

Development of Android Based Application: MEDILINK

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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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APPROVAL

This Project titled “**Development of Android Based Application: MEDILINK**”, submitted by Md. Mehedi Al Hasan, ID No: 162-15-7970 and Shrabosty Deb, ID No: 162-15-7925 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 6 December, 2019.

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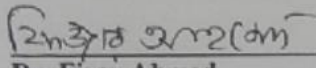
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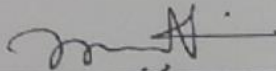
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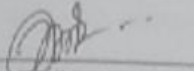
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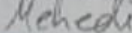
We hereby declare that; this project has been done by us under the supervision of Mr. Sheikh Abujar, Senior Lecturer, Department of CSE, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

This project is based on medical communication system between the patient, hospitals/clinics, doctors, nurses, physiotherapists and pharmacies. This project has been made to create an easier, faster and smoother communication system patient, hospitals/clinics, doctors, nurses, physiotherapists and pharmacies. This project will help to get a better and easier remedies for the patient that will increase the chances of recovery. That's why, we developed this project that will help the users a lot by helping them to get a faster medical solution. This project will increase the chances of the patients getting most accurate online medical solution, medicines and so on. Most of time, in a country like us, people don't get proper treatment in time, this project will help them to get opinions from various doctors, even from the foreign doctors. So, this project will open an opportunity for the patients to compare the opinions from various doctors. This project will also help them to book appointment of the doctors directly. User also will be able to order medicine online form the pharmacies. They can book medical helps from the hospitals any time. This will reduce the suffer and time for the users. Our projects has created a whole medical solution. It will save time and users doesn't have to worry about their communication problems regarding medical conditions. This system is implemented and supervised by the experts and satisfying by the users. XML, JAVA, firebase are used to develop the system.

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CHAPTER 1

Introduction

1.1 Introduction

In a country like Bangladesh, the whole medical system is very poor. To get proper treatment in an affordable cost is a rare thing here. Most of the time, people don't get treatment in time or get the medicine that is needed. To get the appointment of a well-known doctor is a time lengthy process and people have to face a lot of trouble for this.

Therefore, we came up with an executable idea to solve these problems and give other services to the users. Our project will create a direct connection between the user and doctors, hospitals, nurses, pharmacies etc.

As most of the people are using smartphone nowadays. This problem can be solved by an Android app. So built this app called "Medilink", so that the Android app can be the medium of communication between the user and doctors, hospitals, nurses, pharmacies etc. By creating this project, we are offering a platform for the users which will solve the medical related problems at lesser time and which also be effective.

1.2 Motivation

The inspiration for this project is based on our real-life scenario. We face many difficulties when it comes to get a proper medical treatment. Many people suffer a lot just because they don't get proper treatment in time. Even people die for lack of proper treatment. These situations motivated us to think a solution to lessen the problems and make an android app to build a platform that will offer the users a complete medical solution where they can communicate regarding any medical condition related issues with their desired respective. Using this app will make the users life easier by providing them medical services online and offline.

1.3 Objective

The main objective of this project is to build an easier and faster platform where between the user and doctors, hospitals, nurses, pharmacies etc. can connect with each other. A platform where users can

- Book appointment with the doctor directly
- Book ambulance
- Contact with hospital
- Create communication with the doctors
- Contact with the foreign doctors
- Buy medicines online from the pharmacies
- Can get proper treatment online and offline

1.4 Expected Outcome

The results of this project are very important. The following are some of the things mentioned

- By using this app, users can directly book appointments of the doctor without any suffering. They can book medical benefits from the hospitals. They can call ambulances and they also can buy medicines from online from various pharmacies.
- Getting proper treatment will be easier and it will take much less time to reach the doctor. This will increase the chance of getting proper treatment.
- This app will bring a drastic change in our medical system. Users will not have to waste time or suffer from the lack of treatment.

1.5 Report Layout

We have created an Android application titled “**Medilink**”. We will ensure the project is completed on time. Respecting our work flow, we design project reports.

The second chapter names the Background, we have discussed the role, related work, comparative study, problem areas, challenges.

The third chapter names the Requirement Specification, we have discussed business process modeling, requirements collection and analysis, case modeling and use of details, logical data models, design requirements.

The fourth chapter names the Design Specification, we talked about front-design, back-end design, connection design and UX and application requirements.

The fifth chapter names the Implementation and Testing, we talked about database implementation, front-end design implementation, test implementation, test results and reports.

The sixth chapter names the Discussion and Conclusion, we have discussed the future scope, coverage and outcome of the entire project.

CHAPTER 2

Background

2.1 Introduction

In a real life scenario, we face many difficulties when it comes to get a proper medical treatment in time. In a country like Bangladesh, many people suffer a lot just because they don't get proper treatment in time. Even people die for lack of proper treatment. This has been going on for a lot of time. In this modern era, people still suffer from this reason. People have to wait for a long time to get an appointment of the doctors or having a second opinion from another doctor. They just have to rely on this old traditional way to get a proper treatment. A platform is much needed to change this situation.

2.2 Related Works

There are some related works that has been done on this topic but none of them is totally similar to this project.

There are applications named "Doctor Bhai", "Optimal Health", "Mediconnect" etc. These applications work only on booking appointments of the doctors or online blog systems. But our application covers all the factors of a medical system.

2.3 Comparative Studies

There are a lot of medical help assistant system is currently available now. They offer online medical helps for a specific sector, like – online treatment or online consult with the doctors etc.

So that, we offer a platform which will cover every sectors of a medical system. By using one android application platform, users can get all kinds of help that can be needed. Using one application is much easier than using multiple platforms. Nowadays as the Internet reaches everywhere, we can easily communicate anytime, anywhere, no matter where they are.

2.4 Scope of the Problem

As we said, teachers and students face some difficulties to communicate with each other. Our current communication system isn't as fast as the demand is going. So, we can discuss some problems here;

- Using multiple applications for multiple medical problems is not preferable by the user.
- The communicating regular system is manual still now, but this is a fully online based application.
- Many the time increases the suffering of the injured or sick people and decrease the chances of getting recovered.

According to these problems, our application offers solutions that will cover every need of medical solutions.

2.5 Challenges

In every project, there are some challenges. As android based communication platform is our main goal, so we have to face some challenges too.

- It is an android based mobile application, so if not anyone has an android phone then this app will not be helpful the person.
- It will take time to reach out the rural people of country for this service for the internet service.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

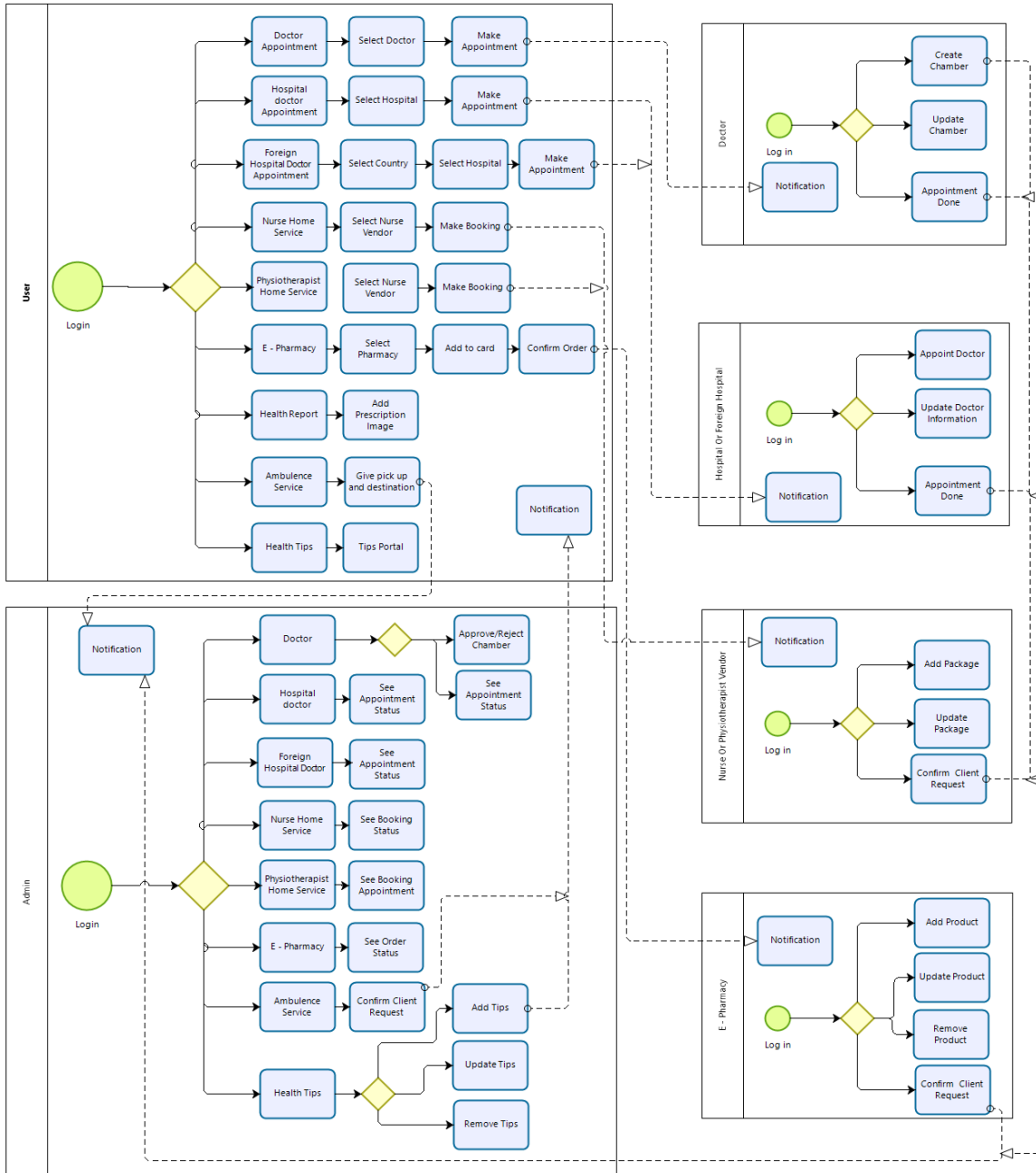


Figure 3.1: Business Process Modeling.

3.2 Requirement Collection and Analysis

This is an online based patient and medical services booking system. so, the process of procurement requirements must address all realities involved. This is the reason for identifying requirements at all levels and perceptions.

Software Requirements:

- Users
- Users login system
- Time advantage
- Easy to accept

Hardware and Software Requirements for our system:

Before purchasing any software or hardware for a digital platform you should make sure that the platform capable to supports the system requirement. Your computer has the specifications required to use this software and hardware efficiently; All computer software requires specific hardware components or other software resources to be present on one computer.

During the development phase, all the tools and platforms on the system need to be described in order for the new system to move forward.

- XML
- JAVA
- Node.js
- Android Studio 3.5.0

3.3 Use Case Modeling and Description

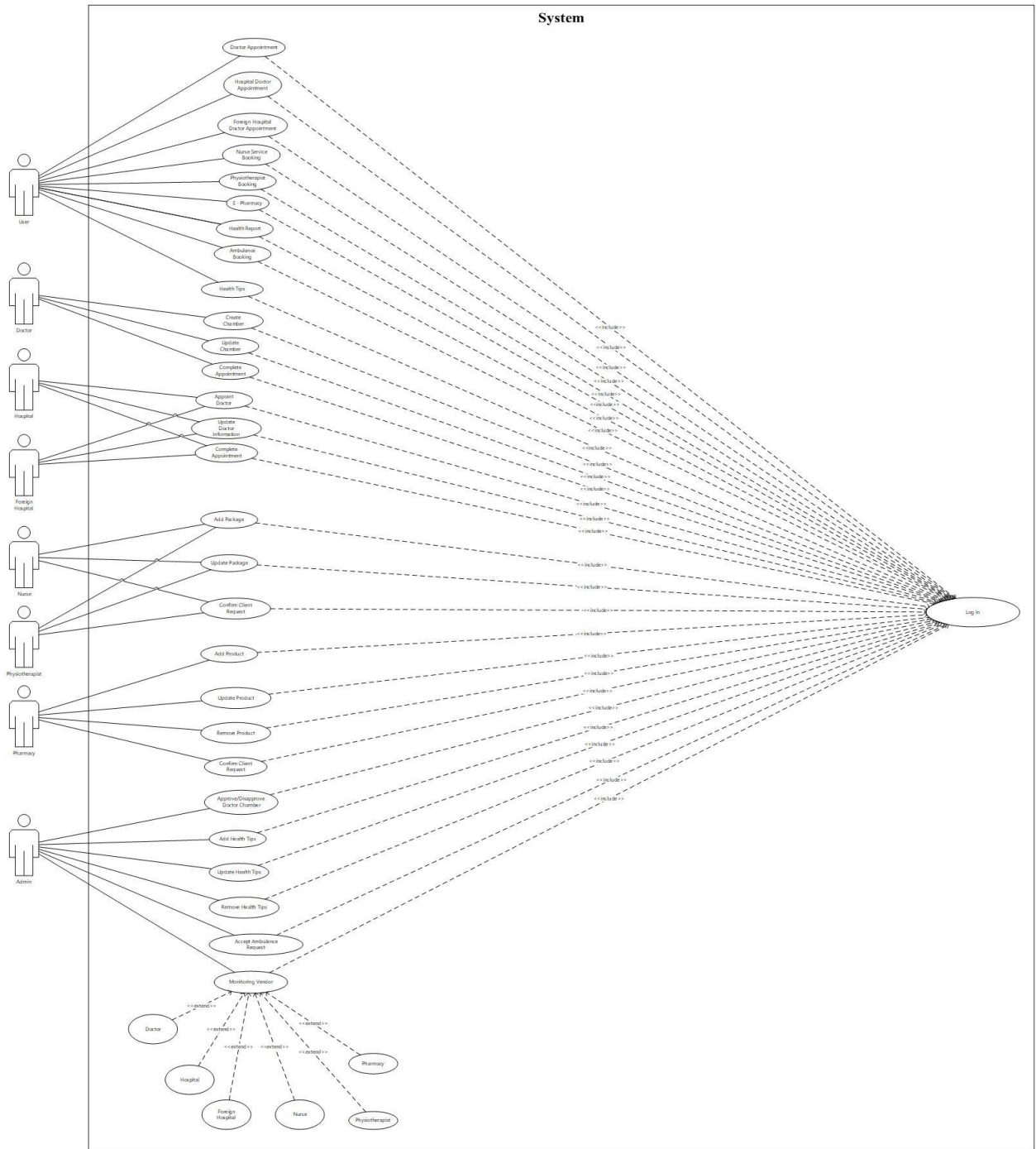


Figure 3.2: Use Case Modeling.

Use Case 1: Login

Primary Actor: All services provider, Patient

Precondition: Must have registered Email and Password in the system

Main Success Scenario:

1. The actor places the email id in the email section
2. The actor places the password id in the password section
3. Press the Login button

Exception Scenario:

1. The email id must be registered on the system
2. Incorrect password

Use Case 2: Give Services

Primary Actor: Service provider

Precondition: Provider has logged in

Main Success Scenario:

Add their services

Exception Scenario:

Must fill required field to add a service

Service Provider

1. Doctor Appointment
 - Doctor will set the schedule and patient will set the Appointment
 - Doctor will receive the request from the patient and able to decline or accept
 - In-app notifications for all the cases.
2. Hospital Appointment
 - Hospital will receive the appoint request with the details of problem and departments
 - Decline or accept the request and leave a message for trying the other hospitals
 - Notifications for all the cases.
3. Nurse Appointment
 - Partially Similar to doctor Appointment
 - Nurses can provide the service privately by the patient's requirement

4. Foreign Appointment

- a. Foreign Treatment VISA Processing
 - Patient will be able to request for processing a foreign VISA to the Admin
- b. Foreign Treatment Packages Booking
 - Patient will see and book one or multiple packages of treatment of specific problem sated by the admin.
- c. Foreign Hospital Appointment
 - Similar to ‘Hospital Appointment’ only there will be the available foreign hospitals

5. Health Report

- Next Appointment schedule notification
- Tracking Weight and calculate BMI

6. Ambulance Hiring

- Patient will be able to pick an ambulance from the available ambulance list

7. E-Pharmacy

- Like as a simple multivendor e-commerce
- Patient can get the medicines from multiple pharmacy nearest to their locations.

Use Case 3: Messaging

Primary Actor: Service Provider, Patient

Precondition: Actor has logged in

Main Success Scenario:

1. Actor find expected service provider from his history
2. Actor writes message and send the message

Exception Scenario:

1. Message must contain characters other than Space and New line.

3.4 Logical Data Model

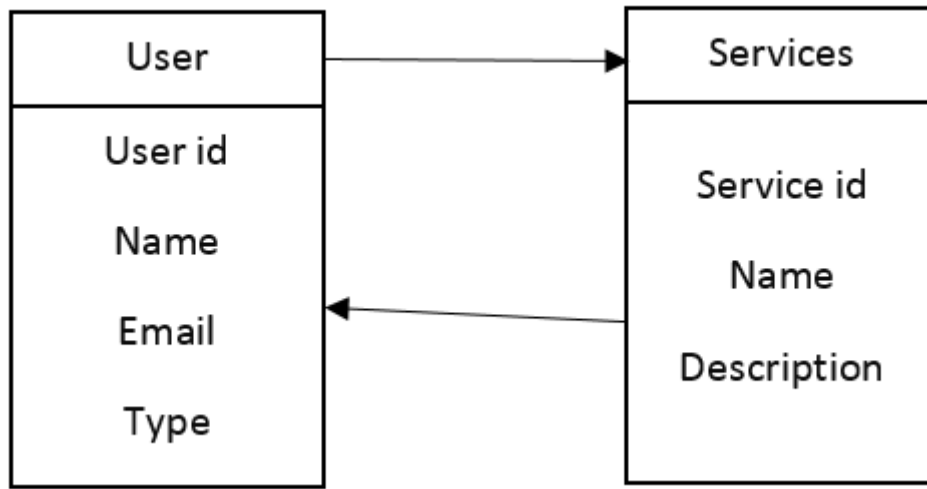


Figure 3.3: Logical Data Model.

3.5 Design Requirements

When we design a software or system, we take into account some requirements to make the project efficient. It is almost mandatory to do the following requirements.

- Login activity
- Registration activity
- Home activity
- Navigation drawer
- Profile activity
- Service details activity
- Service provider activity
- Admin panel activity

CHAPTER 4

Design Specification

4.1 Front-end Design

The front-end design is basically divided into two parts. The UIX design and the UIX development. At present, it has been made clear that there is a difference between Photoshop designed and XML design in mobile application development.

Everything that we can see is a XML. These include things like fonts, drop-down menus, buttons, transitions, sliders, contact forms, etc. For android application we need XML to create user interface.

4.2 Back-end Design

The backend of our project is divided into three parts, one server, one application, one database. If you book an air ticket in a travel agency, you usually open the travel agency website and interact with the frontend. When the data you need is inputted, the application saves it to a database created on a server.

Therefore, in our back-end system we create a database to store the data that the server receives through the users. We used JAVA & Node.js for our application development.

4.3 Interaction Design and UX

Interaction with user experience (UX) design is the most important part of design. The result of an application depends on user satisfaction. As an application there is more User-friendly depends on interaction and Design part. In our application we have used a useful model of interactive design.

4.4 Implementation Requirements

We were given a very good idea of the implementation requirements. The main task of this part is to make all the things easier, user friendly. The following is a list of implementation requirements;

- Easy to create
- Easy to manage
- Easier to analyses
- Easier to interact
- Dynamic pages
- User-friendly

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database

We are using Firebase as the database for this project. As Firebase stores all the data as JSON tree format, the whole database of our project is stored as JSON. The whole database is a JSON object and the entities of the database is the children of the object. The entities have their own child JSON objects which are the instances of individual entity. These JSON objects have unique ids. In these objects the attributes are stored as key value pairs. There are also JSON arrays for multi-valued attributes. Firebase is easily traceable but there is some problem too. As this is a non-SQL database, the queries are not like regular SQL queries. There is no concept of Primary Key or Foreign Key. But this can be obtained by the design of the JSON tree. As this is a new concept in database, this seemed a little confusing but this can be a great way to store data in a large scale in near future.

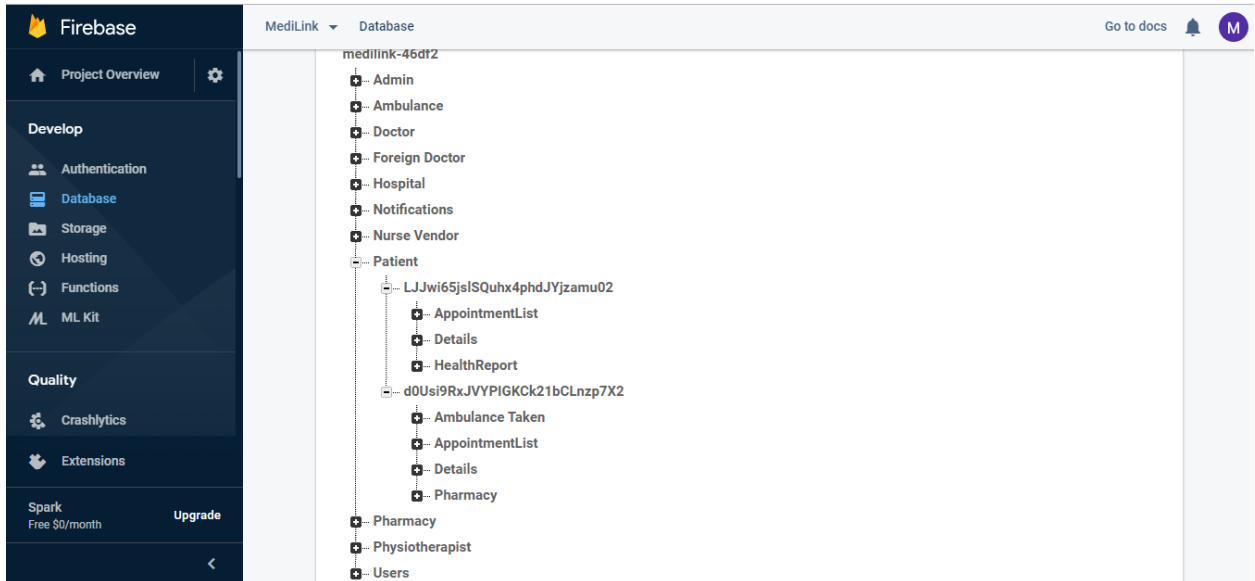


Figure 5.1: Database Implementation Model

In Figure 5.1 we show the implementation of data in the database.

5.2 Implementation of Front-end Design

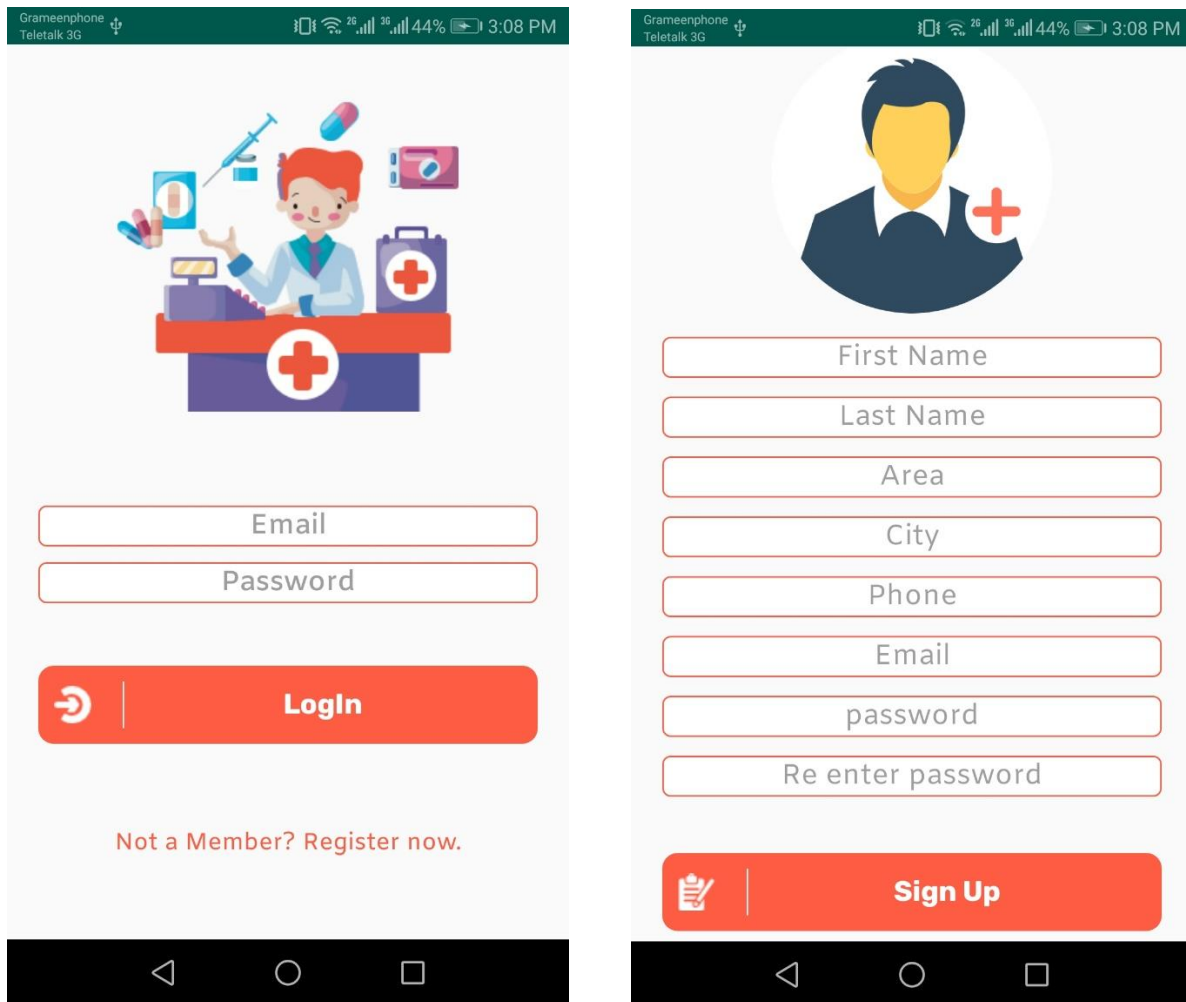


Figure 5.2: User login and registration

In Figure 5.2, in the first picture user have to put his register mail and his password in the particular field to login in this system. To get registered mail user need to provide some information, which is shown in second picture. You can go there by selecting “Register now” from the first picture.

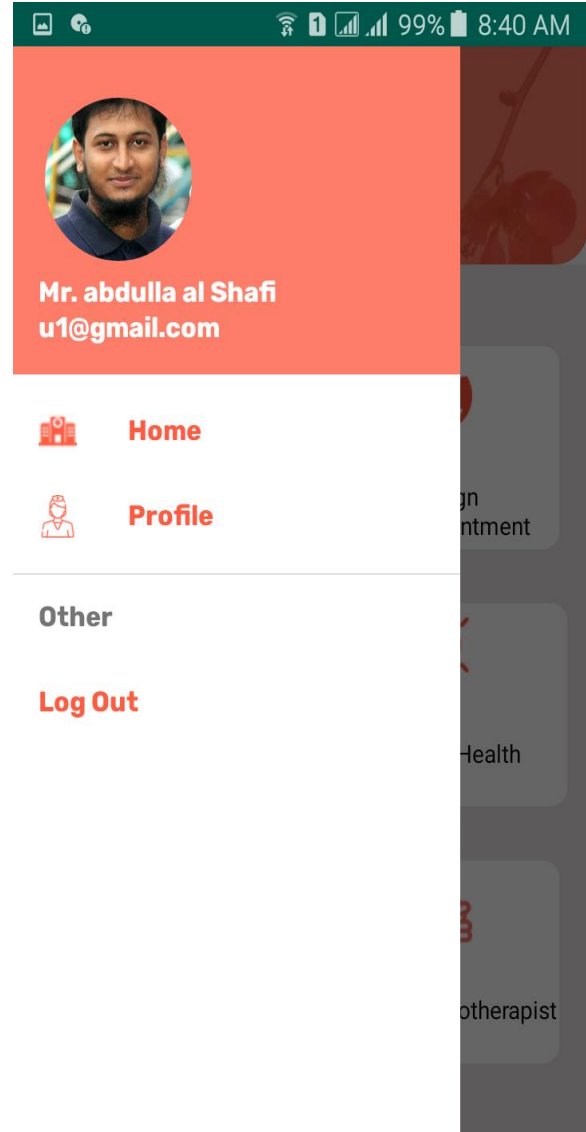
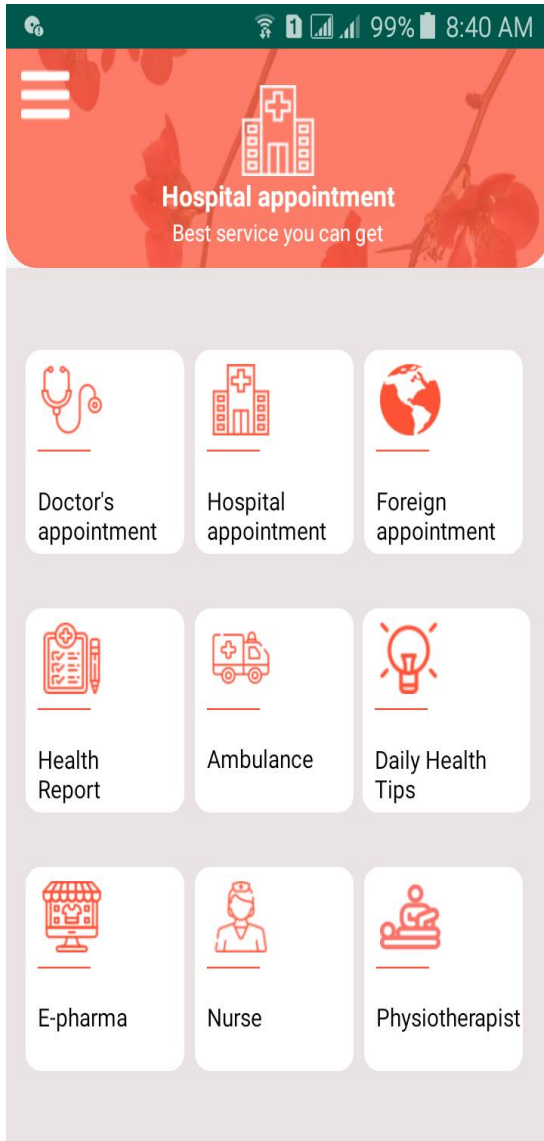


Figure 5.3: Home and Navigation bar.

In Figure 5.3, first picture show the home page where you can find all the services by the system. In addition, the second picture show the navigation drawer where an user can find his profile and also can log out from the system.

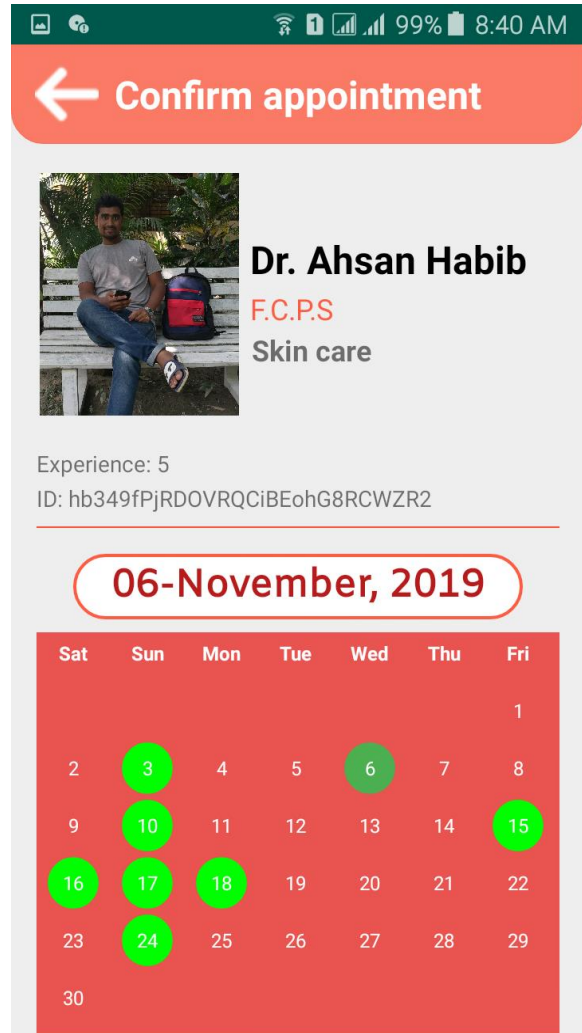
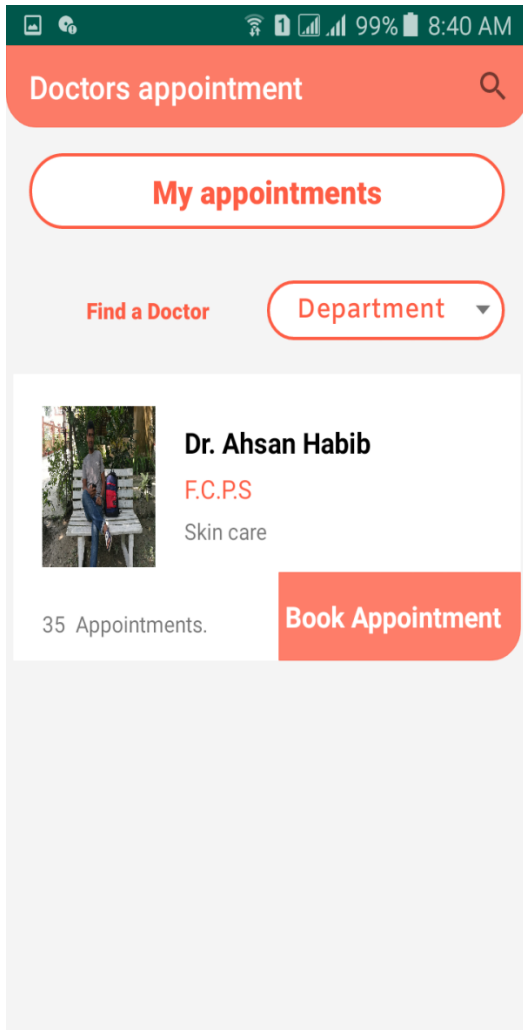


Figure 5.4: Doctor Appointment.

In Figure 5.4, first picture will come up if you select “**Doctor’s appointment**” from the home page. Here you can see the doctor list. You can search doctor by department or name. When you select a doctor then second picture will come up. Green date present the available date by the doctor.

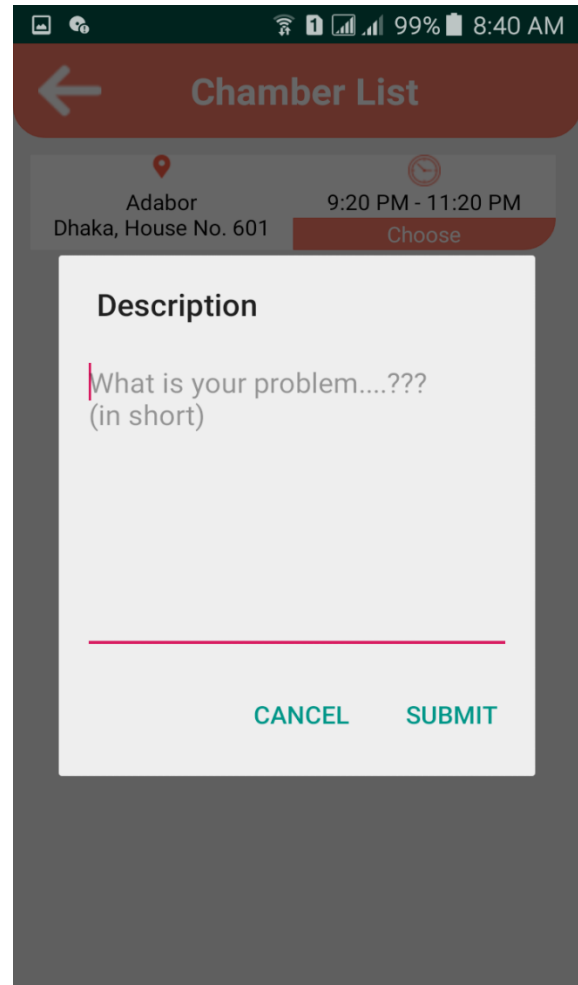
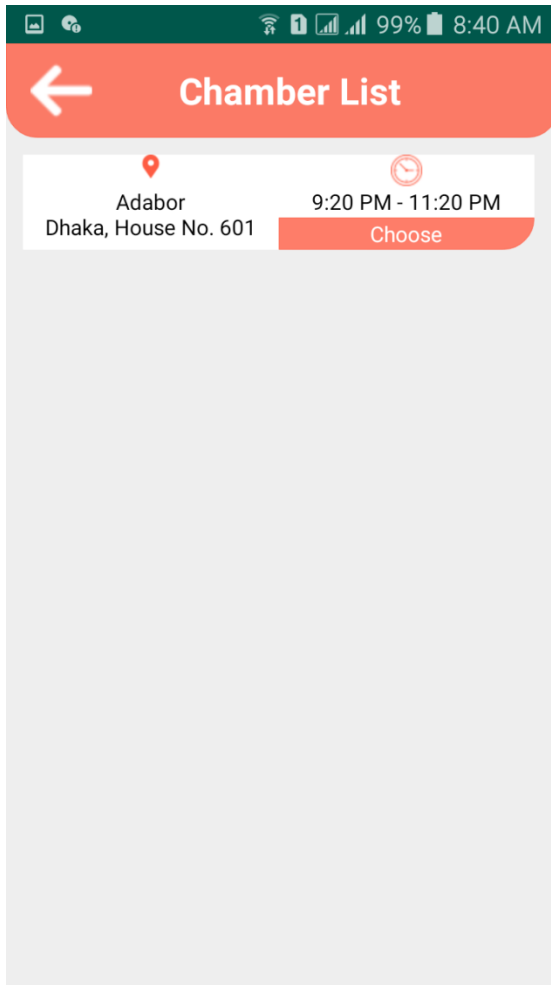


Figure 5.5: Doctor Appointment Confirm.

In Figure 5.5, first picture will come up if you select any available date from the previous page. Here you can see the list of the chamber of that doctor. You can select any chamber and give some note of your problem in a pop up window. Then select submit to confirm your appointment.

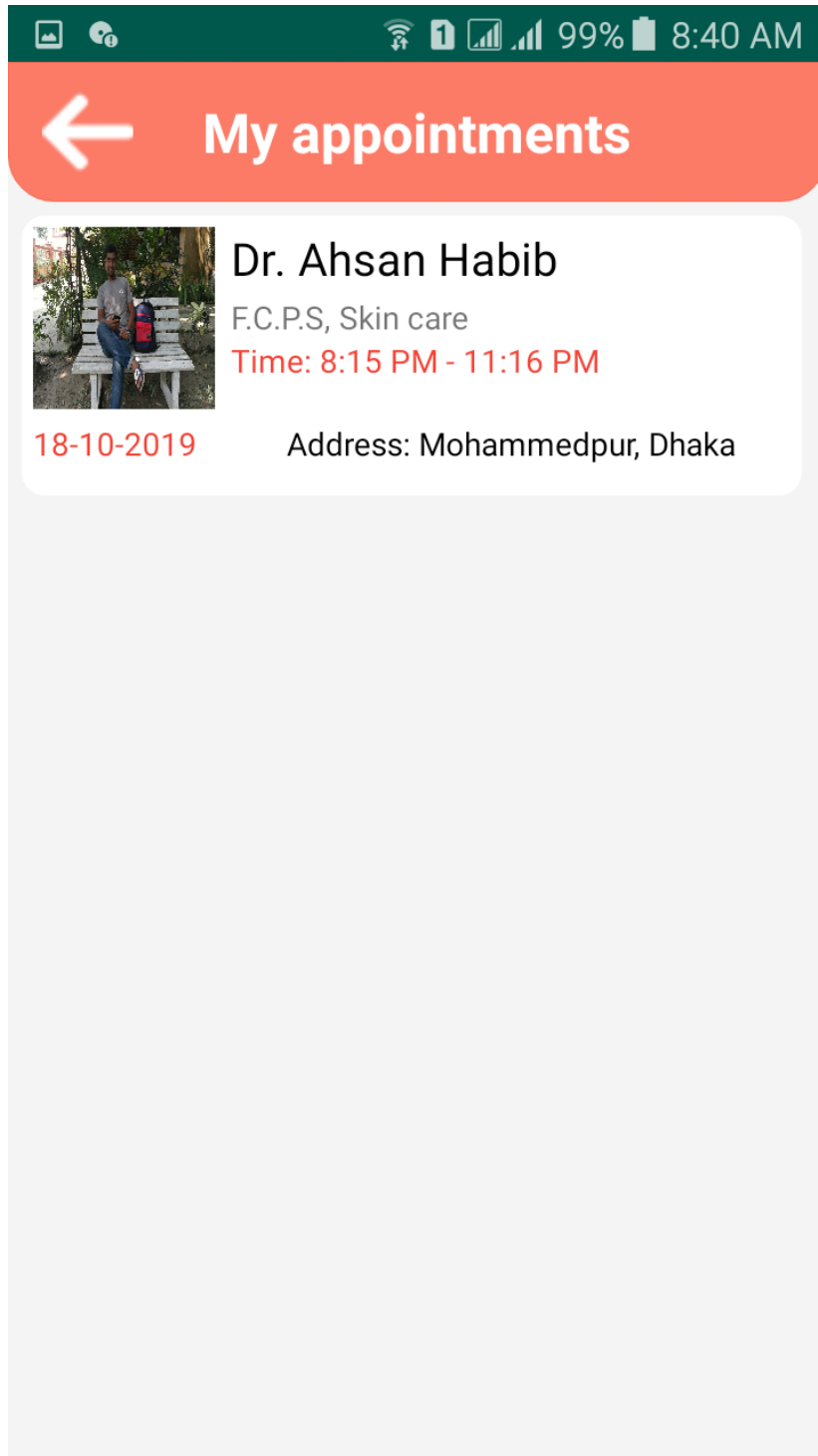


Figure 5.6: Taken Appointment List.

In Figure 5.6, here you can see your taken appointment list, which you can find from “**My appointment**” shown in figure 5.4 first image.

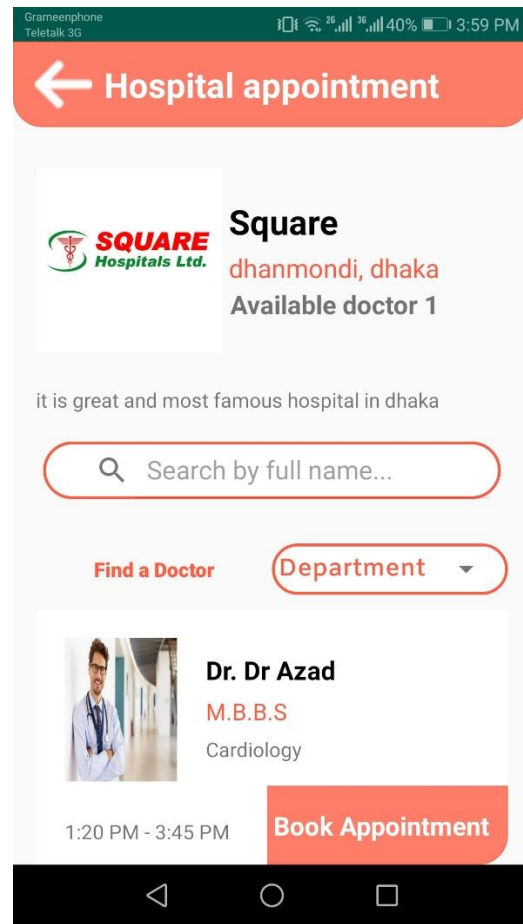
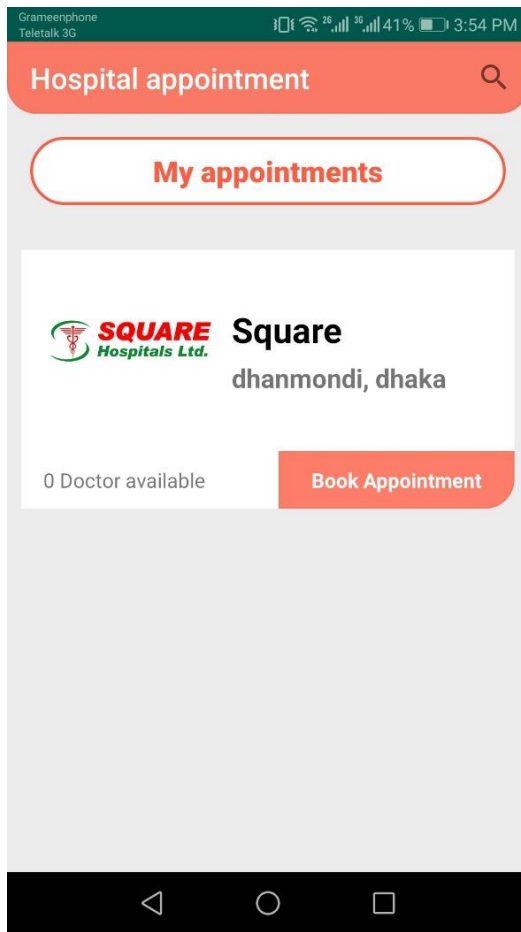


Figure 5.7: Hospital booking.

In Figure 5.7, first picture will come up if you select “**Hospital appointment**” from the home page. Here you can see the hospital list. You can search hospital by name. When you select a hospital then second picture will come up with the list of doctor provided by the hospital. You can search doctor by department or name. When you select a doctor then second picture will come up. Green date present the available date by the doctor.

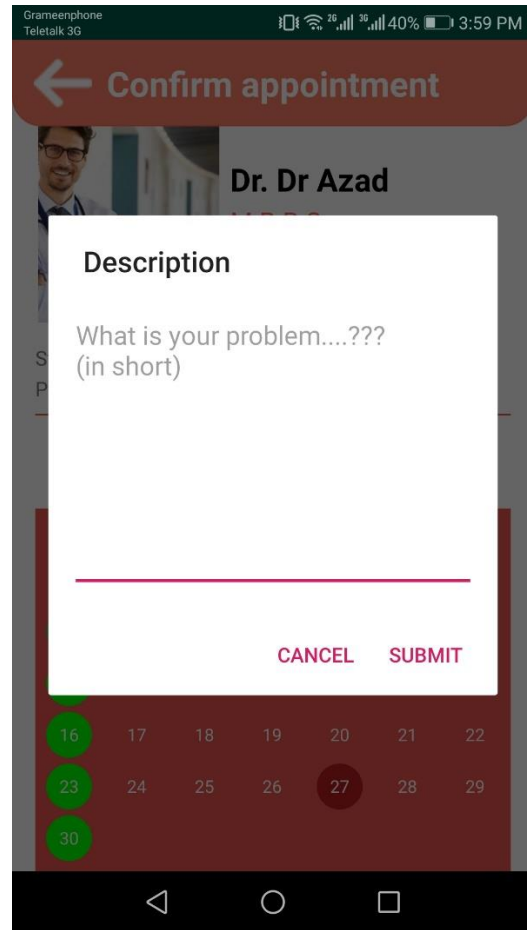


Figure 5.8: Hospital booking Confirm.

In Figure 5.8, when you select a doctor from the previous page then first picture will come up. Green date present the available date by the doctor. You can select any available date and give some note of your problem in a pop up window. Then select submit to confirm your appointment.

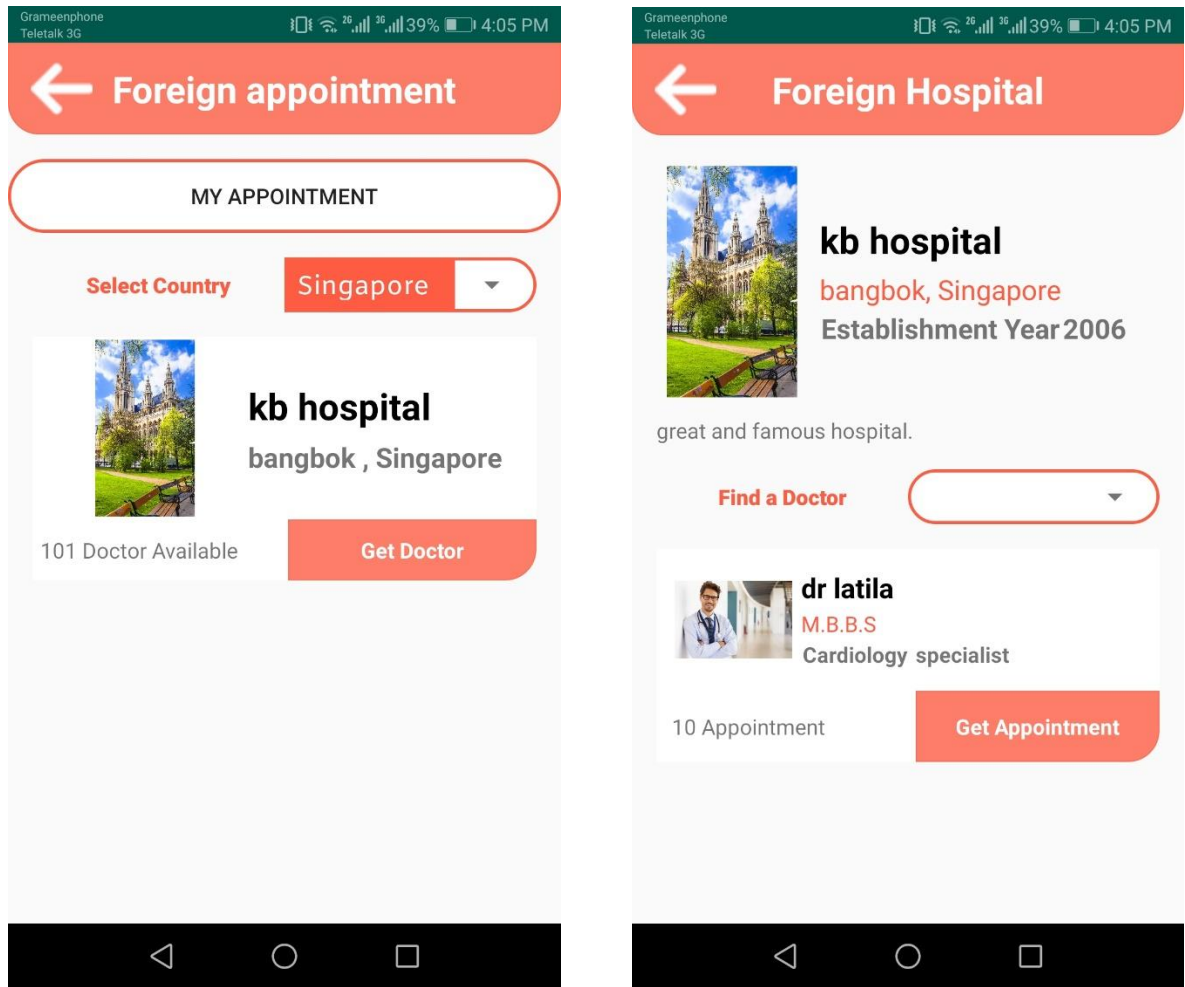


Figure 5.9: Foreign Hospital booking.

In Figure 5.9, first picture will come up if you select “**Foreign appointment**” from the home page. Here you can see the hospital list. You can search hospital by country name. When you select a hospital then second picture will come up with the list of doctor provided by the hospital. You can search doctor by department or name. When you select a doctor then second picture will come up. Green date present the available date by the doctor.

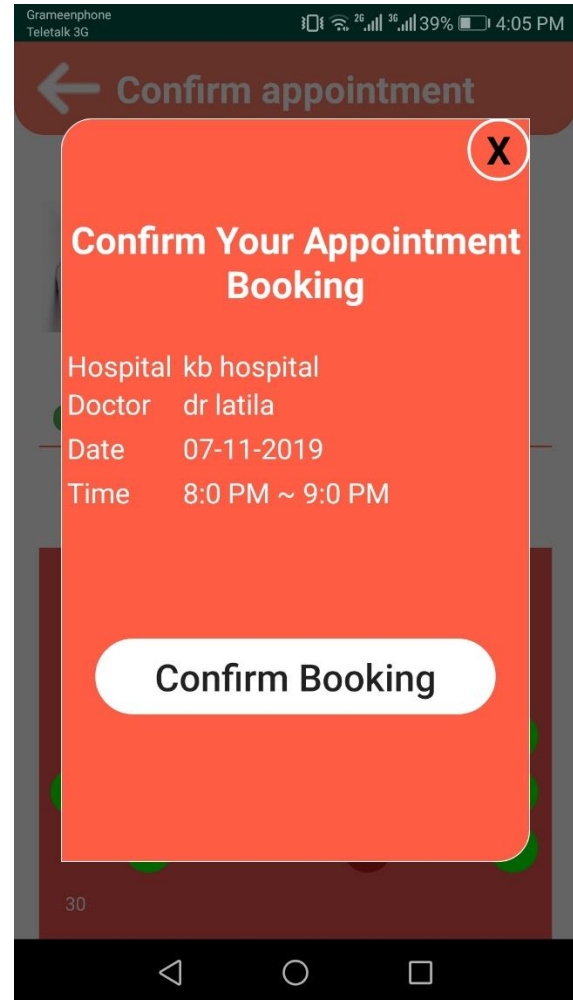


Figure 5.10: Foreign Hospital booking Confirm.

In Figure 5.10, when you select a doctor from the previous page then first picture will come up. Green date present the available date by the doctor. You can select any available date and to make sure your appointment you need to select “**Confirm Booking**” in the pop up window.

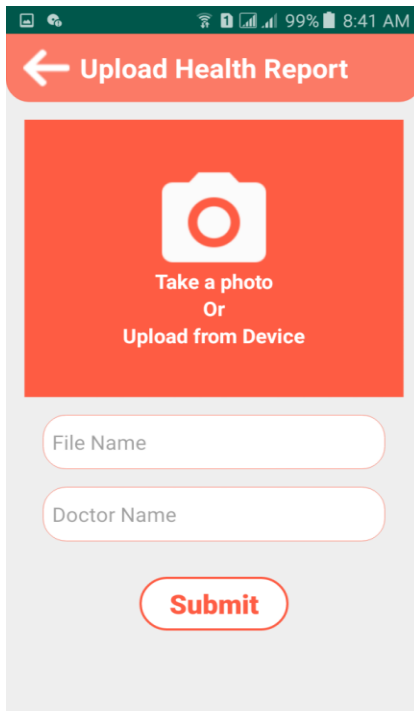
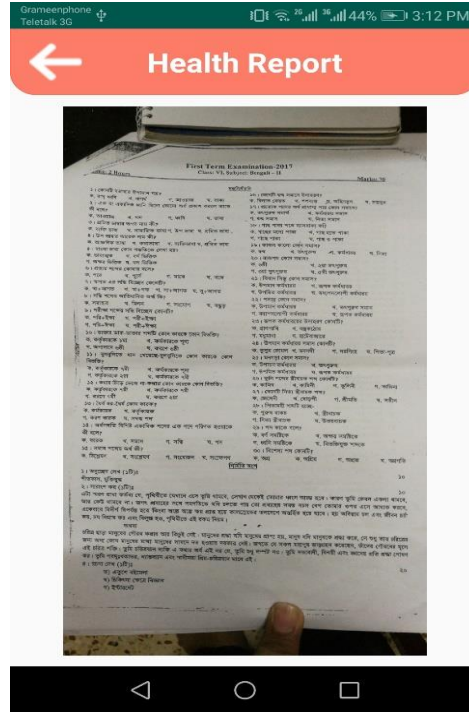
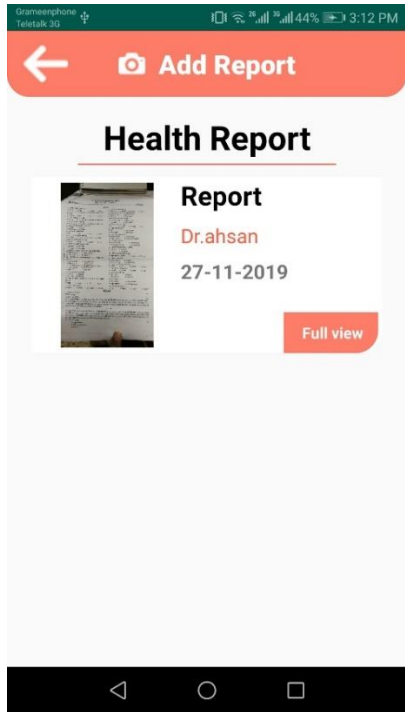


Figure 5.11: Health Report.

In Figure 5.11, when you select “**Health Report**” from the home page you can see the first page. Where you can find your health report if any added before. If you select any report then second picture come up with full view of your selected report. To add report you have to select “**Add Report**” from the first picture.

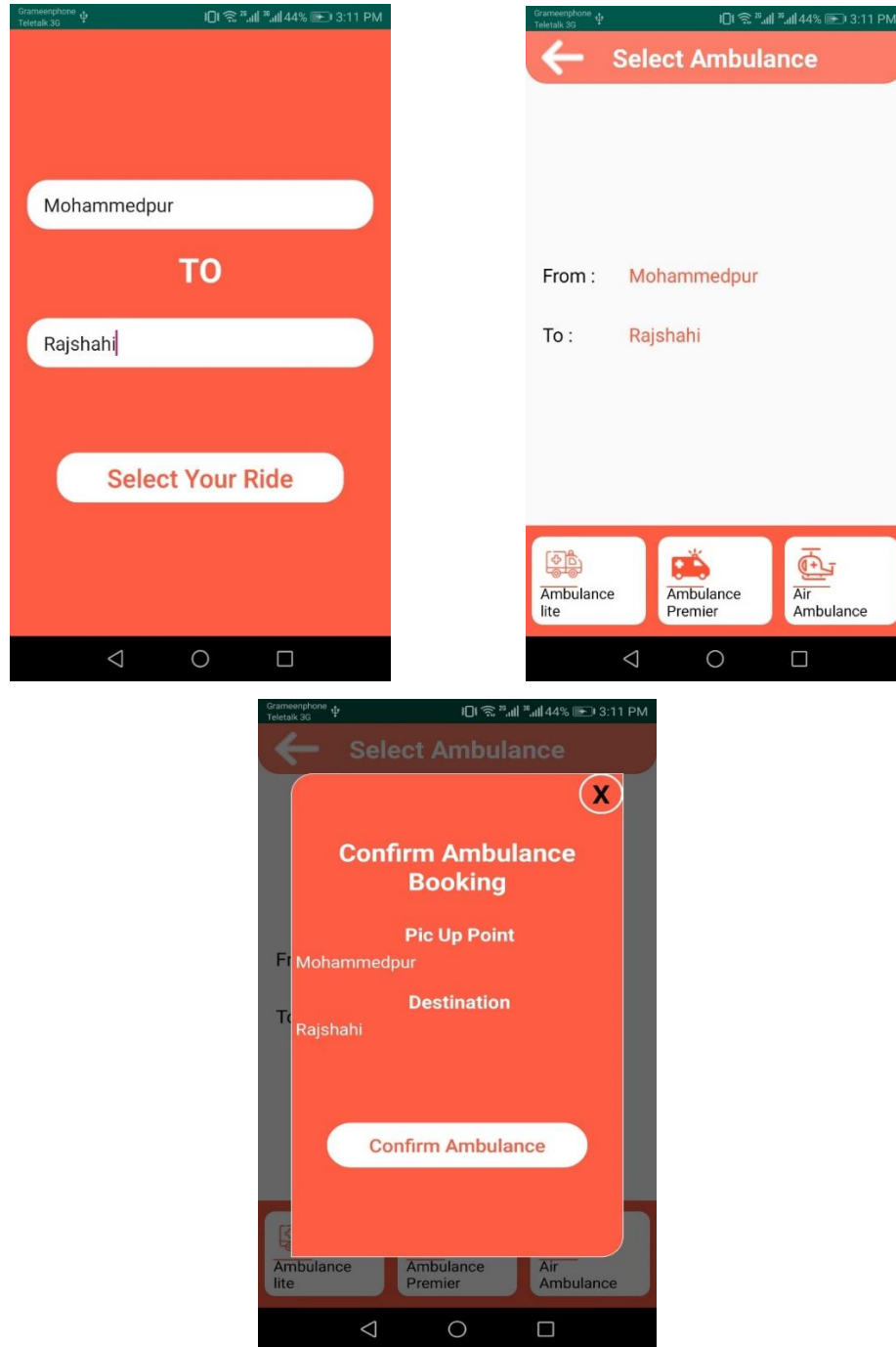


Figure 5.12: Ambulance booking.

In Figure 5.12, when you select “**Ambulance**” from the home page you can see the first page. Where you need to give **pick up** & **destination** address to book any ambulance. By selecting “**Select Your Ride**” you can find rider type page. When you select a type, you will have a pop up window with your booking details. Select “**Confirm Ambulance**” your booking.

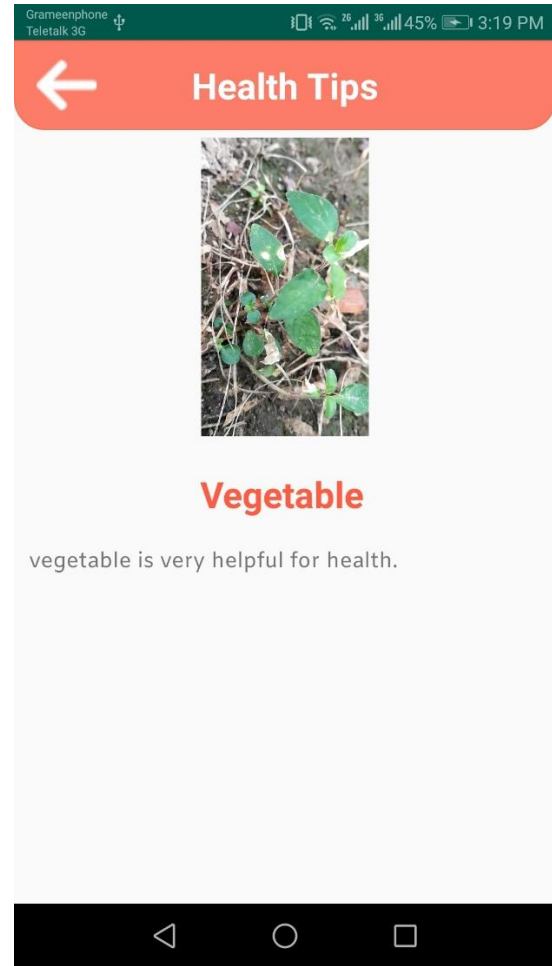
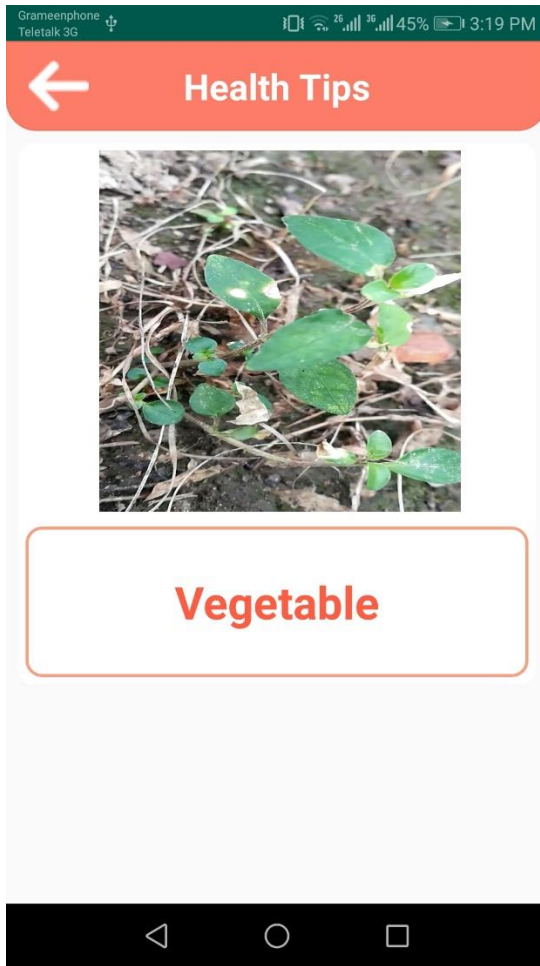


Figure 5.13: Daily health tips.

In Figure 5.13, when you select “**Daily Health Tips**” from the home page you can see the first page. This page containing health tips list. Select any tips to view full details about that tip, which example shown in second picture.

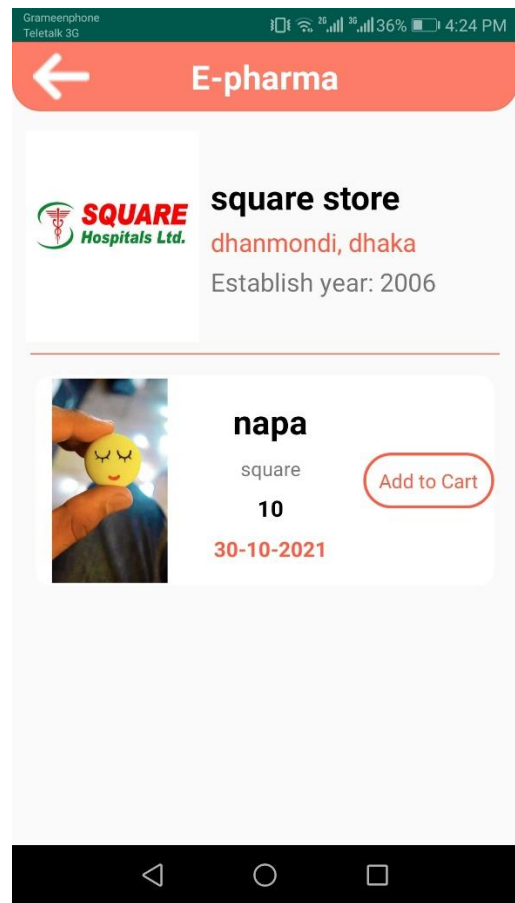
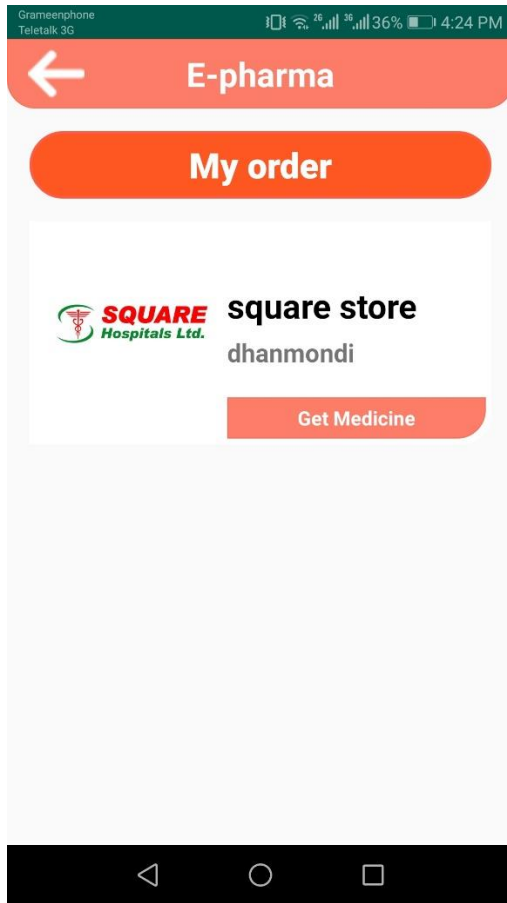


Figure 5.14: E - Pharmacy.

In Figure 5.14, when you select “**E-pharma**” from the home page you can see the first page. This page containing the list of medicine shops. Select any shop then second picture come with their available product.

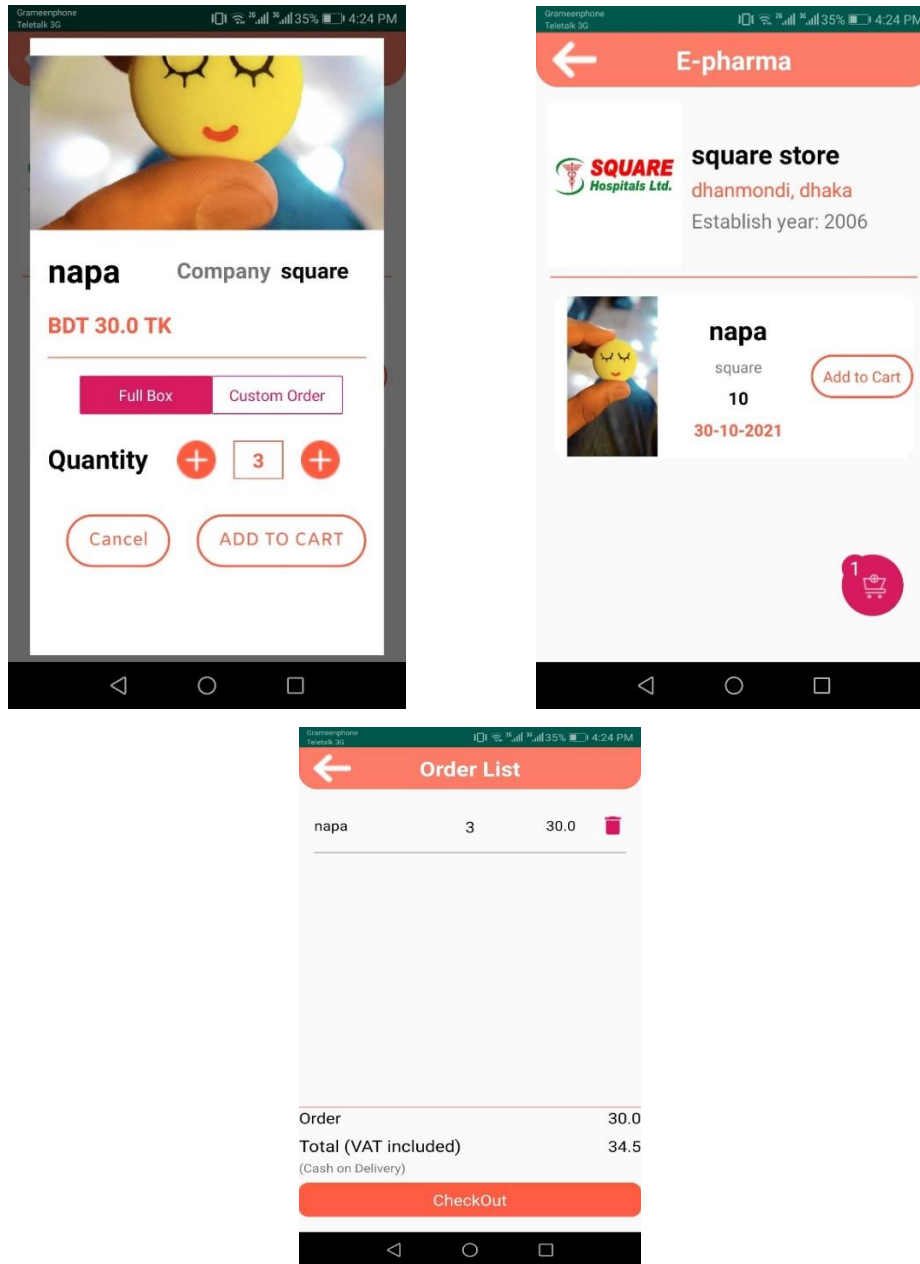


Figure 5.15: E – Pharmacy confirm order.

In Figure 5.15, to buy a product select “**Add to Cart**” then give the quantity you want in the first picture and select again “**ADD TO CART**”. To check out select the floating action button in the second picture and make confirmation by selecting “**CheckOut**” which you can find in last picture.

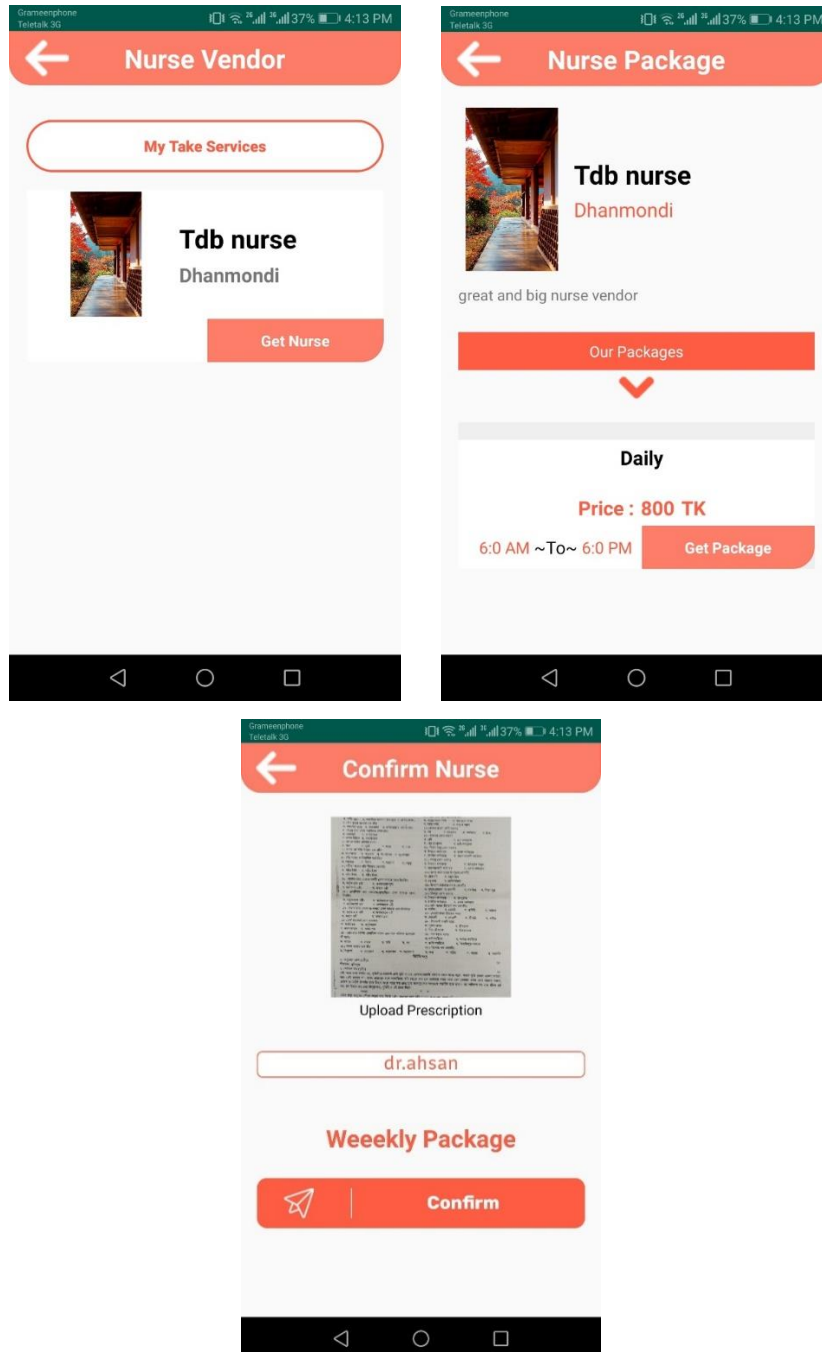


Figure 5.16: Nurse Service.

In Figure 5.16, when you select “Nurse” from the home page you can see the first page. This page containing the list of nurse service providers name. Select any provider then second picture come with their available package. Select a package you want to take and give your prescription image and doctor name in the last picture and select “Confirm”.

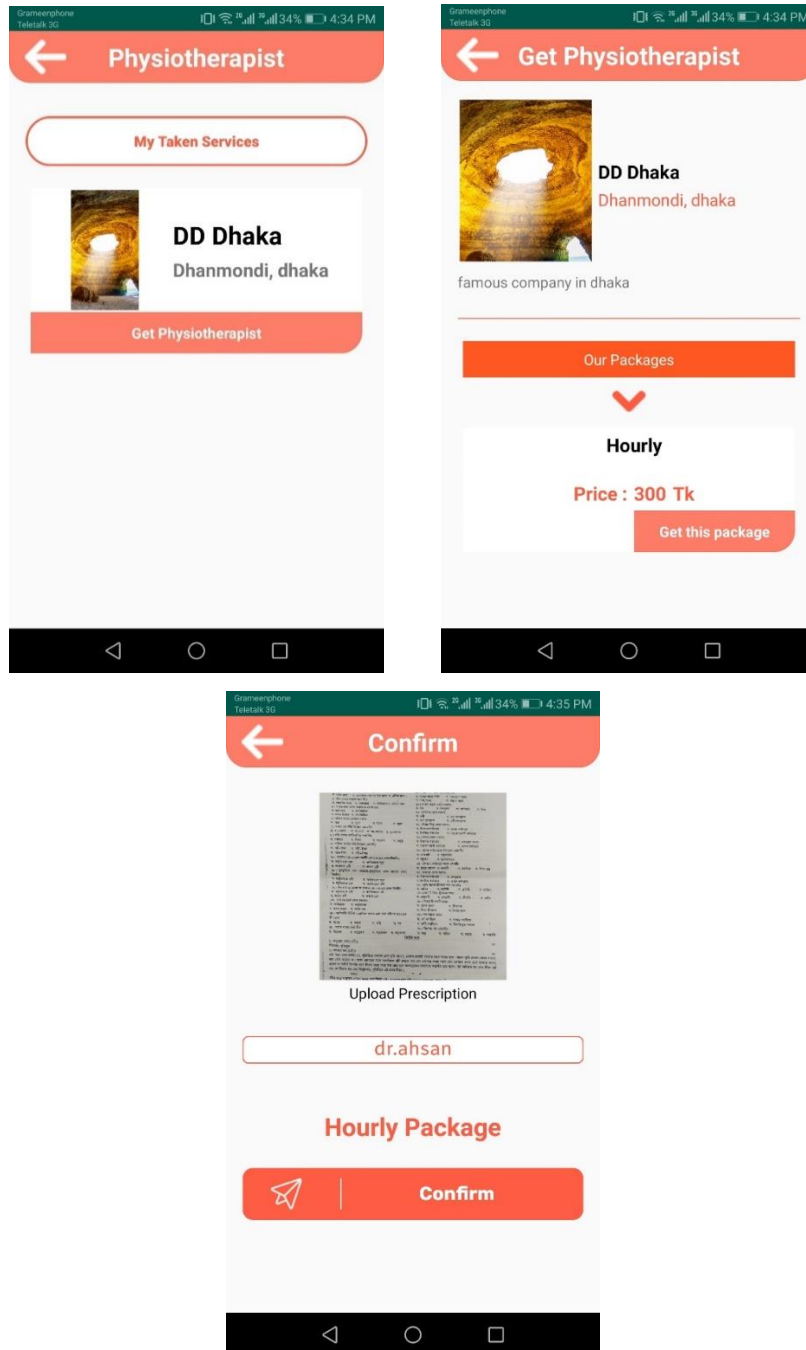


Figure 5.17: Physiotherapist service.

In Figure 5.17, when you select “**Physiotherapist**” from the home page you can see the first page. This page containing the list of physiotherapist service providers name. Select any provider then second picture come with their available package. Select a package you want to take and give your prescription image and doctor name in the last picture and select “**Confirm**”.

5.3 Implementation of Interactions

There are common interfaces in modern communication systems is interaction. This is due to easy and fast communication. When users are on a particular page, the other activity involves doing something else that helps us to interact. This should be done in a way that attracts users.

5.4 Testing Implementation

5.4.1 Testing

Testing is an integral part of any system development project. The main objective of the test is to validate the contribution, authenticity, reliability and quality of the application. The purpose is to implement an Android-based application.

5.4.2 Unit Test

Each piece of software is tweaked to ensure that the design is properly finished. This ensures that every part of the application will be compliant with the requirements.

5.4.3 Unit Test Case

There are two parts in unit test. One is the database handler and the other is interface handler. We also use some basic features, such as data collection, data processing, and data extraction. The database handler will test these three functionality. The database handler test case now looks like this.

- Each user can successfully add new data or not
- Each user can successfully edit his or her data or not.
- Each user can successfully delete his or her data or not.

5.4.4 Implementation Test

The last and most important chapter is implementation. Applies advanced training personnel, system testing and execution.

5.5 Test Result and Reports

All tests can be performed to enhance the efficiency of a system and to integrate software where each error can be found and resolved.

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and Conclusion

Working on medical system is an exciting topic to work. Going through this project, we have faced many challenging tasks that are related to our traditional medical system.

We have researched many platforms that have helped us to realize what should be done and what should not be done in our project. We interacted with the people to know that what kind of problems they are facing in the existing system.

We talked with several experts, took guidelines that has helped us a lot to develop this platform.

Though getting above these, we still faced many challenges.

We think it is an innovative idea to bring all the medical solutions in one platform. The help that provided through this application is massive. We interact with many people, listen their problems, try to understand them and came up with this application. We hope that it will help them a lot.

6.2 Scope of Further Development

There many scopes of further developments. We have several ideas-

- We will build a sustainable website for this platform.
- We will build software version for various operating systems.
- We will build apps for ios.
- We will try to implement AI based medical assistant in this system.

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APPENDIX

Appendix A: Research Reflection

The purpose of this Appendix is to provide an introduction to Project reflection. The group research project was a challenging and enjoyable experience typical of the course as a whole. We have had little exposure to group work at university. Therefore, it was a nice change to be part of an effective and dynamic team. We complemented one another quite well both in bringing together interdisciplinary perspectives and in balancing the work at hand. The experience taught us that planning and constructing responses takes a longer time in teams than on your own. The extensive effort required was ultimately a good thing. When working alone, we can end up with a result that is identical to our initial plans. In our group, we are constantly developing and refining one another's ideas. It was fascinating just how productive our group meetings were. The time seemed to fly and yet we always got a lot done and managed to help another along the way towards the end point of having a substantive policy.

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Development of Android Based Application: MEDLINK ABSTRACT This project is based on medical communication system between the patient, hospitals/clinics, doctors, nurses, physiotherapists and pharmacies. This project has been made to create an easier, faster and smoother communication system patient, hospitals/clinics, doctors, nurses, physiotherapists and pharmacies. This project will help to get a better and easier remedies for the patient that will increase the chances of recovery. That's why, we developed this project that will help the users a lot by helping them to get a faster medical solution. This project will increase the chances of the patients getting most accurate online medical solution, medicines and so on. Most of the time, in a country like us, people don't get proper treatment in time, this project will help them to get opinions from various doctors, even from the foreign doctors. So, this project will open an opportunity for the patients to compare the opinions from various doctors. This project will also help them to book appointment of the doctors directly. User also will be able to order medicine online from the pharmacies. They can book medical helps from the hospitals any time. This will reduce the suffer and time for the users. Our project has created a whole medical solution. It will save time and users doesn't have to worry about their communication problems regarding medical conditions. This system is implemented and supervised by the experts and satisfying by the users. XML, JAVA, Firebase are used to develop the system. CHAPTER 1 Introduction In a country like Bangladesh, the whole medical system is very poor. To get proper treatment in an affordable cost is a rare thing here. Most of the time, people don't get treatment in time or get the medicine that is needed. To get the appointment of a well-known doctor is a time lengthy process and people have to face a lot of trouble for this. So, we came up with an executable idea to solve these problems and also give other services to the users. Our project will create a direct connection between the user and doctors, hospitals, nurses, pharmacies etc. As most of the people are using smartphone nowadays. This problem can be solved by an Android app. So built this app called "Medlink", so that the Android app can be the medium of communication between the user and doctors, hospitals, nurses, pharmacies etc. By creating this project, we are offering a platform for the users which will solve the medical related problems at lesser time and which also be effective. 1.2 Motivation The inspiration for this project is based on our real-life scenario. We face many difficulties when it comes to get a proper medical treatment. Many people suffer a lot just because they don't get proper treatment in time. Even people die for lack of proper treatment. These situations motivated us to think a solution to lessen the problems and make an android app to build a platform that will offer the users a complete medical solution where they can communicate regarding any medical condition related issues with their desired respectives. Using this app will make the users life easier by providing them medical services online and offline. 1.3 Objective The main objective of this project is to build an easier and faster platform where between the user and doctors, hospitals, nurses, pharmacies etc. can connect with each other. A platform where users can o Book appointment with the doctor directly o Book ambulance o Contact with hospital o Create communication with the doctors o Contact with the foreign doctors o Buy medicines online from the pharmacies o Can get proper treatment online and offline 1.4 Expected Outcome The result of this project are very important. The following are some of the things mentioned o By using this app, users can directly book appointments of the doctor without any suffering. They can book medical benefits from the hospitals. They can call ambulances and they also can buy medicines from online from various pharmacies. o Getting proper treatment will be easier and it will take much less time to reach the doctor. This will increase the chance of getting proper treatment. o This app will get a drastic change in our medical system. Users will not have to waste time or suffer from the lack of treatment. 1.5 Report Layout We have created an Android application titled "Medlink". We will ensure the project is completed on time. Respecting our work flow, we design project reports. The second chapter names the Background, we have discussed the role, related work, comparative study, problem areas, challenges. The third chapter names the Requirement Specification, we have discussed business process modeling, requirements collection and analysis, case modeling and use of details, logical data models, design requirements. The fourth chapter names the Design Specification, we talked about front-design, backend-design, connection design and UX and application requirements. The fifth chapter names the Implementation and Testing, we talked about database implementation, front-end design implementation, test implementation, test results and reports. The sixth chapter names the Discussion and Conclusion, we have discussed the future scope, coverage and outcome of the entire project. CHAPTER 2 Background 2.1 Introduction In a real life scenario, we face many difficulties when it comes to get a proper medical treatment in time. In a country like Bangladesh, many people suffer a lot just because they don't get proper treatment in time. Even people die for lack of proper treatment. This has been going on for a lot of time. In this modern era, people still suffer from this reason. People have to wait for a long time to get an appointment of the doctors or having a second opinion from another doctor. They just have to rely on this old traditional way to get a proper treatment. A platform is much needed to change this situation. 2.2 Related Works There are some related works that has been done on this topic but none of them is totally similar to this project. There are applications named "Doctor Bhai", "Optimal Health", "Medconnect" etc. These applications work only on booking appointments of the doctors or online blog systems. But our application covers all the factors of a medical system. 2.3 Comparative Studies There are a lot of medical help assistant systems are currently available now. They offer online medical helps for a specific sector, like - online treatment or online consult with the doctors etc. So that, we offer a platform which will cover every sectors of a medical system. By using our android application platform, users can get all kinds of help that can be needed. Using our application is much easier than using multiple platforms. Nowadays as the internet reaches everywhere, we can easily communicate anytime, anywhere, no matter where they are. Scope of the Problem As we said, teachers and students face some difficulties to communicate with each other. Our current communication system isn't as fast as the demand is going. So, we can discuss some problems here: o Using multiple applications for multiple medical problems is not preferable by the user. o The communicating regular system is manual still now, but this is a fully online based application. o Many the time increases the suffering of the injured or sick people and decrease the chances of getting recovered. According to these problems, our application offers solutions that will cover every need of medical solutions. 2.4 Challenges In every project, there are some challenges. As android based communication platform is our main goal, so we have to face some challenges too. o It is an android based mobile application, so if anyone doesn't have an android phone then this app will not be helpful for the person. o It will take time to reach out the rural people of country for this service for the internet service. CHAPTER 3 Requirement Specification 3.1 Business Process Modeling Figure 3.1: Business Process Modeling, 3.2 Requirement Collection and Analysis This is an online based patient and medical services booking system, so the process of procuring requirements must address all realities involved. This is the reason for identifying requirements at all levels and expectations. Software Requirements: o Users o Users login system o Time advantage o Easy to accept Hardware and Software Requirements for our system: Before purchasing any software or hardware for a digital platform you should make sure that the platform capable to supports the system requirement. Your computer has the specifications required to make the project efficient. It is almost mandatory to do the following requirements. CHAPTER 4 Design Specification 4.1 Front-end Design The front-end design is basically divided into two parts. The UX design and the UI development. At present, it has been made clear that there is a difference between Photoshop designed and XML design in mobile application development. Everything that we can see is a XML. These include things like fonts, drop-down menus, buttons, transitions, sliders, contact forms, etc. For android application we need XML to create user interface. 4.2 Backend Design The backend of our project is divided into three parts, one server, one application, one database. If you book an air ticket in a travel agency, you usually open the travel agency website and interact with the frontend. When the data you need is inserted, the application sends it to a database created on a server. So, in our backend system we create a database to store the data that the server receives through the users. We used JAVA & Node.js for our application development. 4.3 Interaction Design and UI Interaction with user experience (UX) design is the most important part of design. The result of an application depends on user satisfaction. As an application there is more user-friendly depends on interaction and Design part. In our application we have used a useful model of interactive design. 4.4 Implementation Requirements We have given a very good idea of the implementation requirements. The main task of this part is to make all the things easier, user friendly. The following is a list of implementation requirements: o Easy to create o Easy to manage o Easier to analyses o Easy to interact o Dynamic page o User-friendly CHAPTER 5 Implementation and Testing 5.1 Implementation of Database We are using Firebase as the database for this project. As Firebase stores all the data as JSON tree format, the whole database of our project is stored as JSON. The whole database is a JSON object and the entities of the database is the children of the object. The entities have their own child JSON objects which are the instances of individual entity. These JSON objects have unique IDs. In these objects the attributes are stored as key value pairs. There are also JSON arrays for multivalued attributes. Firebase is easily reachable but there is some problem too. As this is a non-SQL database, the queries are not like regular SQL queries. There is no concept of Primary Key or Foreign Key. But this can be obtained by the design of the JSON tree. As this is a new concept in database, this seemed a little confusing but this can be a great way to store data in a large scale in near future. Figure 5.1: Database Implementation Model In Figure 5.1, we show the implementation of data in the database. 5.2 Implementation of Front-end Design Figure 5.2: User login Figure 5.3: Home and Navigation bar Figure 5.4: Doctor Appointment Figure 5.5: Doctor Appointment Confirm Figure 5.6: Taken Appointment List Figure 5.7: Health Report with full view Figure 5.8: Health Report add 5.3 Implementation of Interactions There are common interfaces in modern communication systems is interaction. This is due to easy and fast communication. When users are on a particular page, the other activity involves doing something else that helps us to interact. This should be done in a way that attracts users. 5.4 Testing Implementation 5.4.1 Testing Testing is an integral part of any system development project. The main objective of the test is to validate the contribution, authenticity, reliability and quality of the application. The purpose is to implement an Android based application. 5.4.2 Unit Test Each piece of software is broken to ensure that the design is properly finished. This ensures that every part of the application will be compliant with the requirements. 5.4.3 Unit Test Cases Basically there are two parts in unit test. One is the database handler and the other is interface handler. We also use some basic features, such as data collection, data processing, and data extraction. The database handler will test these three functionality. The database handler test case now looks like this, o Each user can successfully add new data or not o Each user can successfully edit his or her data or not o Each user can successfully delete his or her data or not. 5.4.4 Implementation, Test The last and most important chapter is implementation. Applies advanced training personnel, system testing and execution. 5.4.5 Test Results and Reports All tests can be performed to enhance the efficiency of a system and to integrate software where each error can be found and resolved. CHAPTER 6 Conclusion and Future Scope 6.1 Discussion and Conclusion Working on medical system is an exciting topic to work. Going through this project, we have faced many challenging tasks that are related to our traditional medical system. We have researched many platforms that have been used to realize what should be done and what should not be done in our project. We interacted with the people to know that what kind of problems they are facing in the existing system. We talked with several experts, took guidelines that has helped us a lot to develop the platform. Though getting above these, we still faced many challenges. We think it's an innovative idea to bring all the medical solutions in one platform. The help that provided through this application is massive. We interact with many people, listen their problems, try to understand them and came up with this application. We hope that it will help them a lot. 6.2 Scope of Further Development There are many scopes of further developments. We have several ideas - o We will build a sustainable website for this platform. o We will build software version for various operating systems. o We will build apps for ios. o We will try to implement AI based medical assistant in this system. @Daffodil International University 2 @Daffodil International University 3 @Daffodil International University 4 @Daffodil International University 5 @Daffodil International University 6 @Daffodil International University 7 @Daffodil International University 8 @Daffodil International University 9 @Daffodil International University 10 @Daffodil International University 11 @Daffodil International University 12 @Daffodil International University 13 @Daffodil International University 14 @Daffodil International University 15 @Daffodil International University 16 @Daffodil International University 17 @Daffodil International University 18 @Daffodil International University 19 @Daffodil International University 20 @Daffodil International University 21 @Daffodil International University 22 @Daffodil International University 23