

**CUREHEALTH: FACILITATE M-HEALTH SERVICE IN BANGLADESH**

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

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**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

**DECEMBER 2019**



## DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Farzana Akter, Lecturer (Senior Scale), 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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## ABSTRACT

“CureHealth: Facilitate M-health Service in Bangladesh” is a m-health service which is basically used for the practice of medicine and public health supported by mobile devices.

This android application reduces the user’s trouble to get medical information service with a short time from anywhere. User can easily find hospital emergency services. This application can be considered as a trustworthy medium of our daily life at anywhere. There’s also have doctor’s information of various reputed hospitals. So, its goanna be very easy to find needed expertise with the base of your own condition. People faced a very common problem of getting blood donors in needed time. We give the opportunity to direct contacting with the donors by a decent list of the donors. We added the lists of names, Blood group and the contact numbers of donors and also user can directly contact with the phone call in a decent way. Medicine reminder is very important part of this application. Normally people forget to take their medicines at a time, they have to check their prescriptions every time. Alarms system can be the smart way of using android mobile phone. Health tips can make you concern about which food you are taking and which food you should need to take. Some first aid tips are given about bleeding, nose bleeding, heart attack. These are basically information’s that everyone should know about it. We can call it street first aid tips because you will know what to do when these problems occurred. These medical first aid tips can be the life saving tips.

We’ve added a calculator which will help you to calculate the BMI of your body. People can calculate the BMI and they will get conscious about their food habit and how much calory they should take every day. This is our first android project and we are trying to improve it more and more. We will try to add some more feature so that users will get more benefitted by using it. We will try to add video calling system between the reputed doctors and patients with a decent payment system. Emergency ambulance service can be added and so on. We are working on it to make more user friendly and more useful to all kind of people.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Introduction

There are so many people dying for lack of primary treatment and lack of doctor's concretion. In this era, a device people always carry which is a smartphone. We are working on health issues (m-health service) of every level of people (higher to lower class) and solve the lack of treatment in absent of nurse or doctors. We are adding some extra features in smartphones that will save lives. It helps quick direction to the nearest hospitals using Global Positioning System (GPS) for accidental issues. We try to add all possible solutions for primary treatments and advises through this application. Communication with blood banks or blood donors, ambulances are available here. Alarm system for taking medicines in proper time. Some researchers are performed based on mHealth working with sensor technology by which patient can check blood pressure and so many things. We are trying to give them full package information of primary treatment and health. People will get more concern about their health what they should do, what they should eat and what they shouldn't. In our country most of the people don't know how many calories they should take which foods are harmful to them, so, hopefully, this application is going to be the full guidance to them.

### 1.2 Motivation

We know that 'Health is wealth'. Our project motivation based on the rural people who wants to have cure health. Now a day's android users are increasing, that's why all services are included in android system day-by-day. The uses of android mobile applications are beloved of all because of its easiest usefulness. This is too much user friendly, that's why anybody can use application without any proper knowledge.

In this era most of the device support health assistants, which play an essential role for finding symptoms of the disease in remote areas.

Due to not only lack of knowledge but also minimal income most of the people suffer from proper treatment on accurate time.

Consequently, we developed an android healthcare application to conquer this situation.

### 1.3 Objectives

The objectives of this project are developed an Android application that can saving time and money for health care.

- a. To find out the location information of nearest hospital.
- b. To see the doctor's information.
- c. To get the contact list of blood donor with blood group.
- d. To notify the schedule of taking medicine.
- e. To calculate calories limit.
- f. To provides health tips.

## **1.4 Expected Outcome**

We are developing an android application not only focusing our undergraduate final year project but also to make this project as a future healthcare. If we can give our best by the bless of Allah.

We are expecting these outcomes will help people for their cure health.

- People can easily find out the information about specialist doctors.
- Anyone can contact with blood donors at anytime from anywhere through the calling service of this application.
- Fast and easy way to find blood donor at nearby area.
- People can easily maintain their health by calculating calories rate.
- Anyone can easily find out nearby hospital.
- Patient can easily set reminder for taking medicine.

## **1.5 Report Layout**

This report has been divided into six main chapters where

### **Chapter one: Introduction**

Chapter one introduction phase of this application.

### **Chapter two: Background**

Chapter two is divided into some portion. These are the background of developing this application.

### **Chapter three: Requirement Specification**

In third chapter we will discuss about which requirement specification to make our application.

### **Chapter four: Design Specification**

Chapter four is about the specification of our application.

### **Chapter five: Implementation and Testing**

Here we focus our application implementation and show with result.

### **Chapter six: Conclusion and Future Scope**

And lastly, Chapter six is about conclusion and counselling our future scope what we'll do in next and what will be our future features in our application.

## **CHAPTER TWO**

### **BACKGROUND**

#### **2.1 Introduction**

Now a day the smartphones are too much available to everyone. In Bangladesh, people use it on their every walk of life. If they need any kind of information at the initial time, they use smartphones for browsing or use android applications. People are sensible about their health condition day by day. They regularly check their blood pressure, health condition, how much calories they should take, which type of food they should take. So, we are trying to boost up the Android service to general people, especially healthcare service. The smartphone should be considered as a medical device to give instance services.

#### **2.2 Related Works**

In this section, we will try to summarize some previous researches which are related to our project. Following this we will introduce some of the related work done regarding m-health service.

- Few kinds of research have been performed in the field of m-health services. They proposed Cardiopulmonary Resuscitation (CPR) mobile application for a sufferer of cardiac arrest patients. Abstract-Each day, approximately 750 Europeans suffer from an out-of-hospital cardiac arrest, which presents a large public health problem. Whereas Bangladesh or Indian subcontinental rural people also faced so many health problems out of hospital services. Where the mobile phone can be a huge medium of curing these problems.[10]
- They implemented sensors technology in Android smartphones. A developing country like Bangladesh Electronic Health Records (EHR) research on healthcare system shows the importance of the conductive paths of influence on the EHR system assumption by the physicians. Sensors technology can make a significant change in m-health services by measuring pulse of the heart rate, calory burning issues and so on.[3]
- They work with collecting data by mobile, process it and analyze it, the other creates the emergency alarm system. User can give the alarm or emergency message/text to the relatives, doctors or required peoples to rescue him/her. Few publications are exploration data-guided studies and find out seven main Sub-contexts for healthcare communication. Alarming prescriptions can make big deal with the interaction between the device and the patient. Most of us forget to take medicines in proper time at proper way.[8]
- There is no doubt that that mobile and wireless technology amplifies health service, it's also permissive that the new generation of wireless devices will play a key role as health care technology.[9]

### **2.3 Comparative Studies**

In our android application we have added so any features and one of them is alarming prescribed medicines. Patient can be set their alarm with due to their medicine's prescriptions with proper medicine name, date, time, amount of medicine. We are not limited only give alarming feature we added so many extra features such as primary treatments, blood donors list with direct calling system, emergency ambulance calling system, doctors advising portion and so on. We have also added the BMI measure calculation part. On the other studies they have done it but with few features. It can give the daily prescribed medicine alarm. It also can give the emergency alarm by analyzing the body condition by sensor technology. Some are added to the global positioning system (GPS) into an android application to find hospital location. [1,8]

### **2.4 Scope of the Problem**

It can be the pure guidance of primary treatments of the health issues. It is so much user-friendly so that anybody can use the application very easily in a comfortable way. Emergency Service features are so good and effective. In one applications people can get so many daily needed features like BMI test, first-aid tips those are very needed to everyone. By this app anyone can get urgent nearest hospitals location in a second in any unknown region by the help of internet. Each and every feature is so much important like blood donors' number and calling system, emergency ambulance calling system from any region of Bangladesh.

### **2.5 Challenges**

This is an android based mobile application which is done by us. We are doing an android based project for the first time. We tried our level best to make this application useful with so many features. We've faced so many challenges to make it complete and those are

- Making ensure that the application is user-friendly.
- Make sure about the right information.
- To ensure the best experience with our mobile health care service.
- Make sure about the google services in free of cost.
- To ensure that application is getting not so heavy.
- To ensure that adding new features in an effective way.

# CHAPTER THREE

## REQUIREMENT SPECIFICATION

### 3.1 Requirements Collection and Analysis

Our project is totally based on Android. That's why to complete our whole project, we need a few software components. Some of them are given below with description.

#### 3.1.1 Android Studio IDE (Integrated Development Environment)

Computer programmers use an IDE (Integrated Development Environment) that is a kind of software application which provides magnificent efficiency for developing software. Android Studio IDE corresponds with source code editor, build automation tools and a debugger for Android application development.

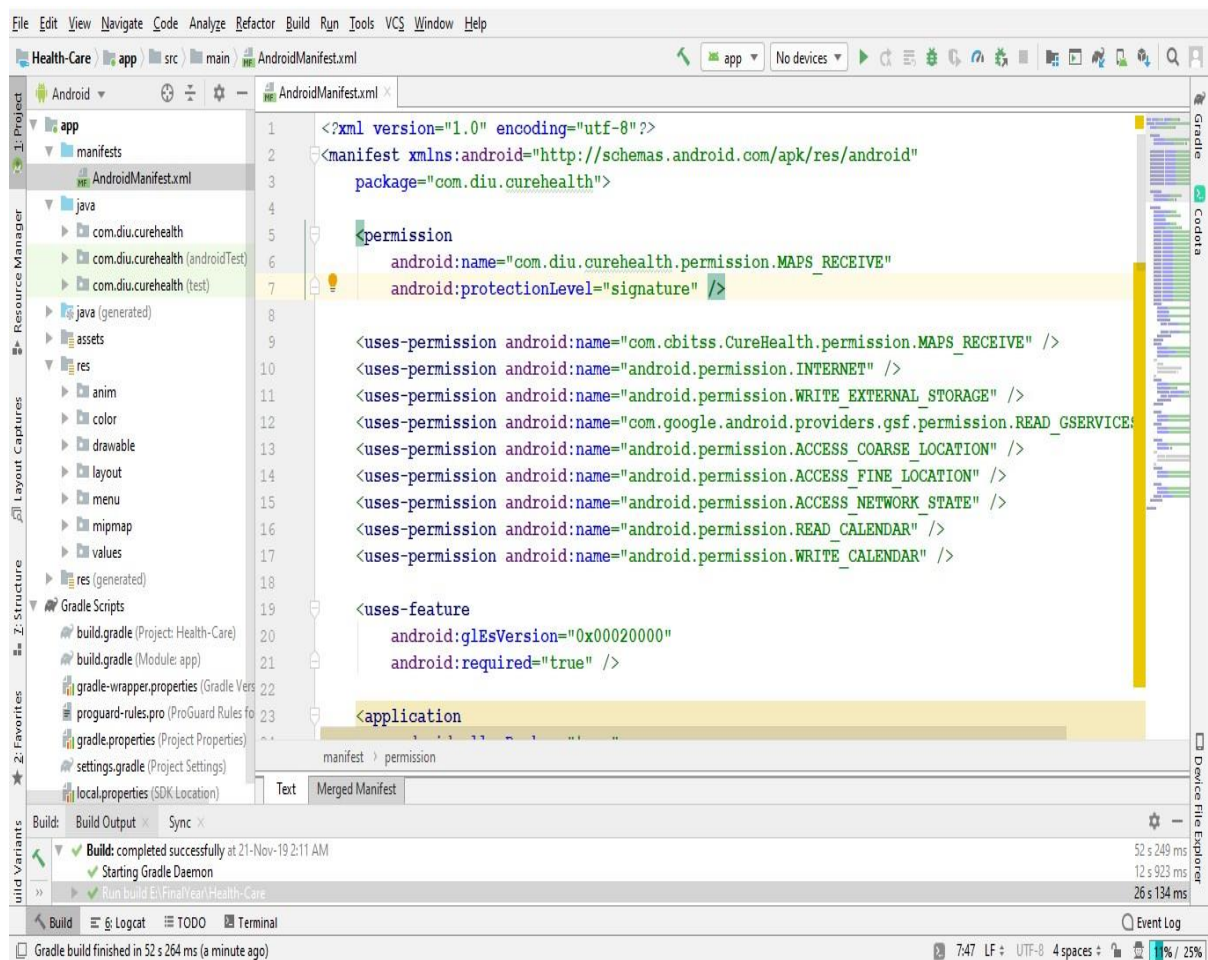


Figure 3.1: Android IDE

### 3.1.2 Android SDK (Software Development Kit)

Android SDK (Software Development Kit) is a module to allow organize a few packages for updating a new version of Android platform for run project smoothly.

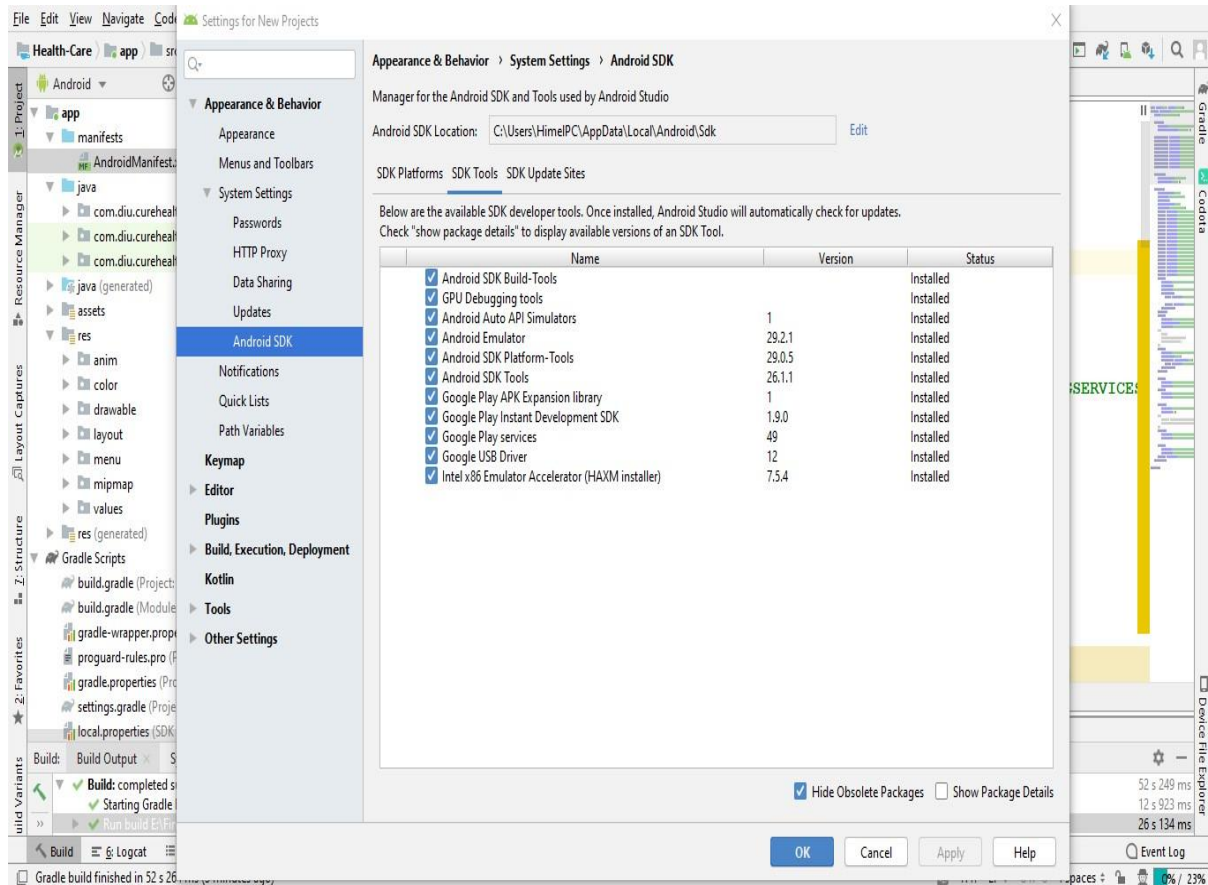


Figure 3.2: Android SDK

### 3.1.3 ADT (Android Development Tool)

Android Development Tools is a kind of plug-in for the IDE. It helps to build android applications with an integrated environment.

### 3.1.3 Java Runtime Environment

This tool helps for development of java application. It is a part of java development kit.

### 3.1.4 Emulator

To run and test Android project, emulator works like virtual device.

### 3.2 Use Case Modelling and Description

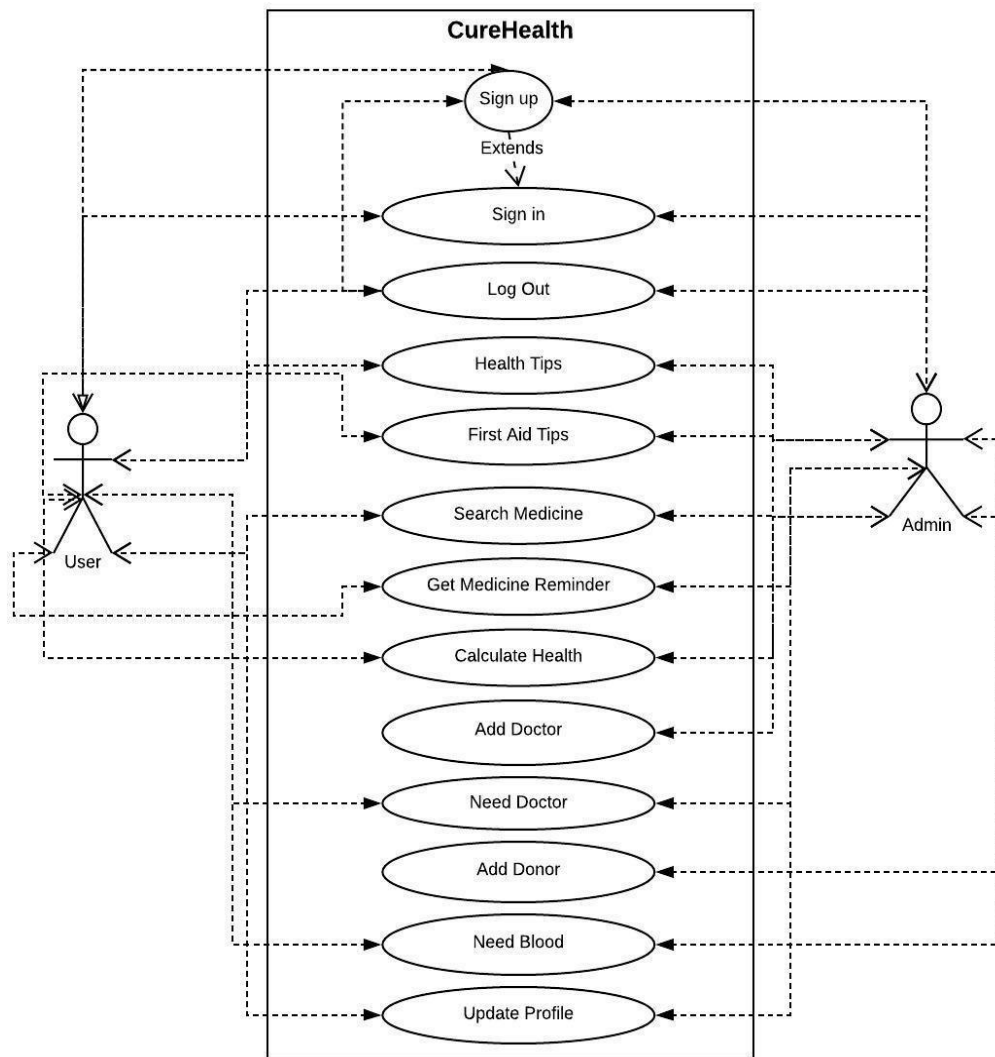


Figure 3.3: Use Case Diagram

**Description:**

Over the utilization of use case graph there are working procedure amongst user and admin.

**Actor:** User and Admin.

**Main Flow of The Diagram:**

The On-screen character can Sign up and log in to get all service to the application. Admin also add doctor, donor information and update all of this.

### 3.3 Logical Data Model

Logical Data Modelling is likely Entity Relationship Model, for which we can show how the relationship between two entity and their attribute. It is a process used to define and analyses the requirement model.

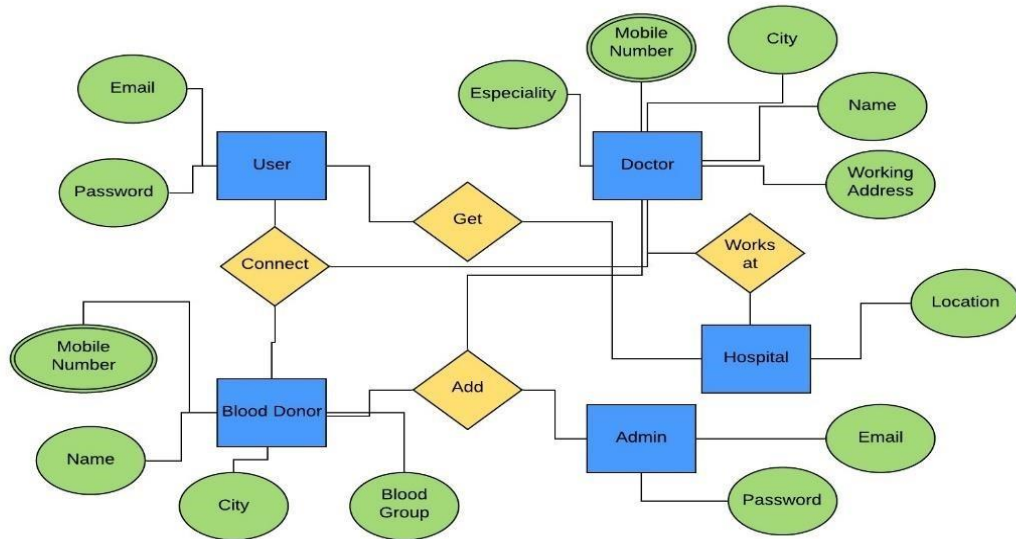


Figure 3.4: Logical Data Model

### 3.4 Design Requirements

The following goals were kept in mind while designing the system:

#### **User Friendly:**

This health care application is too easier to use for its simple User Interface. As it is flexible, that's why the user can easily find what they want.

#### **Efficiency:**

It is one of the most important part of an application. This application should run properly and work in minimal time as possible.

#### **Reliable:**

The application should be more reliable to use any user.



# CHAPTER FOUR

## DESIGN SPECIFICATION

### 4.1 Front-end Design

We have used Android Studio software for so many xml and java for completing our full project.

Java code use for working procedure of our application. In our project it's helps to interact one activity to another activity, one button to another button in user interface. We used xml code for things look. Mainly look and working design implicit on those coding.

### 4.2 Database Design

The application has used real-time database firebase. We have used firebase to store user information also doctor and donor information. Doctor and donor information inputted by the admin in this case. From this database admin can insert, delete, update information of doctor and donor table. We can also add information manually by the application. User only see doctor donor information.

It's free that's why it's saves a lot of time and money.

### 4.3 Interaction Design and UX

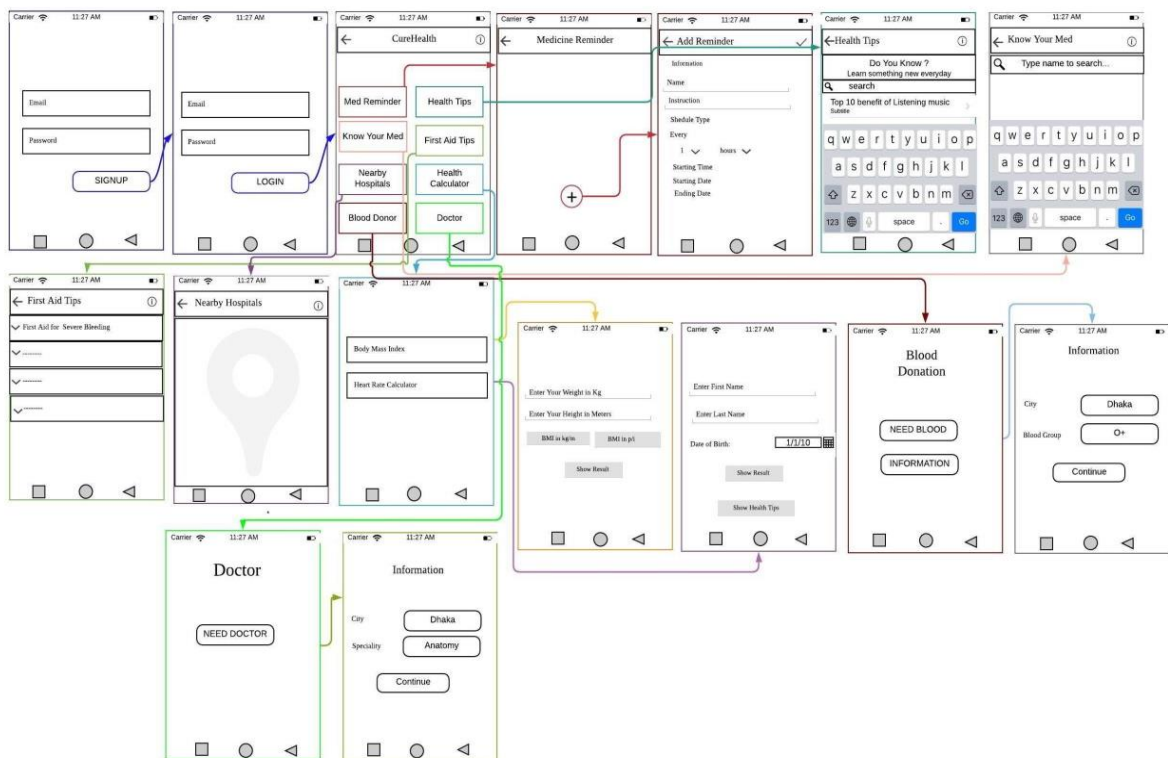


Figure 4.1: Interaction design

## CHAPTER FIVE IMPLEMENTATION

### 5.1 Implementation Requirements

Implementation requirement is important to make a project. Our application is very flexible and any one can understand that how to use this application at a glance. The following implementation requirements are given below:

- Admin to maintain the Application
- User friendly
- Time convenience
- Faster response
- Reliable application

### 5.2 Implementation of Front-end Design

#### 5.2.1 Register Screen:

This is the register page where user will signup to use this application.

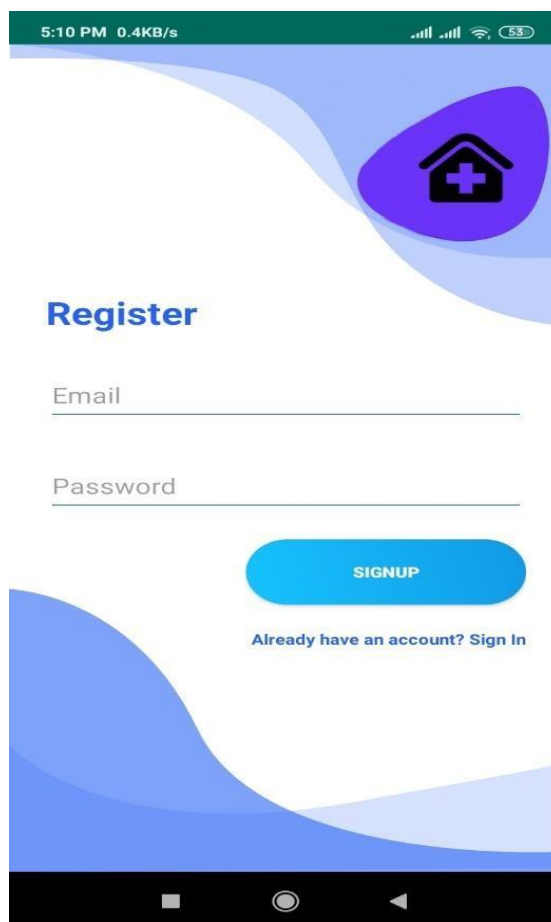


Figure 5.1: Register screen

### 5.2.2 Login Screen:

For clicking Signup from register page this UI will come.

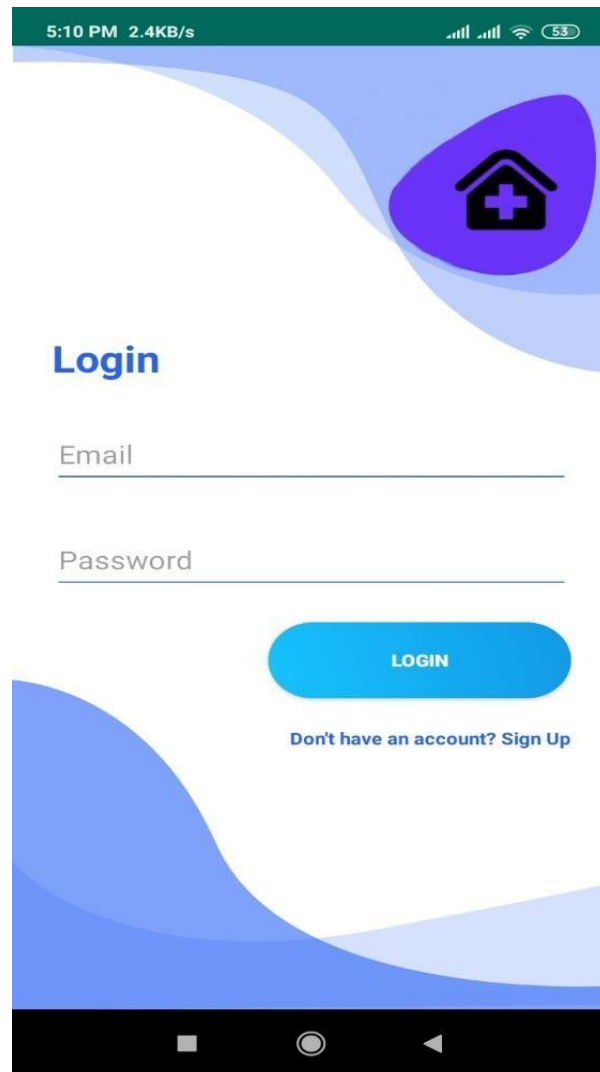


Figure 5.2: Login screen

### 5.2.3 Main Display:

For clicking Login from Log in page this UI will come.

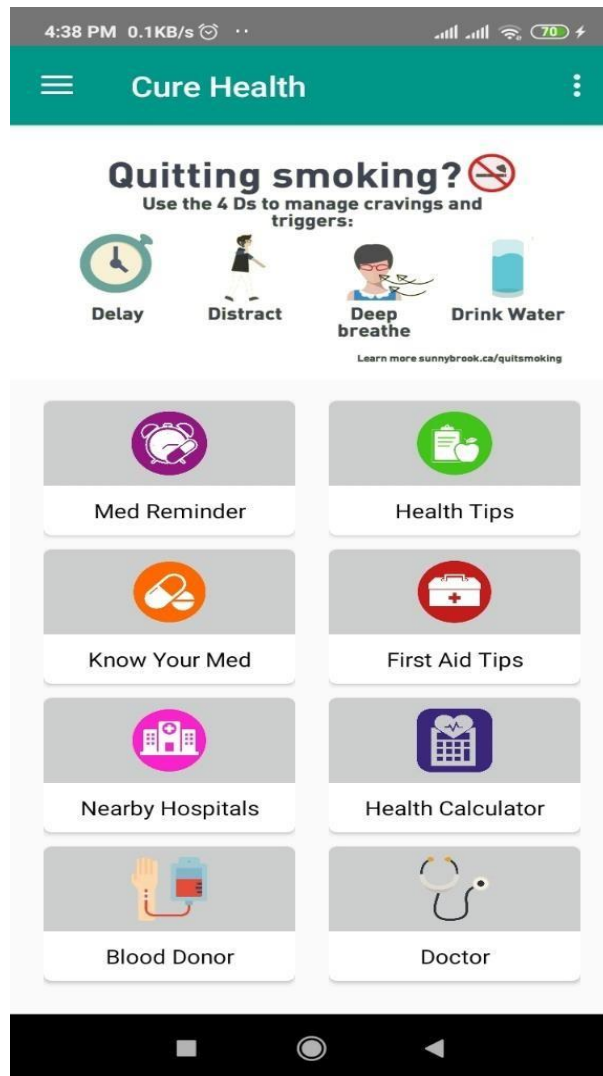


Figure 5.3: Main display

### 5.2.4 Medicine Reminder:

For clicking Med reminder from main page this UI will come.

The screenshot displays the 'Add Reminder' interface on a mobile device. At the top, the status bar shows the time as 5:16 PM, a data speed of 1.0KB/s, and a battery level of 53%. The app's header is blue with a back arrow on the left and a checkmark on the right. The main content area is light gray and contains four distinct sections, each with a red title bar and a light blue border:

- Information:** Contains a text input field for 'Name' with the value 'Napa' and another for 'Instructions' with the value 'after breakfast'.
- Schedule Type:** Shows a dropdown menu set to 'Every' with a value of '1' and the unit 'days'.
- Frequency:** Shows a dropdown menu set to '1 time' and a 'Choose Times' field with the value '09:30'.
- Schedule Type:** Shows two date fields: 'Starting Date' with the value '01/10/2019' and 'Ending Date' with the value '07/10/2019'.

The bottom of the screen shows the standard Android navigation bar with a square, a circle, and a triangle icon.

Figure 5.4: Medicine Reminder

### 5.2.5 Health Tips:

For clicking health tips from main page this UI will come.

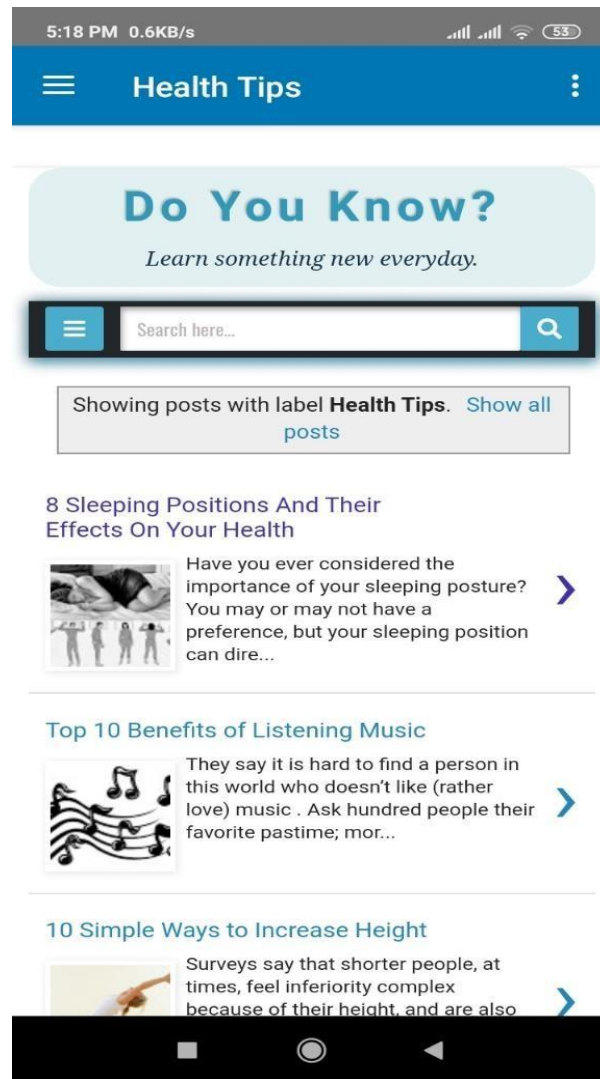


Figure 5.5: Health Tips

### 5.2.6 First Aid Tips:

For clicking First aid tips from main page this UI will come.

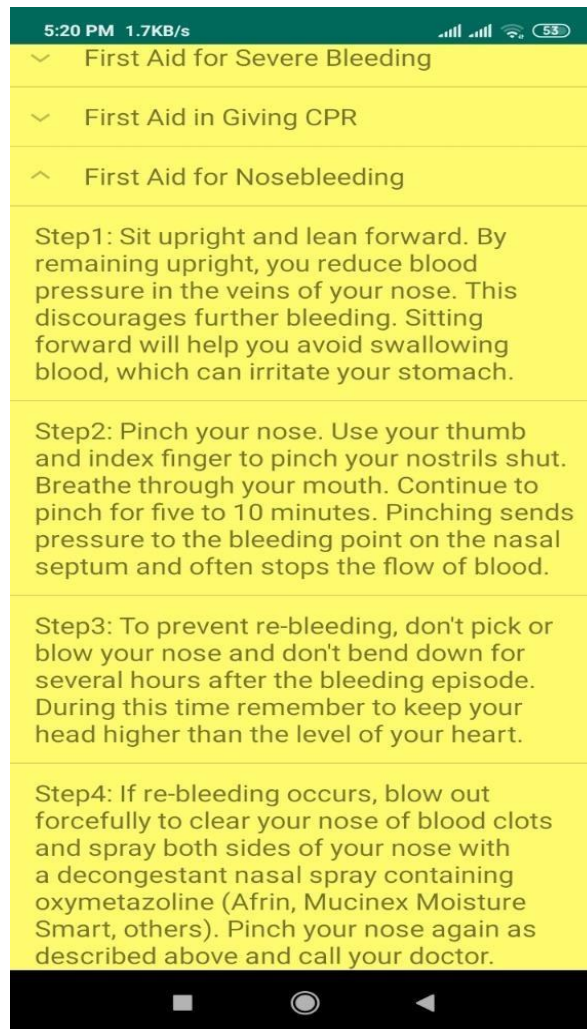


Figure 5.6: First aid tips

### 5.2.7 Nearby Hospitals:

For clicking Nearby hospitals from main page this UI will come.



Figure 5.7: Nearby Hospital



### 5.2.8 Health Calculator:

For clicking Health Calculator from main page this UI will come.

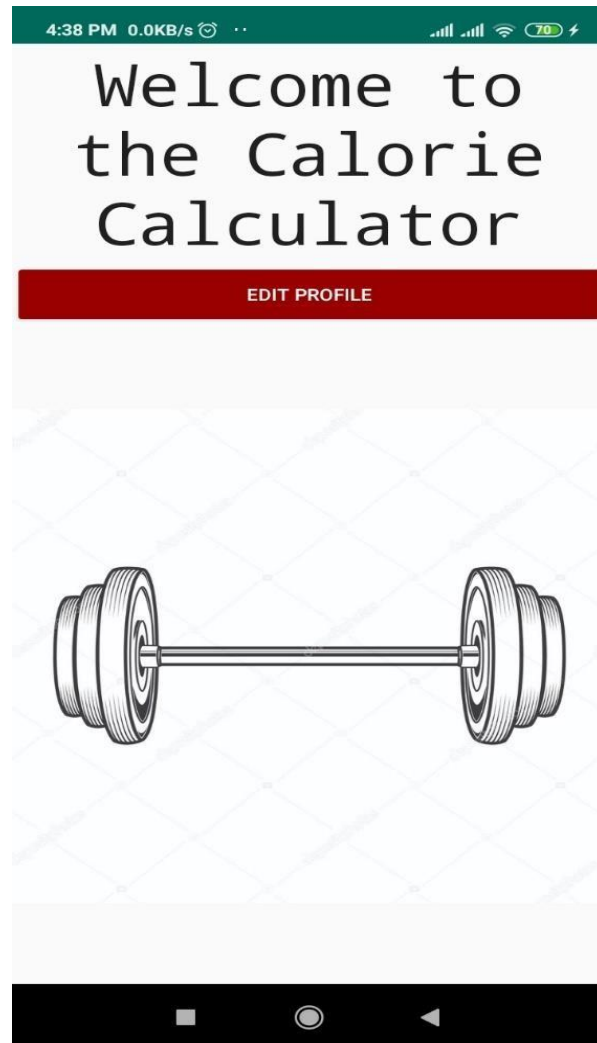


Figure 5.8: Health Calculator

## 5.2.8 Calculator

For clicking Edit profile from main page this UI will come.

5:40 PM 0.0KB/s

Name

Enter Age: \_\_\_\_\_

4'0" \_\_\_\_\_

232lbs \_\_\_\_\_

Enter Active Days Per Week:

0  1-2  3-5  6-7

Gender

ADD ENTRY

VIEW ALL ENTRIES

VIEW HEALTHY ENTRIES

If you do not want to save your data:

FIND DAILY CALORIC INTAKE FIND BODY MASS INDEX

Figure 5.9: Calculator

### 5.2.9 Blood Donor:

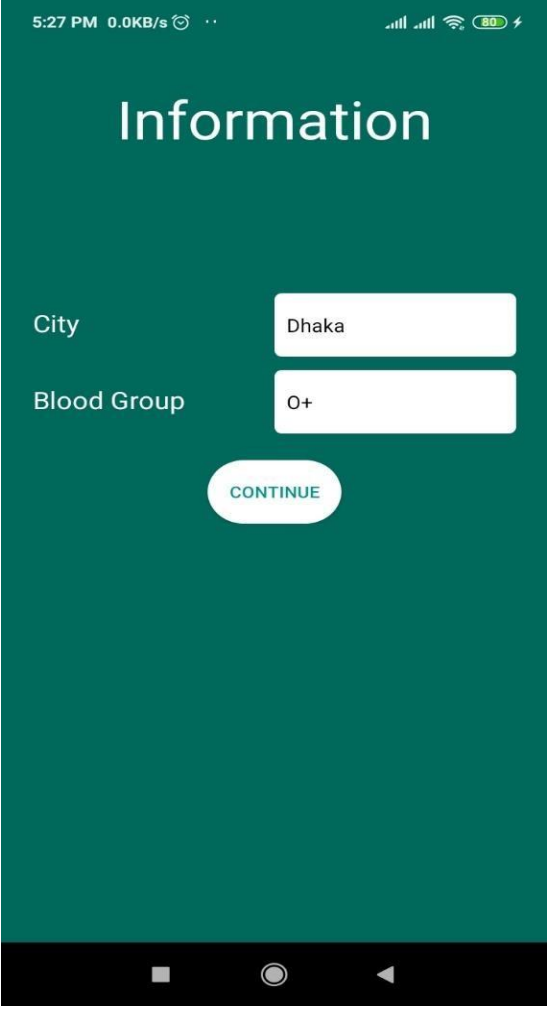
By clicking Blood from main page this UI will come.



Figure 5.10: Blood Donor

### 5.2.9.1 Need Blood

By clicking Need blood from blood from main page this UI will come.



The screenshot displays a mobile application interface with a dark green background. At the top, the status bar shows the time as 5:27 PM, a data speed of 0.0KB/s, and battery level at 80%. The main heading is 'Information' in white text. Below this, there are two input fields: 'City' with the value 'Dhaka' and 'Blood Group' with the value 'O+'. A white 'CONTINUE' button is positioned below the input fields. The bottom of the screen shows the standard Android navigation bar.

Figure 5.11: Need Blood

### 5.2.10 Doctor:

By clicking Doctor from main page this UI will come.

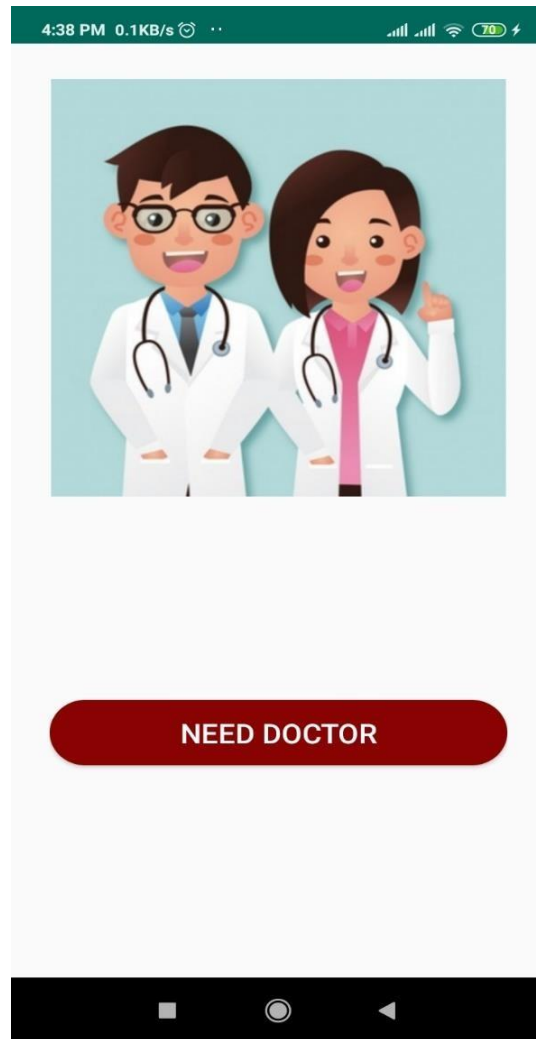


Figure 5.12: Doctor

### 5.2.10.1 Need Doctor:

By clicking Need blood from Blood page this UI will come.

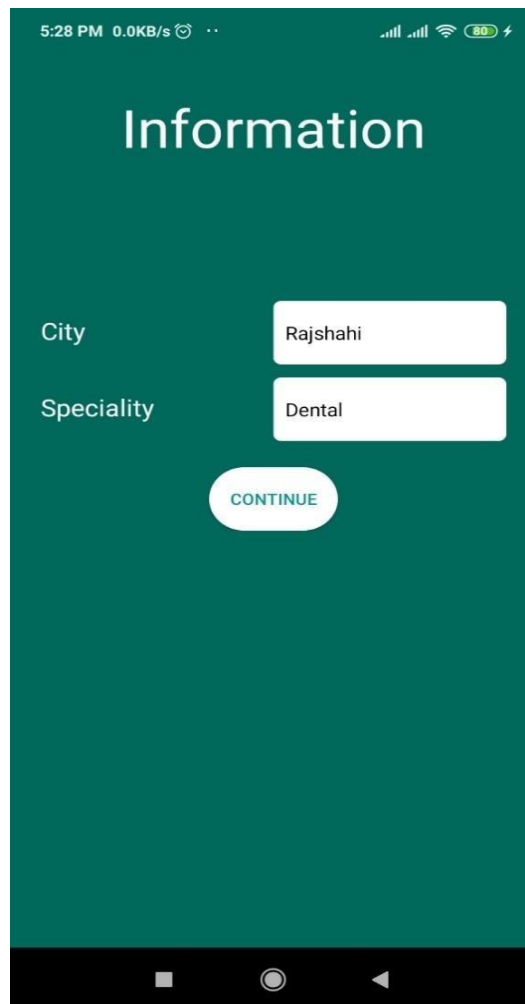


Figure 5.13: Need Doctor

### 5.3 Implementation of Database

Every data needs a database to be stored. In our application we use firebase real-time database where we have User, Admin object like Email and password. In this database there have also Doctor object list like name, city, speciality, hospital, location. Donor have name, city, bloodGroup, contactNumber.

### 5.4 Implementation of Interactions

It's really mattered how an application look like and how easily it's work. Interaction of our application is too simple. The system includes the messages for the user so that the user can understand what is going on, in every step. It will help the user to interact with the application user-friendly. All the necessary options are placed on the home screen, so that can user easily find what they want. And we try our best to user satisfaction.

## **CHAPTER SIX**

### **CONCLUSION AND FUTURE SCOPE**

#### **6.1 Discussion and Conclusion**

Our application is mainly made for the regular people who use android mobile phones. Now almost everyone uses android mobile phone. By this medium we tried to make an application which is not only useful but also be a compulsory product for people. In that purpose we added so many useful features like prescription's alarming, emergency ambulance and blood donors. We have added some important first aids tips also. Location of the nearby hospitals are the one of the most important adding and challenging work of this project. In the future we will try to improve our application more lite with extra features. This application will help you to choose the right foods with the conditions of your health.

#### **6.2 Scope for Further Development**

We are working on it and there are a few of scopes to development in this Application like

- We can use video conference with doctors and prescribe from doctor.
- We can add taking foods with the health condition. That's why, we can always maintain our protein and calories level.
- An emergency contacts are adding for emergency situation and notified nearest hospital using GPS.

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## APPENDICES

This is use for firebase authentication.

```
firebaseAuth = FirebaseAuth.getInstance();  
NavigationView navigationView = (NavigationView) findViewById(R.id.nav_view);
```

This is for setting doctor information.

```
public Doctor(String name, String contactNumber, String city, String hospital, String speciality) {  
    this.name = name;  
    this.contactNumber = contactNumber;  
    this.city = city;  
    this.hospital = hospital;  
    this.speciality = speciality;  
}  
  
public Doctor() {  
}  
  
public String getName() { return name; }  
  
public void setName(String name) { this.name = name; }  
  
public String getContactNumber() { return contactNumber; }  
  
public void setContactNumber(String contactNumber) { this.contactNumber = contactNumber; }  
  
public String getCity() { return city; }  
  
public void setCity(String city) { this.city = city; }  
  
public String getHospital() { return hospital; }  
  
public void setHospital(String hospital) { this.hospital = hospital; }  
  
public String getSpeciality() { return speciality; }
```

This is for setting Donor information.

```
public Donor(String name, String contactNumber, String bloodGroup, String city) {
    this.name = name;
    this.contactNumber = contactNumber;
    this.bloodGroup = bloodGroup;
    this.city = city;
}

public String getName() { return name; }

public void setName(String name) { this.name = name; }

public String getContactNumber() { return contactNumber; }

public void setContactNumber(String contactNumber) { this.contactNumber = contactNumber; }

public String getCity() { return city; }

public void setCity(String city) { this.city = city; }

public String getBloodGroup() { return bloodGroup; }

public void setBloodGroup(String bloodGroup) { this.bloodGroup = bloodGroup; }
```

User sign up process.

```
//creating a new user
firebaseAuth.createUserWithEmailAndPassword(email, password)
    .addOnCompleteListener( activity: this, (task) -> {
        //checking if success
        if(task.isSuccessful()){
            finish();
            startActivity(new Intent(getApplicationContext(), MainActivity.class));
        }else{
            //display some message here
            Toast.makeText( context: SignupActivity.this, text: "Registration Error", Toast.LENGTH_LONG).show();
        }
        progressDialog.dismiss();
    });
```