Development of Android Application

"Medical Information Guide"

BY

K.M.Waliullah
ID: 161-15-981

Md.Alamgir Hossain
ID: 161-15-1016

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

Supervised By
Amatul Bushra Akhi
Lecturer
Department of CSE
Daffodil International University

Co-Supervised By
Farzana Akter
Senior Lecturer
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Project titled **Development of Android Application "Medical Information Guide"**, submitted by K.M.Waliullah and Md.Alamgir Hossain to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 10/12/2019.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Amatul Bushra Akhi, 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.

Supervised by:

_____

Amatul Bushra Akhi
Lecturer
Department of CSE
Daffodil International University

Co-Supervised by:

_____

Farzana Akter
Senior Lecturer
Department of CSE
Daffodil International University

Submitted by:

_____

K.M.Waliullah
ID: 161-15-981
Department of CSE
Daffodil International University

_____

Md.Alamgir Hossain
ID: 161-15-1016
Department of CSE
Daffodil International University

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At last, we should recognize with due regard the steady help and patients of our parents.

ABSTRACT

Medical is the important part of our life. But when we got sick, sometimes we cannot get proper treatment in medical sector. So, we want to build a mobile application that have the solution of this problem. Development of Android Application **"Medical Information Guide"** is an Android application where we cover an overall solution of medical problem. When we research about our project then we find some medical related mobile and web-based applications but they developed small part of medical sector. Some kinds of medical related android application and web applications are: "BdHealthSolution, Bd Doctor Assistant, E-Medicare , Medicare Plus". Even now they cannot give a popper solution for medical problem.

So that, We wants to development of Android Application "Medical Information Guide". Here we provide a proper solution of medical related problem. When a person getting Sick, for there good wealth they have to take different steps and they can easily get all steps by using our mobile applications and find their solutions.

Patients can easily find out the solution of their disease easily from this application. User can easily find this disease specialist doctors, Information and by nearby they can easily find their nearest doctor, hospital and emergency services (Ambulance, Blood Bank, Emergency Doctor). Otherwise the important features like as home care, medical reminder, appointment list, prescription list, pharmacy, and other health tips.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

In this modern world human life has become very easy by the use of modern technology. But still there are some places in our country which are not blessed by modern technologies.[1] Such as Medical Sector. Medical is one of our basic needs. When we get sick then we can not get a popper solution by using this technology in medical sector. Nowadays technology are growing up in medical sector. Many peoples developed medical related android and web-based application, that's why patients can easily get treatment. But they developed small part of medical sector. Some kinds of medical related android apps and web applications are,**"BdHealthSolution, Bd Doctor Assistant , E-Medicare , Medicare Plus".** Even now they can not give a popper solution for medical problem.

So that , We wants to Development of Android Application **"Medical Information Guide".** Here we provide a proper solution of medical related problem. When a person getting Sick, for there good wealth they have to take different steps and they can easily get all steps by using our mobile applications.

1.2 Motivation

Recently my friend was ill and we went with him to the hospital and we faces many problems. Such as traffic jam, buy ticket, doctor appointment, time waste, log time waiting for treatment etc. then we research about how to reduces medical problems and we find out some mobile and web application. But those application did not get overall solution of medical problem. That's why we want build a mobile application to reduce the medical harassment.

1.3 Objectives

The main objective of our project is to change the medical eco-system. For this purpose, we want to make an android application to make their life easy. here is some main objective of our project:

(i) **Easily Treatment: "Medical Information Guide"** will ensure easily treatment system in medical sector. By using this application patient can easily find out their nearest doctor, hospital, ambulance service, pharmacy, health complex etc.

(ii) **Reduce the human hassle:** Traffic -jam is one of the main problems of our county. For the reason of traffic- jam sometimes patient can not go to the hospital in proper time and also patient is died before reached to the hospital. So, wants to reduce the human hassle. In the emergency situation patient can take on doctor's and get proper treatment.

(iii) **Easily communicate doctors and Patients:** Patients can contact with doctor's by Audio or Video call conference at any place.

(iv) **Our benefit:** To get some charges from popular hospital and Doctors for our business purpose.

1.4 Expected Outcome

Users can access the system by signup with valid phone number or email and password. After logging in users can easily access all the functionality of this application. They can go to any features as like as the want. When a user click to doctor option then they can access to the doctor page and they find their desired doctor by filter or nearby option. In the same process user can access to other features like as, Doctors, Hospitals, Ambulance. By online appointment user can appointment to the hospital at any place. The user does not have to wait for a huge queue for a single token and reduce harassment. Patients will be able to find-out the Doctors, Hospitals, Ambulance and Information. Find all Government , Semi-government , all Diagnostic Center. Reduce Time and cost. User can easily find available Ambulance, Nearest hospital. User can get appointment using this application. User can direct contact with doctor by audio/video call. Find best rated/ Popular Doctor.

1.5 Report Layout

Chapter 1: Introduction

In this section we have examined about the inspiration, destinations and the normal result of the task. Later looked after the report format.

Chapter 2: Background

We talk about the foundation conditions of our task. We likewise discuss the related work, correlation with other applicant frameworks, the extent of the issue and difficulties of the venture.

Chapter 3: Requirement Specification

This part is about the prerequisites, business process modeling, requirement collection and analysis, use case modeling and description, logical data model, design requirements.

Chapter 4: Design Specification

In this section every one planned the project. Front-end configuration, back-end plan, connection outline and UX and the implementation Requirements.

Chapter 5: Implementation and Testing

This part contains the execution of database, front-end plans, connections and the test aftereffects of the task.

Chapter 6: Conclusion and Future Scope

We examined about the conclusion and the extension for advance improvements which essentially infer about the project.

CHAPTER 2
BACKGROUND

2.1 Introduction

Before starting to make this project "Medical Information Guide" we did a deep study and research about its background. After complete the research we find out many medical related application and website. They solved small part of medical problem but they did not give a overall solution of medical problems. Some applications are: **"BdHealthSolution, BdDoctorAssistant, E-Medicare, MedicarePlus".** So, we wants to make proper solution medical problem.

2.2 Related Works

We find some medical related mobile and web application in google play store and website. Their applications have some similarities as like as our project.

i. **BdHealthSolution:** In this application they can contact with doctor by SMS and take their solutions. [1]. [2]
ii. **BdDoctorAssistant:** Their main feature is patient appointment to the hospital. An application that can help a patient and their family to avoid the sufferings and valuable times we implemented our idea in an android application that is much more easier, user friendly and less time consuming.
iii. **E-Medicare:** It a web -based application. They make platform to connect with doctor's and patient via audio/ Video call conference.
iv. **MedicarePlus:** They make an application that have some medical procedure like as managing appointment , Saving Prescriptions, test documents, Daily alarm notification, medicine reminder.

2.3 Comparative Studies

To complete this project, we research about medical related mobile application and web-based application. but most of the applications are not give overall medial medical solutions. But in our applications, we provide all the solution of medical problem. other applications features are:

i. Send SMS to the doctor and get medical solution.
ii. Patient appointment.
iii. Contact with doctor's via audio/ Video call conference.
iv. Managing appointment, Saving Prescriptions, test documents, Daily alarm notification, medicine reminder.

But our features are;

i. **Doctor:** User can easily find nearest doctors. Otherwise they can find doctors by filter option.

ii. **Hospital:** In the hospital section we can find out, 3 types of hospitals: Government hospital, Semi -Government hospital and private hospitals. User can easily find nearest hospital and they can find hospital by filter option.

iii. **Health Complex:** Patient can known their problem by taking a photo, text(sms), Voice Record.

iv. **Emergency:** There are three service in this emergency section:
   a) Ambulance Service (AC, Non-AC, Montuary)
   b) Emergency Doctor service (Doctor can visit patients home and treatment patients by extra charge)
   c) Blood Bank Service (User can find nearest blood bank by search and they can easily contact with them)

v. **Blog:** Doctor create helpful blog for people's awareness .By read blog people can gain knowledge about current medical Problem solutions (Like : Recently Dangu problem is a big problem in our country. So they can easily learn what should do / don't by this situations, what is the main causes of dangu and what will be the solutions)

vi. **Health Tips:** User can gain knowledge about many health tips and there have primary treatment solutions. (Like : What should / shouldn't a patients of Diabetes, What should we do if we wants to wealth our health, What should do a kidney patients etc…)

vii. **Pharmacy:** User can get nearest pharmacy and contact with them (Sometimes we can not find our needed medicines from some pharmacy . So, it hampered our valuable time. That's why we create a pharmacy section , where user can easily find all nearest pharmacy list and they can easily contact with any pharmacist and they can easily know where they can get their needed medicines)

viii. **Prescriptions:** Patients can easily collect their all prescriptions in this prescriptions section (They just need to take a picture of prescription and upload it and fill some basic information like : Prescripton name, date and doctor/hospital name)Patients can get all prescriptions list in this section , that will be very helpful when they go to the doctor (If he/she visit a doctor after 5 years they can easily find their prescriptions in there)

ix. **Medicine Remainder:** Sometimes we forgot to take our medicine at a perfect time . So, here is a option where a patient can easily set their medicine taking time like morning, noon, evening and night with the drug name and set reminder time. That's why they don't worry about their medicine taken time. After set the reminder apps will automatically notify them by alarm.

x. **Appointment List:** Patients can easily get an appointment by using this app. They can see the available doctor for appointment. First of all, patients can apply to their selected doctor for appointment. Then the doctor can see the appointment request and he/she (doctor) can accept / cancel this request. If the doctor accepts this then they can set appointment time for patients.

xi. **Home Care:** For a emergency situation a patients have not ability to go hospital. So, in this home care option patients can hire a doctor for their treatment. But doctor get extra payment for this service.

xii. **Disease with drug:** In this section there have some medical problem solutions. For example : The drugs of Fever – Napa / Paracetamol … with the drug taken time.

2.4 **Scope of the Problem**

We provide nearest doctor, ambulance, hospital by google map but for this we have to pay lots of money. we have to collect all doctors, hospitals information and for this reason we need huge man power. We have to ensure that doctor will be go to the patient home by home care that is one of our application parts.

2.3 Challenges

To implement this application, we need huge amount of money and for the reason of huge amount data we have to purchased server for store database. For the huge amount of data sometimes server will be down. In this case patient cannot connect to the doctor or any kind of services

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Business Process Modeling

Business process modeling is the investigative portrayal or graphical wireframe of a business forms. It has incorporated some procedure, starts and image, condition as like a stream outline. In our business procedure model, we show that a procedure is finished by at any rate two clients. Client must enroll and he/she can login to finish the procedure.

In our project, business process modeling has two user (1. Patient 2. Doctor). Patient can access this after login or signup and then they can easily access all the functionality. And doctor can also access this after login or signup and then they can easily access all the functionality.

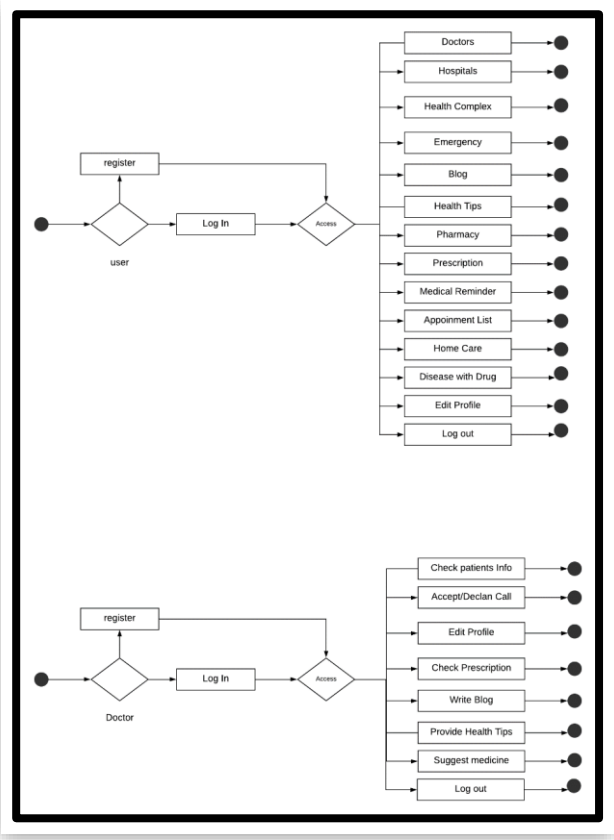


Figure 3.1.1: Business Process Model

3.2 Requirement Collection and Analysis

Collecting and analyzing the requirements is a very important term for developing a system or any type of android application. Our application's target users are doctors and patients. So, it's very important to collect the patient's and doctors requirements. The requirement collection of our project is given below:

i. To use the application, registration must be required for both user and doctors.
ii. Users can be able to sign up through Google Account or Facebook Account.
iii. Must need to verify users email address.
iv. Basic information must be provided in order to use the application.
v. Users will be able to communicate through video or audio call.

Tools requirements to develop the projects:

vi. Android Studio IDE to develop the project.
vii. We use flutter SDK and dart programming language .
viii. Firebase database.
ix. Android devices to testing our application.

3.3 Use Case Modeling and Description

A Use Case is a discrete unit of user (human or machine) interaction with the system. Use Cases are typically 'actors ' related. An actor is a human or machine entity perform meaningful work interacting with the system. In Figure 1.1, here is our Use Case Model

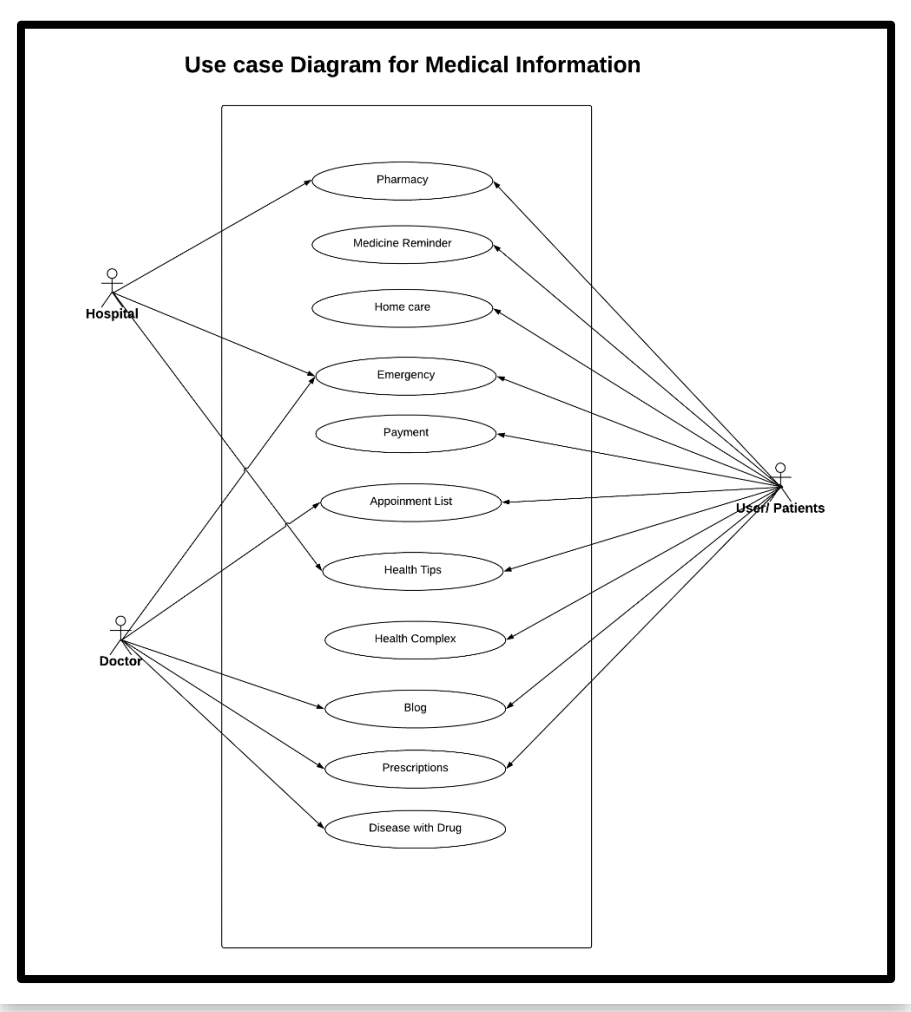


Figure 3.3.1 : Use case Diagram

3.4 Design Requirements

At first user have to login or signup to the system by required their basic information After complete this step user can access to the home page and all features. By using this application user can contact with doctors and get medial services and gain knowledge by reading blog or health tips.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

Front-end design is User Interface design (UI). It is representing the overall visual design of any kinds of projects. UI design Attract user for use the application. So, it is very important part of any kind of project. A good UI is very attractive for the user and UI should very simple and clean that's why user can easily understand the overall idea . We are tried our best to design a useful user interface for the user and make our application smoother.

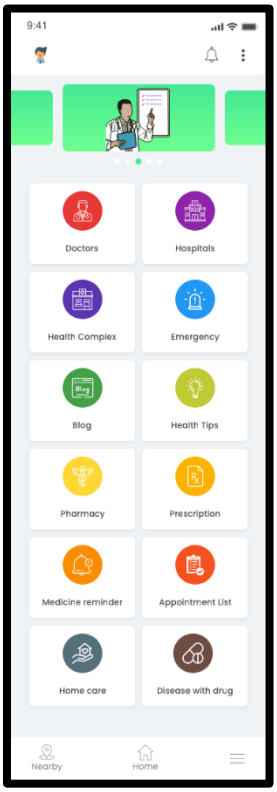


Figure 4.1.1 : Home Page

In this Home page user can access all the functionality of this application.

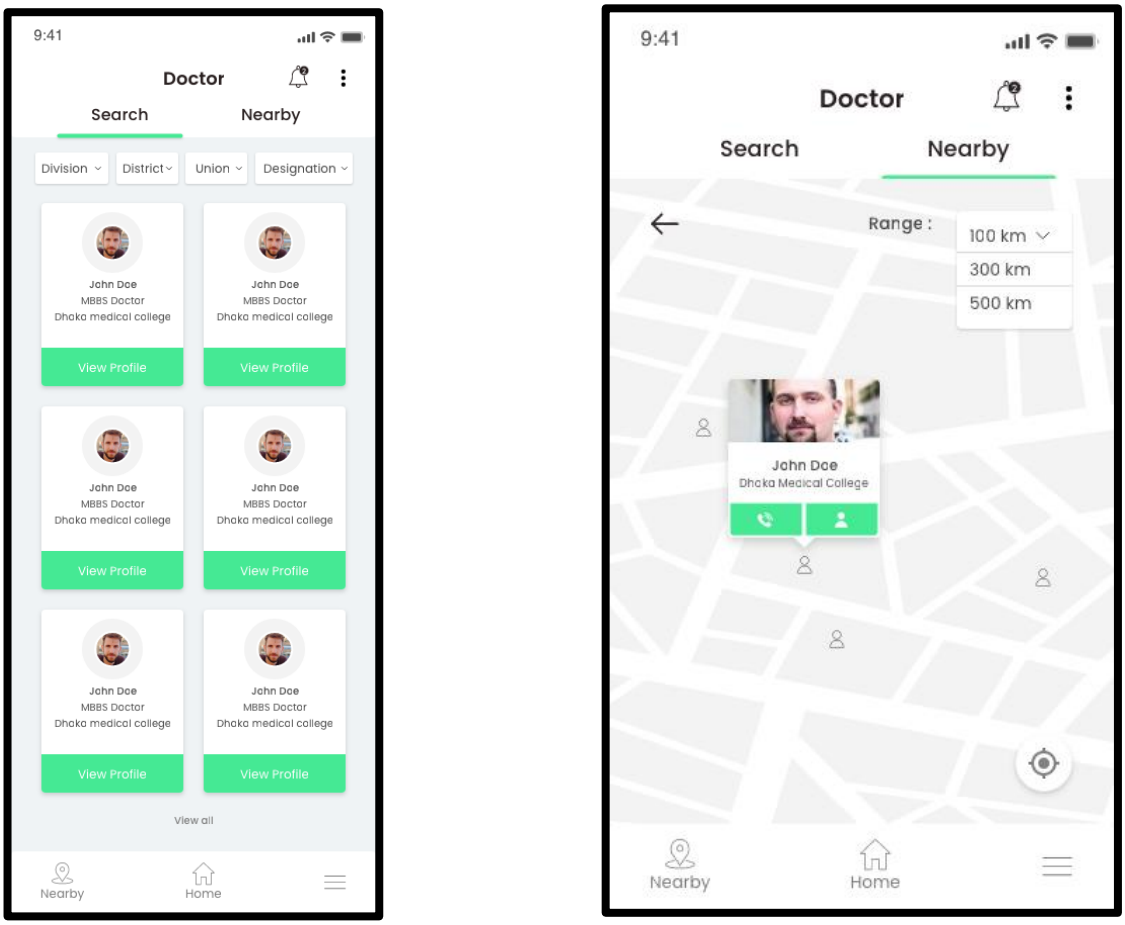


Figure 4.1.2 & 4.1.3 : Doctor Page

User can find out doctor by filter option or search nearby and when they click on view details then they go to the doctor's profile and they can easily call to the doctor or send appointment.

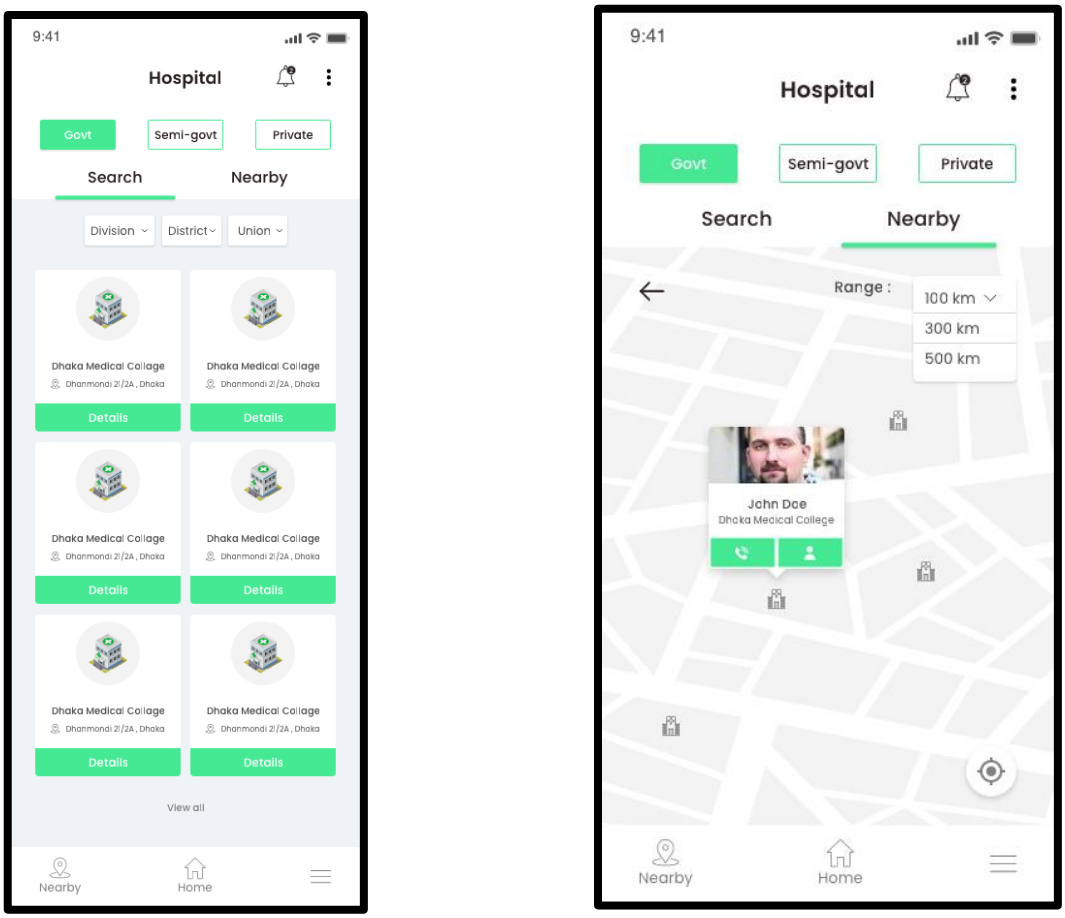
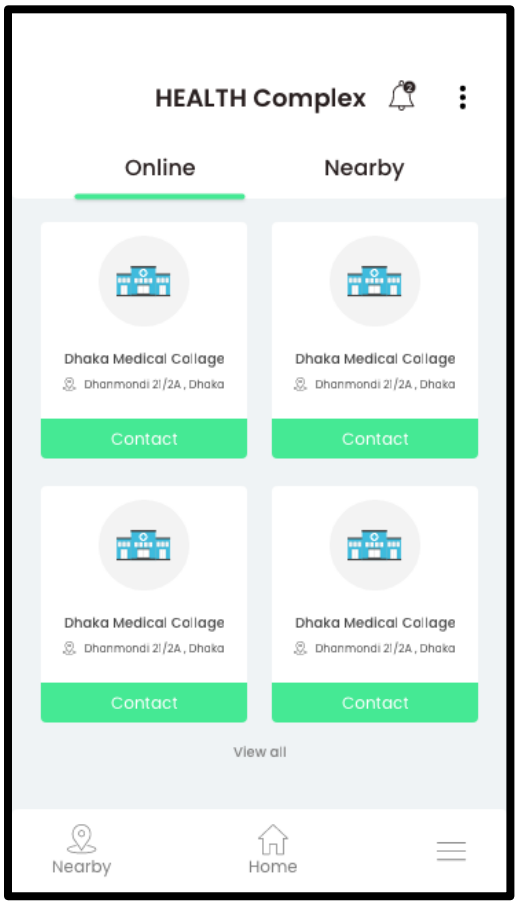


Figure 4.1.4 & 4.1.5: Hospital Page

There are three types of hospital: Government Hospital, Semi-Government Hospital, Private Hospital. User can access all of this hospitals by using this application and also find out hospital by filter option or search nearby.



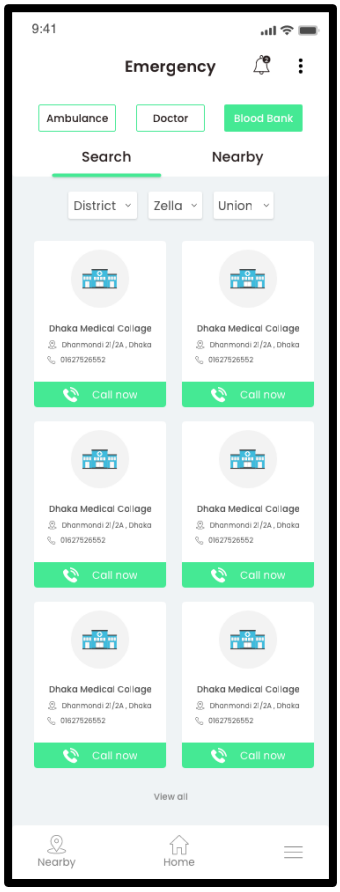
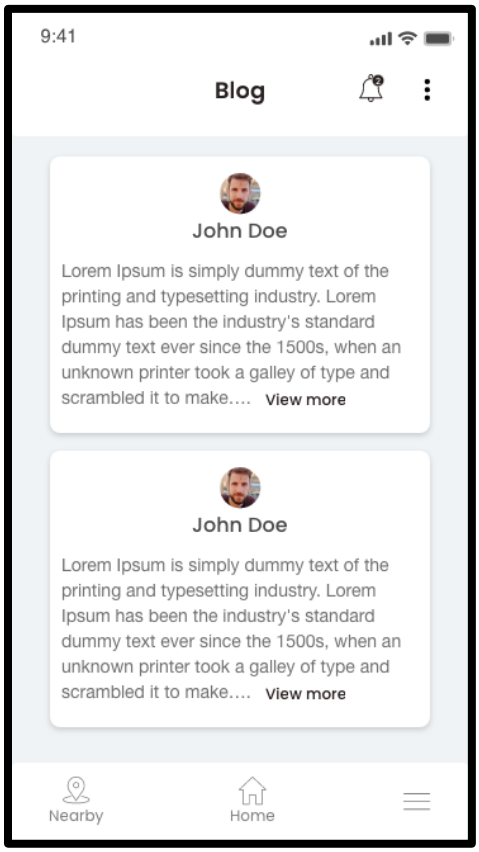


Figure 4.1.6 & 4.1.7: Health complex and emergency Page

Health Complex has a function for user and that is they can easily contact with doctor by online and discuss with their problem by their voice message / Text / Images. So that, they can easily explain their problems to the doctor and get the proper solutions.

There are three service in this emergency section. Ambulance Service (AC, Non-AC, Mantuary) Emergency Doctor service (Doctor can visit patients home and treatment patients by extra charge) .Blood Bank Service (User can find nearest blood bank by search and they can easily contact with them)



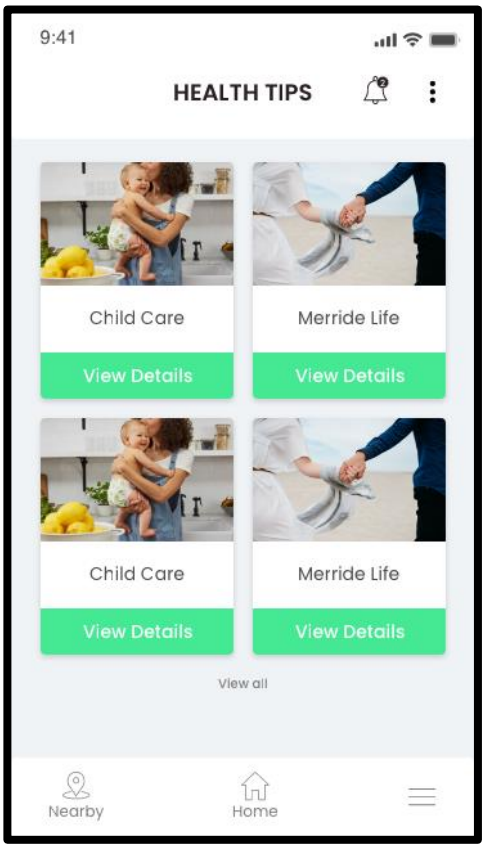
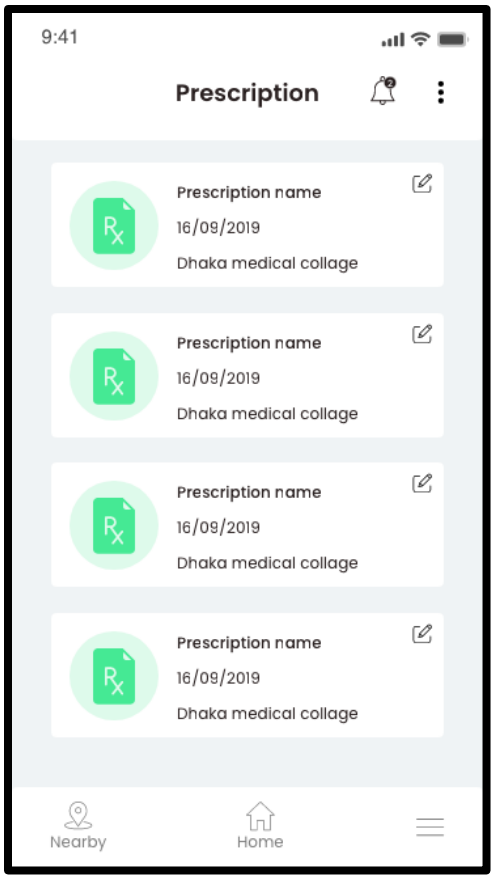


Figure 4.1.9 & 4.1.10: Blog and Health tips Page

Doctor create helpful blog for people's awareness. By read blog people can gain knowledge about current medical Problem solutions (Like : Recently Dangu problem is a big problem in our country. So they can easily learn what should do / don't by this situations, what is the main causes of dangu and what will be the solutions)

User can gain knowledge about many health tips and there have primary treatment solutions. (Like : What should / shouldn't a patients of Diabetes, What should we do if we wants to wealth our health, What should do a kidney patients etc…)



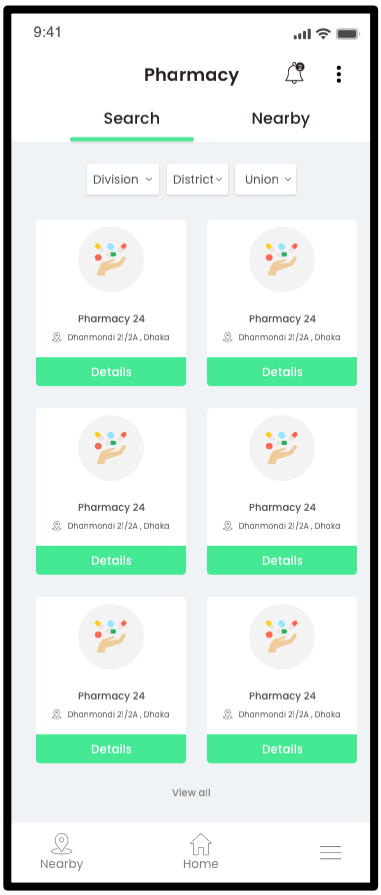
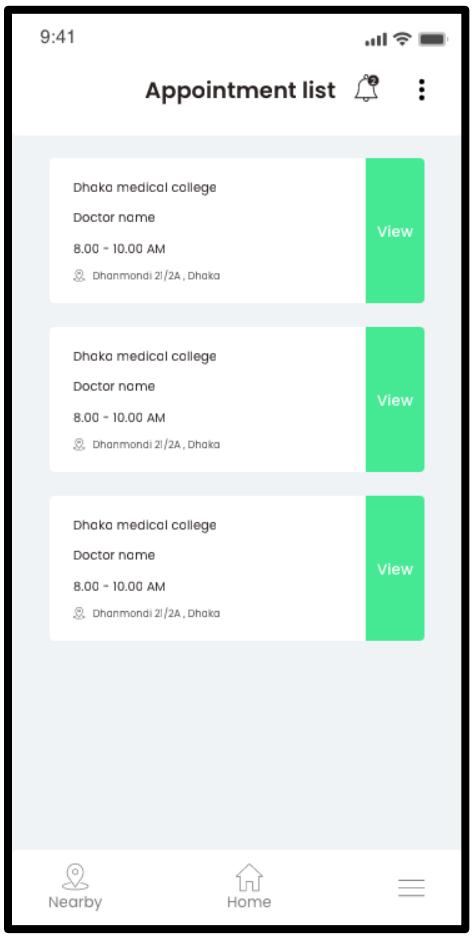


Figure 4.1.11 & 4.1.12: Prescription and Pharmacy Page

User can get nearest pharmacy and contact with them (Sometimes we can not find our needed medicines from some pharmacy . So, it hampered our valuable time. That's why we create a pharmacy section , where user can easily find all nearest pharmacy list and they can easily contact with any pharmacist and they can easily know where they can get their needed medicines)

Patients can easily collect their all prescriptions in this prescriptions section (They just need to take a picture of prescription and upload it and fill some basic information like : Prescripton name, date and doctor/hospital name)

Patients can get all prescriptions list in this section , that will be very helpful when they go to the doctor (If he/she visit a doctor after 5 years they can easily find their prescriptions in there)



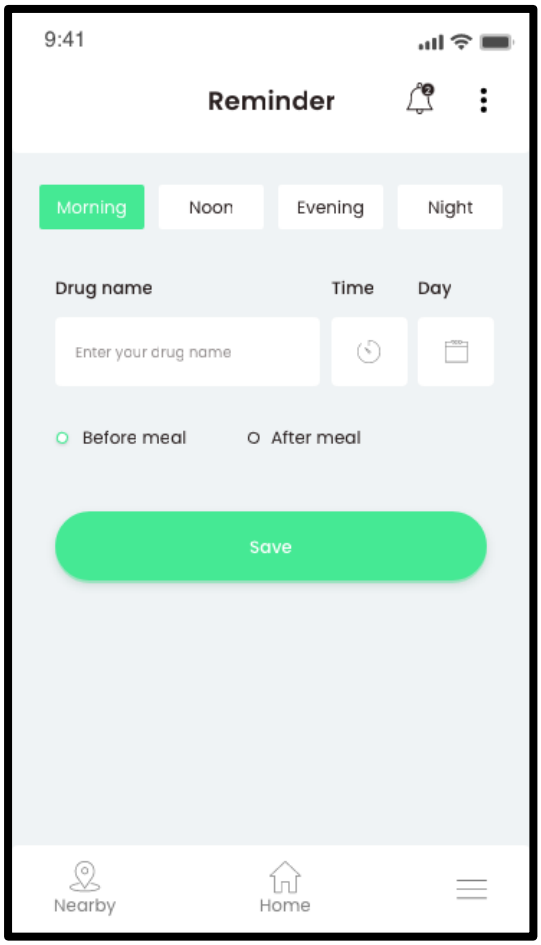
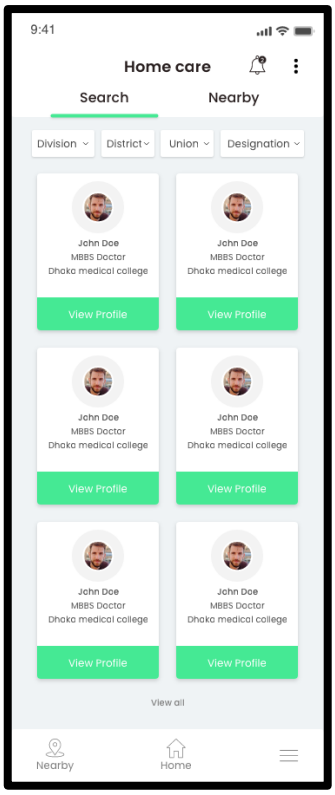


Figure 4.1.13 & 4.1.14: Appointment and Reminder Page

Patients can easily get an appointment by using this app. They can see the available doctor for appointment. First of all, patients can apply to their selected doctor for appointment. Then the doctor can see the appointment request and he/she (doctor) can accept / cancel this request. If the doctor accepts this then they can set appointment time for patients.

Sometimes we forgot to take our medicine at a perfect time . So, here is a option where a patient can easily set their medicine taking time like morning, noon, evening and night with the drug name and set reminder time. That's why they don't worry about their medicine taken time. After set the reminder apps will automatically notify them by alarm.



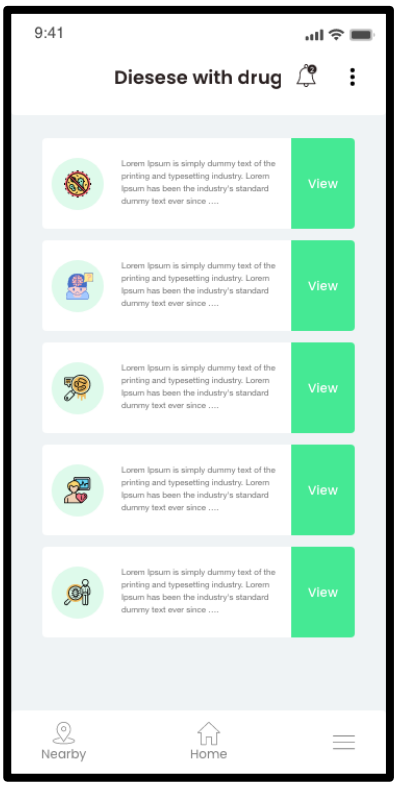


Figure 4.1.15 & 4.1.16: Home care and Dieses with drug Page

For a emergency situation a patients have not ability to go hospital. So, in this home care option patients can hire a doctor for their treatment. But doctor get extra payment for this service.

In this section there have some medical problem solutions. For example : The drugs of Fever – Napa / Paracetamol … with the drug taken time.

4.2 Back-end Design

Back end can be interfaced by software engineers. No one but software engineers can be see and alter the information. Client can't communicate with the back-end structure. For our venture reason, we have to store a great deal of information. In this way, we make database for our undertaking. We picked "Firebase" for database. Firebase is basically a constant database and simple to utilize. We utilize the confirmation, constant database and capacity administration from the firebase administrations. Firebase produce a special incentive for every client. Also, we spared all the client's information under the client's one of a kind key. For putting away pictures, we use firebase stockpiling administration.

4.3 Interaction Design and UX

Interaction design describes the relationship between the application and the client since it is just the manner in which a structure works together and a customer. Client Experience (UX) is imperative to make any applications or site, since we can comprehend by client experience that what client needs/what will be appropriate for them .

We attempt our best to structure a clear and uncomplicated lightweight application for the best User Experience (UX) system. Our application is unreasonably fundamental for a superior client experience, warmth and executing. To make our application smoother and quicker, we use part. We anticipated that the client should be guaranteed and supplemented by our structure information.

4.4 Implementation Requirements

We utilize various types of devices to execute our undertaking. This gives us a ton of improvement highlight. To build up our android venture, we use android studio. Android Studio is currently the most prevalent IDE for Android advancement. We use dart as the programming language and Flutter SDK. Android Studio is an extraordinary android improvement IDE. It gives us increasingly formative highlights. We can compose code in android studio effectively and rapidly. Google is creating Android Studio and they do it as

an open source. In this way, utilizing it makes it simpler. We're utilizing the most recent form of Android 3.5.2. What's more, Our API level for the task is API-28. For the testing reason, we could utilize emulator or any android telephone as genuine gadget. [3]We can utilize emulator to get diverse kind of android gadgets enhance. Be that as it may, here, for testing, we utilize some genuine gadgets. Some of the time in various gadgets, the application demonstrations in an unexpected way. In this way, it is imperative to test our application in various gadgets. Here, we utilize some android reliance that makes to build up our application simpler.

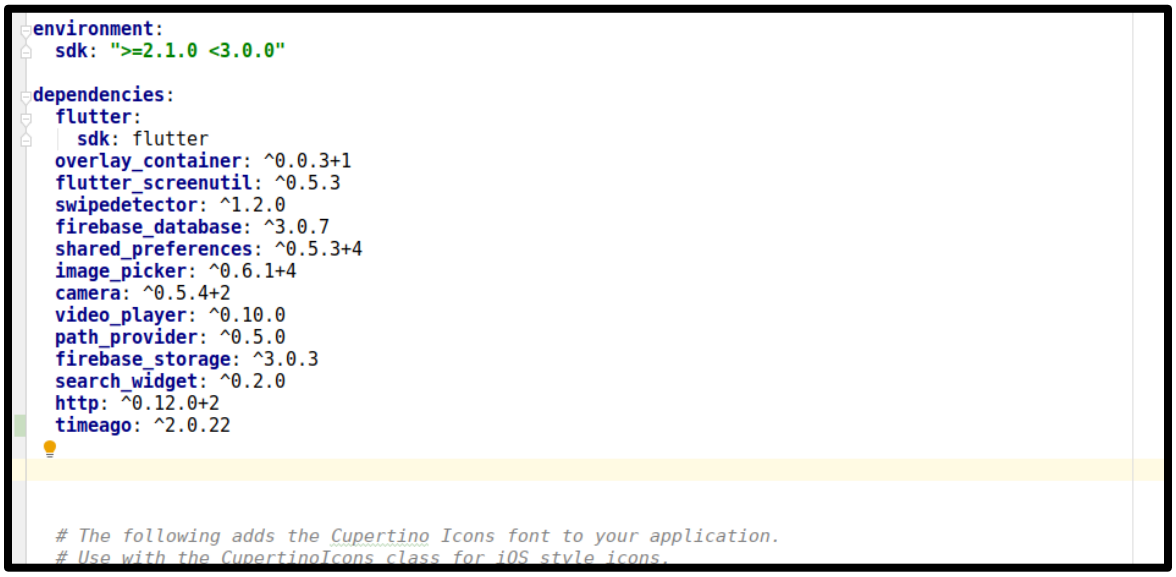


Figure 4.4.1: Dependency.

CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Database

In this area, we portray our task's database. A database is an efficient assortment of information. Database bolster stockpiling and control of information. We use firebase for our undertaking database. Firebase is a constant database. Information put away as JSON in the firebase database and synchronized to each associated customer continuously. At the point when we manufacture cross stage applications with iOS, Android, and JavaScript SDKs, the entirety of just for our customers share one case of the constant database and get refreshes with the most recent information consequently.

In our database there are eight substance in our database. Which are associated with each other with coordinated or numerous to numerous or distinctive sort of relationship. This relationship makes our application to work adequately. In our task one client can include many post. One post has numerous warnings additionally numerous reactions yet one client can do one reaction. Numerous client get numerous warnings. One client can pursue numerous client. One client has many talk list part and one client can many visit choice.

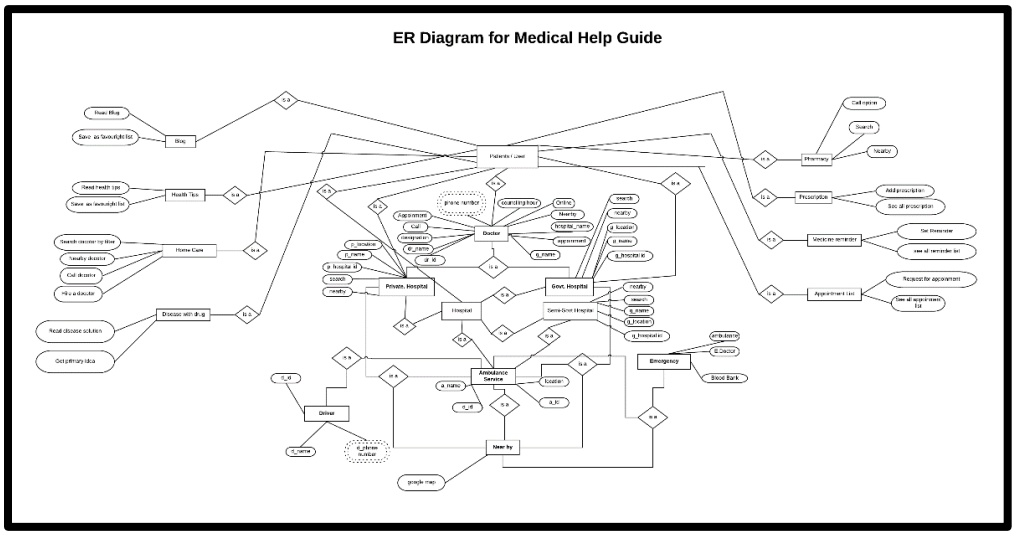


Figure 5.1.1: ER Diagram

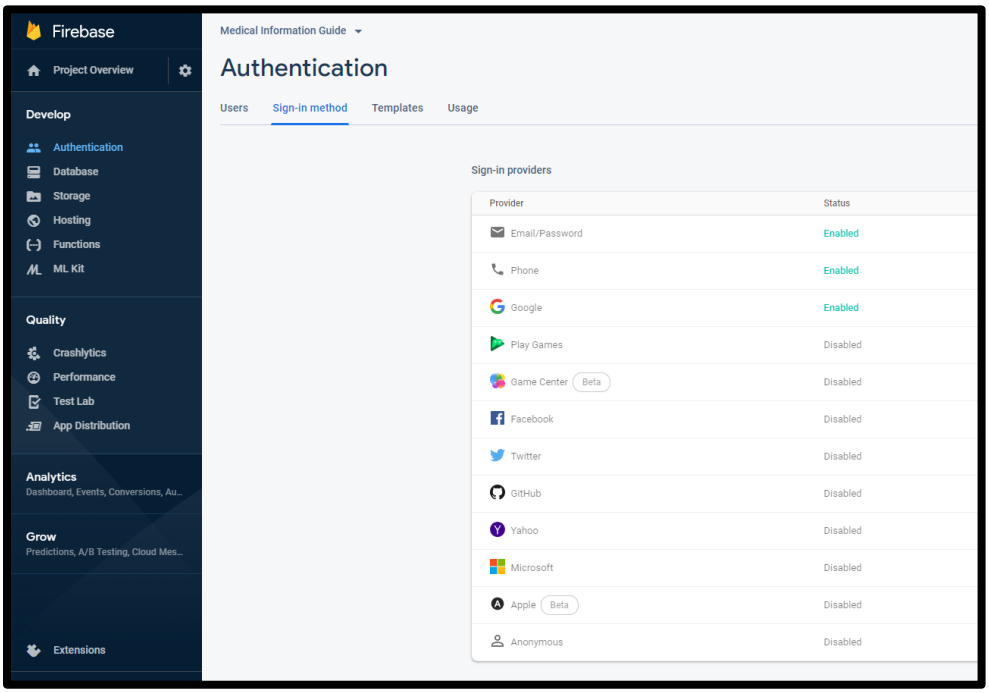


Figure 5.1.2: Firebase Sign-up providers.

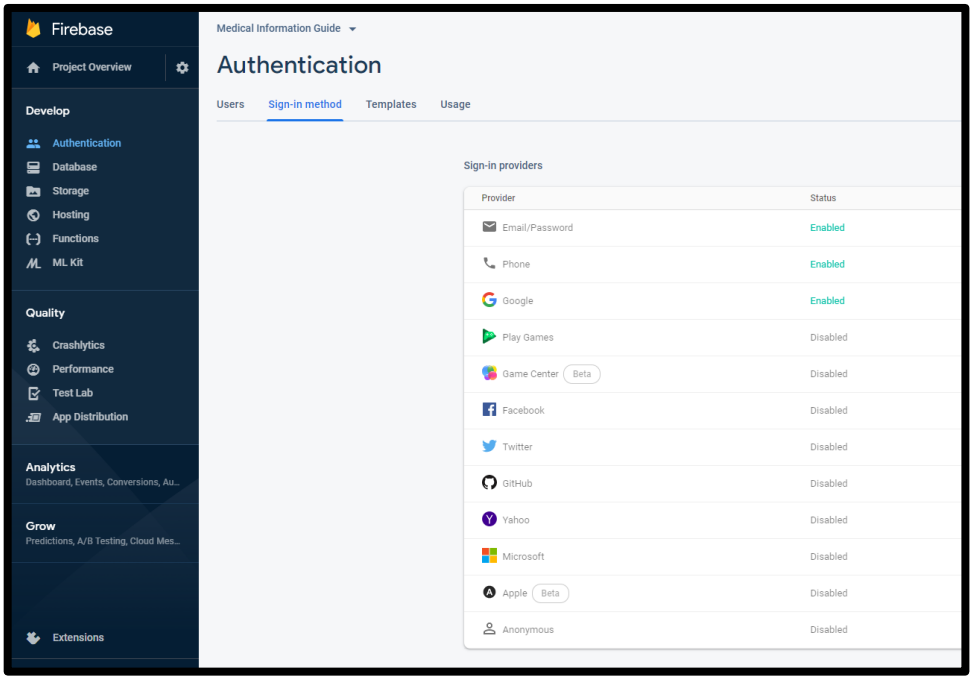


Figure 5.1.3: Data from Firebase Realtime database.

5.2 Implementation of Front-end design

User mainly interacts with the front-end design. So, it is important to make the front-end design attractive. We are trying to make our front-end design user-friendly so that the application can be used effectively by a user.

By signup or login user can see all functionality in the home page and easily go to the any options what they actually need. They can edit their profile and logout from this application.

5.3 Implement of Interaction

We are developing our application to improve our system. Patients and doctor are our main target users. We are trying to make our application user-friendly. We try to simplify and smooth our application so that the application responses quickly. We used flutter that why we can easily develop android and IOS Application at a time.

5.4 Testing Implementation and Results

When we complete our mobile application .then for the testing purpose we provide this application to many users and they give us valuable feedback and finally they wants to used this application to make their life more easier.

CHAPTER 6
FUTUTRE SCOPE AND CONCLUSION

6.1 Discussion and Conclusion

Our medical application was implemented successfully. Overall features and functionalities work fine after connecting to the application via the firebase server. We believe that our application will be helpful for user/patients. Patients can solve their medical problem by using the application. We try to our best to make the front-end design nicely that user can easily use the application with comfort. This project is intended to describe all the features and procedures followed during the application development. We describe all those features and documentation in the paper that we used in our applications.

6.2 Scope for Future Development

Google map service will be integrated into our project in the future. We fixed all the bug of our application and we ensure that all the information of doctor and hospital will be stored in our database.

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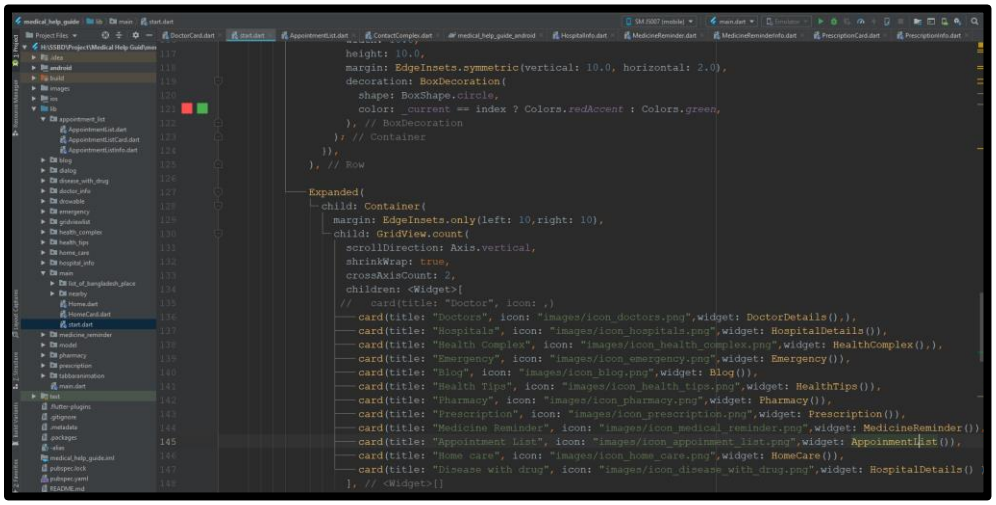
APPENDICES

APPENDIX A: PROJECT REFLECTION

1. Dart language and flutter Framework:



```
                height: 10.0,
                margin: EdgeInsets.symmetric(vertical: 10.0, horizontal: 2.0),
                decoration: BoxDecoration(
                  shape: BoxShape.circle,
                  color: _current == index ? Colors.redAccent : Colors.green,
                ), // BoxDecoration
              ); // Container
            }),
          ), // Row

          Expanded(
            child: Container(
              margin: EdgeInsets.only(left: 10,right: 10),
              child: GridView.count(
                scrollDirection: Axis.vertical,
                shrinkWrap: true,
                crossAxisCount: 2,
                children: <Widget>[
                // card(title: "Doctor", icon: ,)
                  card(title: "Doctors", icon: "images/icon_doctors.png",widget: DoctorDetails(),),
                  card(title: "Hospitals", icon: "images/icon_hospitals.png",widget: HospitalDetails()),
                  card(title: "Health Complex", icon: "images/icon_health_complex.png",widget: HealthComplex(),),
                  card(title: "Emergency", icon: "images/icon_emergency.png",widget: Emergency()),
                  card(title: "Blog", icon: "images/icon_blog.png",widget: Blog()),
                  card(title: "Health Tips", icon: "images/icon_health_tips.png",widget: HealthTips()),
                  card(title: "Pharmacy", icon: "images/icon_pharmacy.png",widget: Pharmacy()),
                  card(title: "Prescription", icon: "images/icon_prescription.png",widget: Prescription()),
                  card(title: "Medicine Reminder", icon: "images/icon_medical_reminder.png",widget: MedicineReminder()),
                  card(title: "Appointment List", icon: "images/icon_appoinment_list.png",widget: AppoinmentList()),
                  card(title: "Home care", icon: "images/icon_home_care.png",widget: HomeCare()),
                  card(title: "Disease with drug", icon: "images/icon_disease_with_drug.png",widget: HospitalDetails() )
                ], // <Widget>[]
```

Figure A.1: Home Page Code

```
templates > base.html > html > body > script
                </li>

                <li class="sidebar-item">
                    <a href="{% url 'allfaculty' %}" class="sidebar-link">
                        <i class="align-middle" data-feather="layout"></i> <span
                            class="align-middle">Faculties</span>
                    </a>
                </li>

                <li class="sidebar-item">
                    <a href="#layouts" data-toggle="collapse" class="sidebar-link collapsed">
                        <i class="align-middle" data-feather="monitor"></i> <span class="align-middle"
                            Thesis</span>
                    </a>
                    <ul id="layouts" class="sidebar-dropdown list-unstyled collapse ">
                        <li class="sidebar-item"><a class="sidebar-link" href="{% url 'allproject' %}"
                                Projects<span class="sidebar-badge badge badge-primary">New</span></a>
                        <li class="sidebar-item"><a class="sidebar-link" href="{% url 'allthesis' %}">
                                Thesis</a></li>
                        <li class="sidebar-item"><a class="sidebar-link"
                                href="{% url 'allinternship' %}">Industrial Attachment</a></li>
                    </ul>
                </li>

                <li class="sidebar-header">
                    Components
                </li>
                <li class="sidebar-item">
                    <a href="{% url 'supervisors' %}" class="sidebar-link">
                        <i class="align-middle" data-feather="users"></i> <span
                            class="align-middle">Supervisors</span>
```

Figure A.2: Doctor Page Code

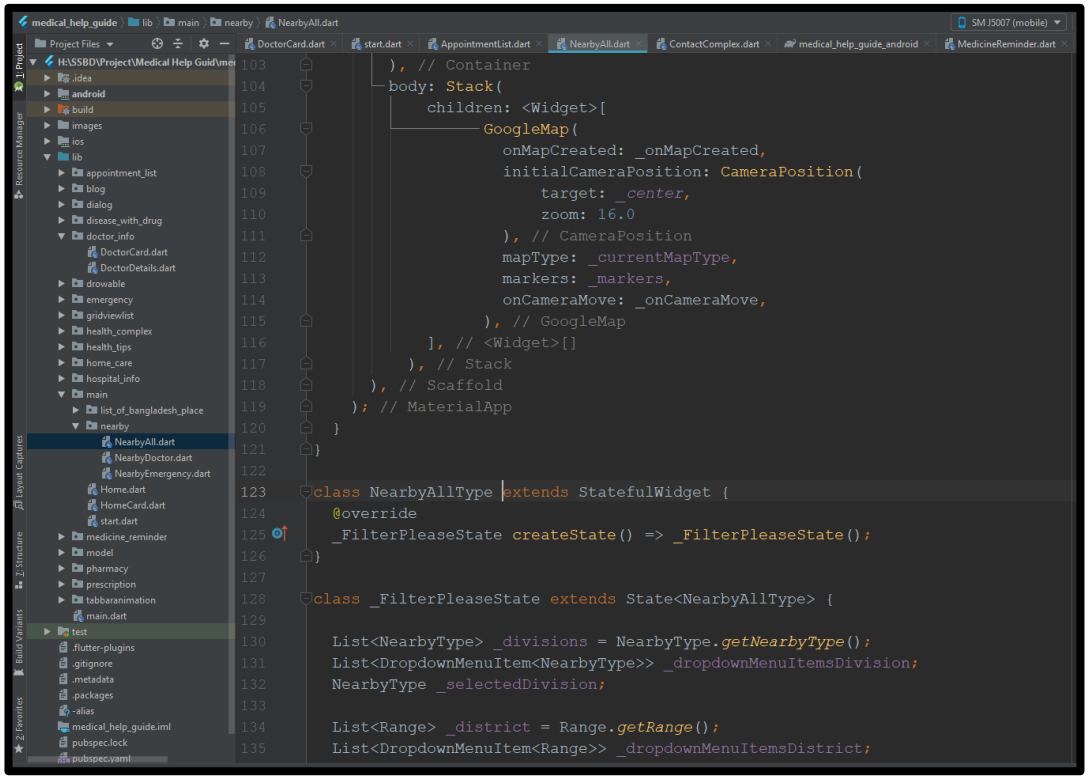


Figure A.3: Nearby Page Code

APPENDIX B: RELATED DIAGRAM

Figure B.1 Shows Hospital, doctor and patients Connectivity

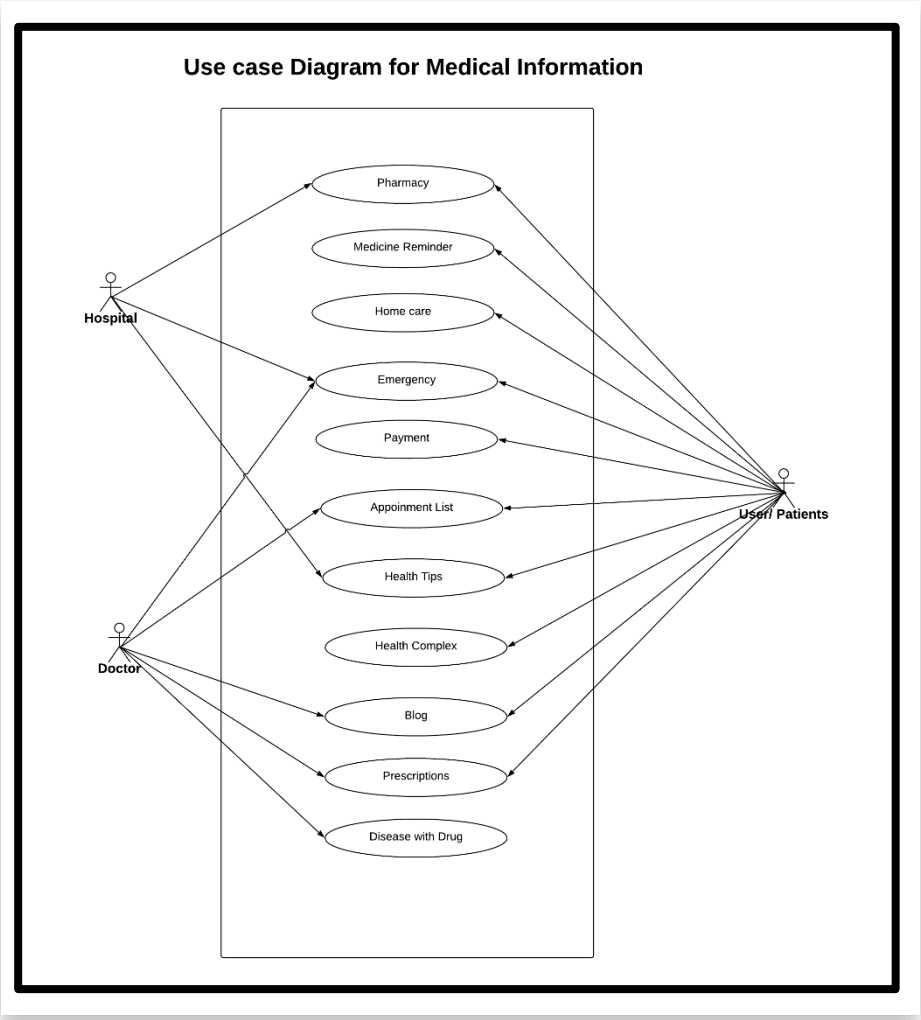


Figure B.1: Hospital, doctor and patients' operation

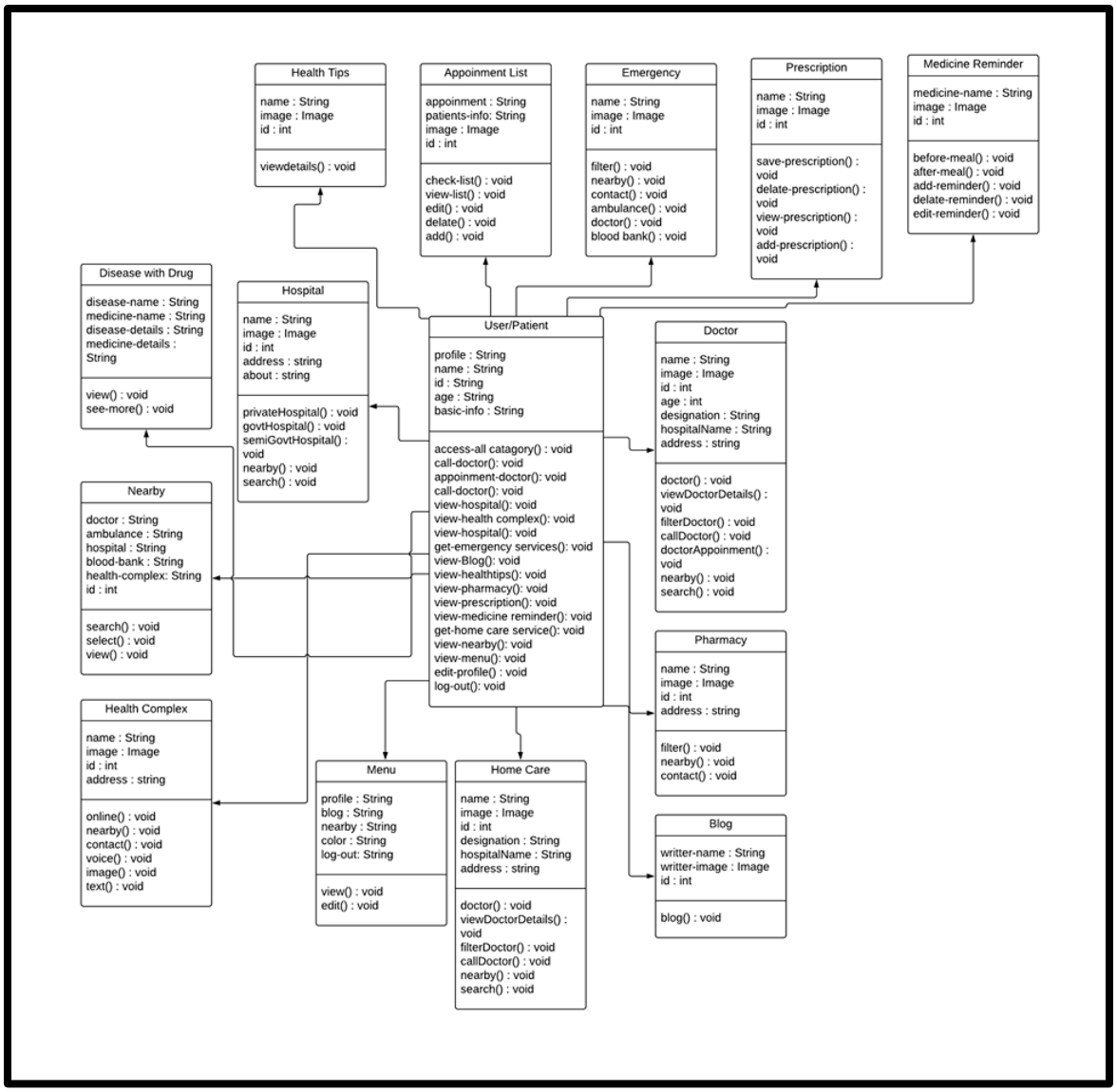


Figure B.2: UML diagrams