gmail Id

4.4 Back-end Design

For back-end designing purpose the application is developed on the Android Studio. The language by which the app developed is “JAVA” and for the database design we used firebase database.

4.4.1 JAVA

The most favourite, flexible and resourceful language for android app developers is Java. Few months ago also java was the only official language to develop android applications. Still it is the first choice among developers and then comes Kotlin. That’s why we choose to develop the app with java.

4.4.2 Database

Firebase database is now the most enlarged, fastest and secured database in the market. We used the pre-built firebase log in form too. When a user logged in to the app it generates an unique key for each user. Admin can delete or ban the user from the firebase explicitly. Admin can monitor all data. The real time database of firebase is used in this app to store the food items and other information also to retrieve them from the online. There is few screenshot of the firebase database given in the next page:

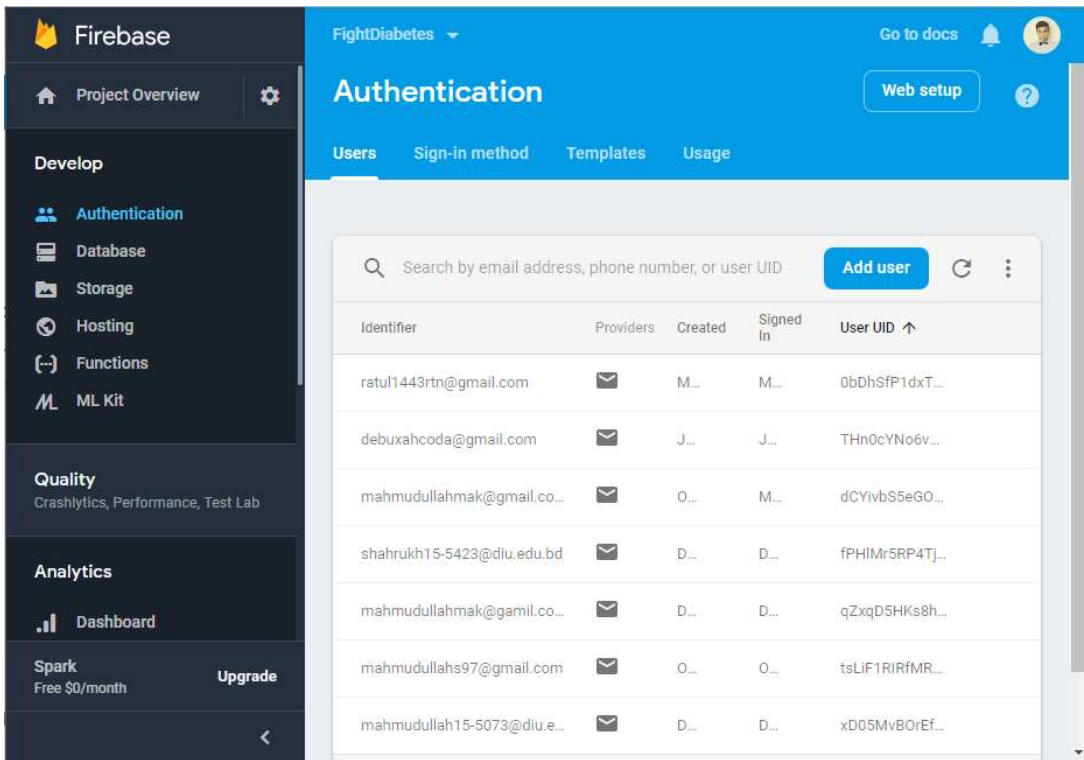


Figure 4.4.2.1: Users of the app Authentication

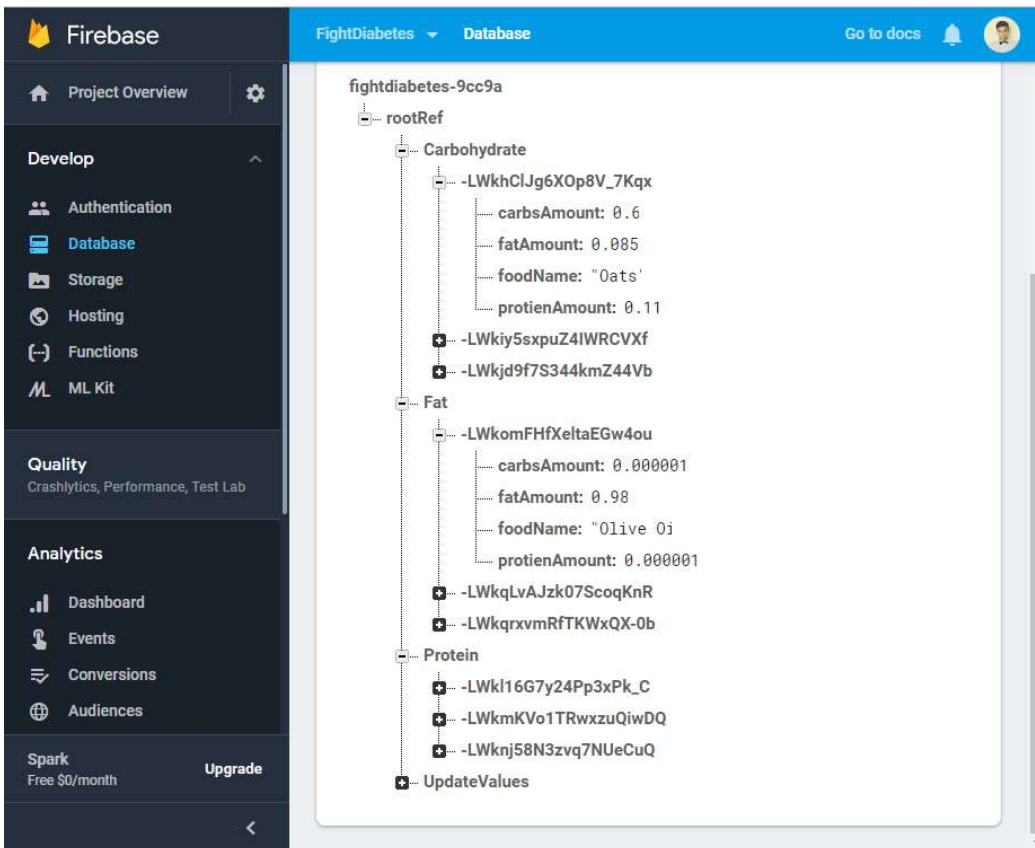


Figure 4.4.2.2: Database of firebase

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Introduction

This chapter contains the details about implementing the database and the other features left to describe the front-end design. The testing is one of the most important task to complete any kind of application. Unless the testing is okay the product can't be okay or published. Different aspects of testing are also described in the chapter.

5.2 Implementation of Database

Firebase database is one of the most dynamic sites to save data and do other login or signup options to maintain the users like take proper authentication. The real time database gives the opportunity to save the data real time. Cross-platform developers also can use firebase to push data and later they can retrieve those in real time.

5.3 Implementation of Front-End Design

Front-end design is the most important task while developing an android application. Users can get the best experience from the app only when the front-end design is easy and beautiful. This app is designed using both xml code and java in android studio. External designed pictures with adobe illustrator is also added to make the UI more attractive. Front-end design tools:

- Activity
- Fragment
- GIF
- Colourful background image
- Recycler View
- Card View
- Retrofit
- Drawer Layout
- Navigation bar
- Toggle button
- Firebase Pre-built UI
- Basic XML tools like Button, Edit text, Text view, Image View etc.

The figure below shows a screenshot contains a design of a page from the exercise feature of the application.

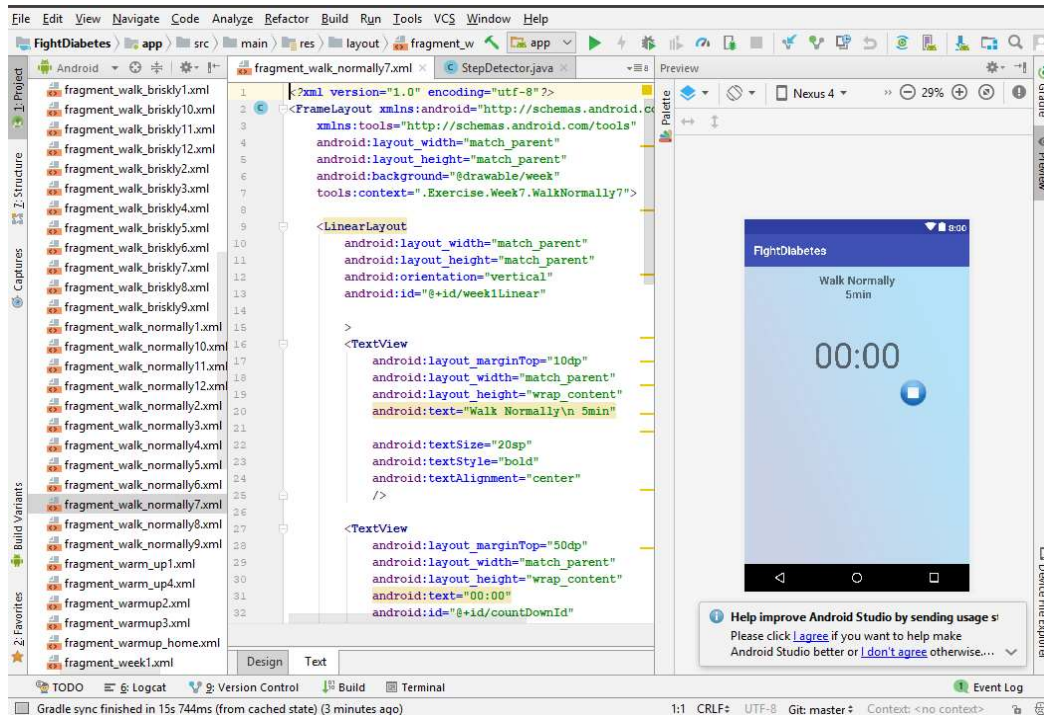


Figure 5.3.1: Xml Design of a Layout

5.4 Testing Implementation

When the development step is done then it comes to test all the elements of the system. This is for the check that the product is fulfilling the goals. Before the publishing an app it is mandatory to test that all feature are running well. Different testing technics in different targeted devices and situation is applied to ensure the quality of accuracy.

5.4.1 Test Plan Strategy

In this procedure it portrays the significance of test plan and how the application is to be tried and furthermore gives procedure to be pursued. Test information finds what is tried and anticipated result with genuine info. In most programming building ventures test plan ought to be delivered. Generally this the framework executed considered as low quality. The client don't acknowledge this since it won't be acceptable. When prerequisites have been recognized test plan ought to be composed. To perceive how the application carries on when extraordinary information is given or over-burden circumstance happens it will be tried with test information.

5.4.2 Test Level

The testing levels are given bellow:

- Unit testing
- Integration testing
- System Testing
- Acceptance testing

Unit Testing

As the name goes the smallest tools and features of the app is tested in the unit testing section. All features are tested to make sure to meet the goal of the app. Positive and negative testing is also performed.

Integration Testing

Integration Testing is where related projects is tried. Here two kinds of methodologies included base up and top down. This testing is performed to distinguish abandons in the interfaces and cooperation's between incorporated parts. The database ought to be associated well with each structure connected. Ensuring no intrusion is intruding on database refreshes.

System Testing

What system testing step does is, it processes the functionalities for the application so that it can handle large number of data with less delay. The testing process is done with the real targeted users of the app. They use the app in the correct environment to see if any error occurs. So that it can be fixed before release.

Acceptance Testing

Worthiness of an application is tried in Acceptance testing level. The point of this test is to evaluate the applications consistence with the prerequisites and think about whether it is prepared for conveyance.

5.5 Test Results and Reports

There were few errors occurred after the testing stage. Those are:

- Retrieving data from firebase.
- Showing the data in recycler view.
- Calculation error while inserting in firebase
- Crashed while logout option selected.
- Crashed when Step counter started.

Finally we solved all the errors. Now the app works perfectly fine.

CHAPTER 6

CONCLUSION AND FUTURE SCOPES

6.1 Discussion and Conclusion

We are happy now thinking about the first day when the idea came and now the project is completed. We have faced so many problems during this project especially the most challenging thing was learning new features of android to make the project happen. We searched online for days and weeks to find an authentic reliable book to collect the method and prescribe formula to provide a good food list to the patients. Finally we found a book from a MBBS medical student which contains a very good briefing about the nutrition treatment to the diabetes patients. After we have got the book, we started to read it by each chapter related to our project goal. Then we started to form new algorithms and formula to find out the best solution to provide an authentic food chart to the patients so that they can get benefitted. Finally we came out with the complete project which is able to provide users a food chart which will help to control the diabetes, Exercise feature will burn the extra fat and it will keep the patient healthier. The step count feature will help the user to count their steps for an idea that how many steps they took in a particular period of time.

6.2 Limitations

The limitation of the app is the accuracy of the food chart is till now at 90%.

6.3 Scope for Future Development

There is and will always be room for doing things better. Obviously there is a lot things that we have plan to do in future with this app.

- Adding a total health app feature to calculate the burned calories with chart development.
- Adding appointment with doctors. It will let the user know the dates of appointment and the doctors' details. User can call and email from the appointment page.

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