

**Design and Development of a Medicare and Medicine Home Delivery
Service Application (RENETO)**

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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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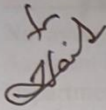
DHAKA, BANGLADESH

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APPROVAL

This Project/internship titled Design and Development of a “**Medicare and Medicine Home Delivery Service Application (RENETO)**”, submitted by “Safiqur Rahman Sakkhar (ID:161-15-7489)”, “Ashikur Rahman Ashik (ID:161-15-6768)” and “Syeed Ahmed Shad (ID:161-15-7477)” 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 “06.12.19”.

BOARD OF EXAMINERS



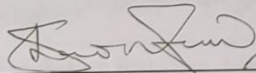
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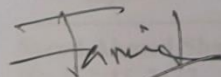
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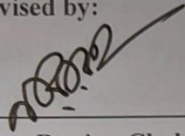
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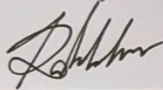
We hereby declare that, this project has been done by us under the supervision of **Narayan Ranjan Chakraborty**, Assistant Professor, Department of CSE Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of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

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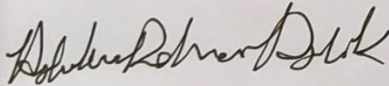


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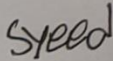
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ABSTRACT

This project is titled “Design and Development of a Medicare and Medicine Home Delivery Service Application”. It is an android application. We are trying to develop an application which will provide Medicare and easy access to prescribed or non-prescribed medicine. Our service is available 24/7. People can get health tips and medicine through this application. Its User Interface is very user friendly. Any person who has a smart phone can use this application to order medicine and maintain a good health by following health tips. Users have to create an account by some specific information and their national ID. If they don’t provide the copy of their national id then their account will be disabled and they will be informed by the admin. An account holder can order a non-prescribed medicine without the prescription. But if they want to order a prescribed medicine then they have to upload the image of a prescription which has to be prescribed by a certified doctor. If they fulfill our policy then their order will be placed. And users also can get information and contact details of their nearest diagnostic centers, hospitals and specialized doctors. We are also planning to add more features in our future updates.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Nowadays we all have smartphone. It has added new dimensions in our daily life. We can do almost all kind of important tasks with this device. It has become the part and parcel of our lifestyle. We cannot imagine a day without smartphone.

There are so many applications which help us to do our task. This applications are installed in our smartphones. We can also download them from play store and various kind of websites. There are so many popular applications in our country. We use them in our daily life. But there is no application in our country which will give the Medicare and medicine home delivery facilities 24/7 like ours.

The name of our application is “RENETO”. It is an android based application. This application is designed for smartphone or a tablet pc running on android OS. People can get this application in android play store. After installing this application, they have to sign up first and become a RENETO member. Only members can use this application and order medicine. They can get daily health tips from “Health Tips” section to get a basic knowledge on being fit and maintain a healthy lifestyle. People can buy both prescribed and non-prescribed medicine from us. They can buy not only medicine but also get contact details of their nearest diagnostic centers, hospitals and doctors through this application.

1.2 Motivation

Our motive is to make an application which we can be used in smartphones to get Medicare and medicine easily. It will help people to get medicine at anywhere anytime. There are so many websites which are giving Medicare through their web pages and it is not easy to access for the

general people. And there is no promising app for ordering medicines. We have a user-friendly interface and an easy ordering process. We also want to create a platform where user can find enough information about diagnostic centers, hospitals and doctors.

1.3 Objectives

- User friendly UI: It will help user to use it easily.
- 24/7 service: We will provide home delivery service in city 24/7.
- Time efficiency: The service will be provided at minimum time required; it is depended on distance.
- Prescribed and non-prescribed medicine: users have to provide prescription if they want to order prescribed medicine.
- Information: Contact details of nearest diagnostic centers will be available.
- Health Tips: Weekly or daily health tips from reliable source will be provided.

1.4 Expected Outcome

- Friendly home delivery service
- Easy access to necessary information.
- Better and healthy lifestyle.
- Users will be able to get medicine easily by sitting at home.
- Users could look for different imported medicine without any suffer.
- User can get addresses of many healthcare facility center from different area.
- User will get daily or weekly healthcare tips so they can be stay fit and stay healthy.

CHAPTER 2

BACKGROUND

2.1 Introduction

Our plan was to develop and design an application which will help people to get medicine in a short period of time. We tried to make an application which will become a part and parcel of a healthy lifestyle. Helping people during emergency is one of the main moto of our work. There are some websites which provides medicine home delivery service. But they are not that much user friendly. And they take so much time to deliver them. Most of the websites are not active. There is a single application which is similar to us but it has so many bugs and limitations. So, we wanted to develop this application. We will talk about our speciality and what makes this application unique from others.

2.2 Related Works

- phramacy.com.bd
- osud.com
- epharma.com.bd
- lazzpharma.com
- mytonic.com
- GoMedKit

2.3 Comparative Studies

In related works section we have provided the names of some works which are similar to our project. All of them are web-based project except “GoMedKit”. This web sites are providing medicine and other health care products delivery services. Most of them are not so active. They take 1 day for delivery. But we will deliver the medicine within a short period of time. And these websites are not user friendly. Our ordering process is comparatively easier than others. There was no application like ours when we took part in the title defense. Unfortunately, an application named “GoMedKit” has released a few months ago. They also provide medicine home delivery service. But this application has so many bugs. It also wants prescription for both prescribed and non-prescribed medicine. We have different sections for prescribed and non-prescribed medicines. People can order non-prescribed medicine without providing a

prescription. We also provide information and contact details of nearest diagnostic centers, hospitals and doctors which they don't offer to their users. we also have a health tips section from where a user can get necessary tips and maintain a healthy lifestyle. And we have plan to add great features in our future updates.

2.4 Scope of the Problem

Scope of the problem in our project is the source of information. We are trying to make it easy to get information for our users. We have to collect information from various sources. Sometimes it is hard to get the information of a health institute and doctors. Some of them are not so co-operative to help. Another problem is we cannot provide service outside of Dhaka. We can't get orders from outside of the city. But we are planning to find a solution and how we can make it national. Our application is in English. So, it might be a little bit hard to use it for the general people.

2.5 Challenges

During designing and developing this application we faced some problems because of the newly updated version of android studio. We were comfortable with the old version. Sometimes we couldn't find the errors for hours even though there were no visible mistakes.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Process modeling

The model is given below which we used in this project. Data flow diagrams are used to graphically represent the flow of data in a business information system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation. Data flow diagrams can be divided into logical and physical. The logical data flow diagram describes flow of data through a system to perform certain functionality of a business. The physical data flow diagram describes the implementation of the logical data flow.

We can link up our DFD and business process diagram for connecting our system processes and business activities.

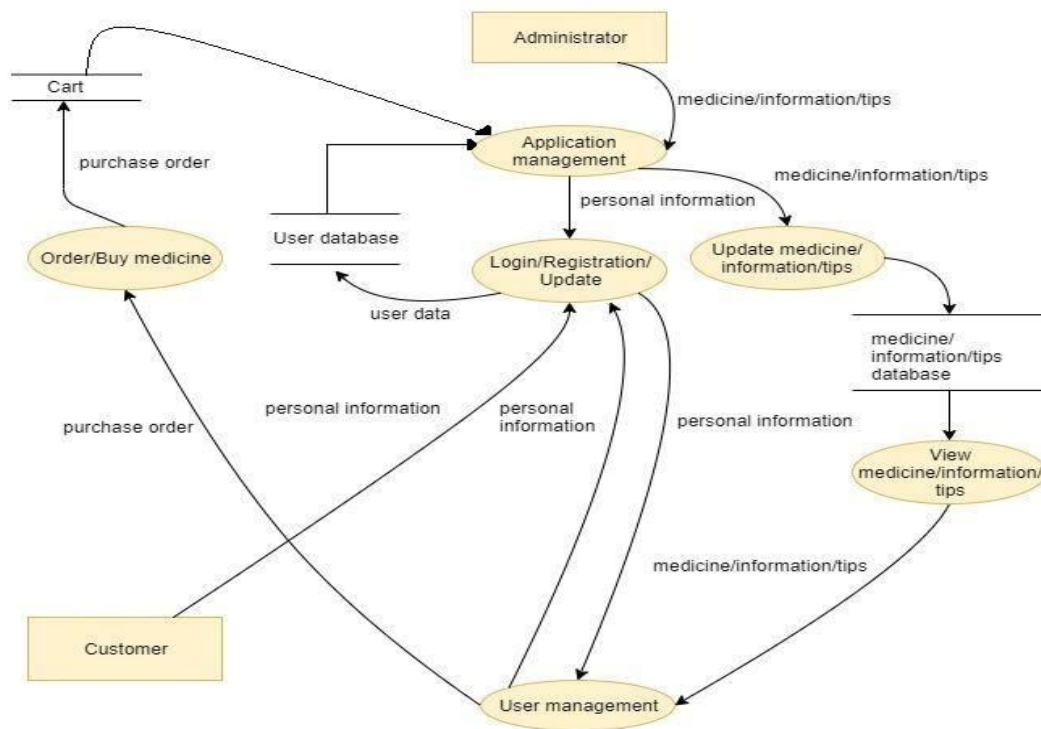


Figure 3.1: Data flow diagram

3.2 Requirement Collection and Analysis

Requirement collection and analysis is one of the primary conditions of application development. For development there are two types of requirement. One is functional requirement and another one is non-functional requirement. Functional requirements are those activities that the application software can perform. Non-functional requirements are the personalities of an application.

Functional requirement: Our system has many functional requirements. Ordering products, a login section where only authenticate person can access, a cart section for checking the ordering products and price of those products are the parts of functional requirements.

Non-functional requirement: Non-functional requirements help to be more efficient. Application UI should be user friendly for excellent user experience.

3.3 Use Case Modeling and Description



Figure 3.3: Use Case Modeling

User can log in to the account. User can sign up for an account. User can order medicine. By adding cart, he/she can place the order. User can also update or delete the cart. User can view information and tips. Admin can add, update, delete data from database. Admin can disable an account for violating the policy. Admin can add products. Admin can receive order.

3.4 Logical Data Model

An entity relationship model, also called an entity-relationship (ER) diagram, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems. An entity is a piece of data-an object or concept about which data is stored. ER diagram of our system is given below.

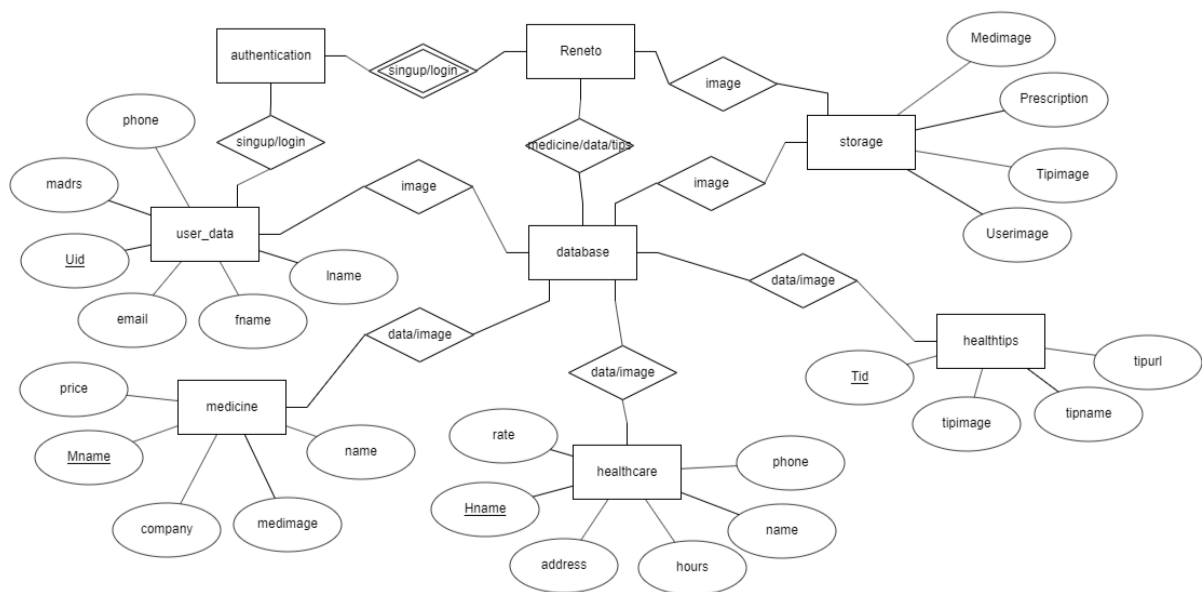


Figure 3.4: Entity Relationship Model

3.5 Design Requirements

When designing systems or software, following issues must be considered that reproduce the overall design of the goals that the system expected to achieve. We have followed below points

User Friendly: The application must be user friendly so that the user can find it easy to use.

Compatible to various devices: It was number one priority that our application has to be installed in almost all android operated smartphones.

Efficient: We have tried to keep this application as light as possible in order to run it faster and smoothly.

Some extra features

- Two types of users: Admin and Customer
- Admin will update the list of products
- Admin will update the information
- User can see the information
- User can order
- User can see the products
- Admin can disable account
- User can upload images

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-End Design

Front-End Design consists of two parts: XML file for the design and structure of the user interface and class for developing logical operations of that user interface.

In XML files of our user interfaces we have used various activity layouts and various types of labels such as edit text, image view, button, text view etc. We have also used some extra XML files and classes to make our application much more user friendly and attractive user interface so that it becomes easy to use for the users. As a result it has turned out simple but attractive.



Figure 4.1: User Login and Registration page.

This is the home page of our application. User can directly login to our application if he/she has already registered. If the user has no account then he/she has to sign up first by giving the

information we ask for. He/she also has to provide the copy of their NID to create a verified account.

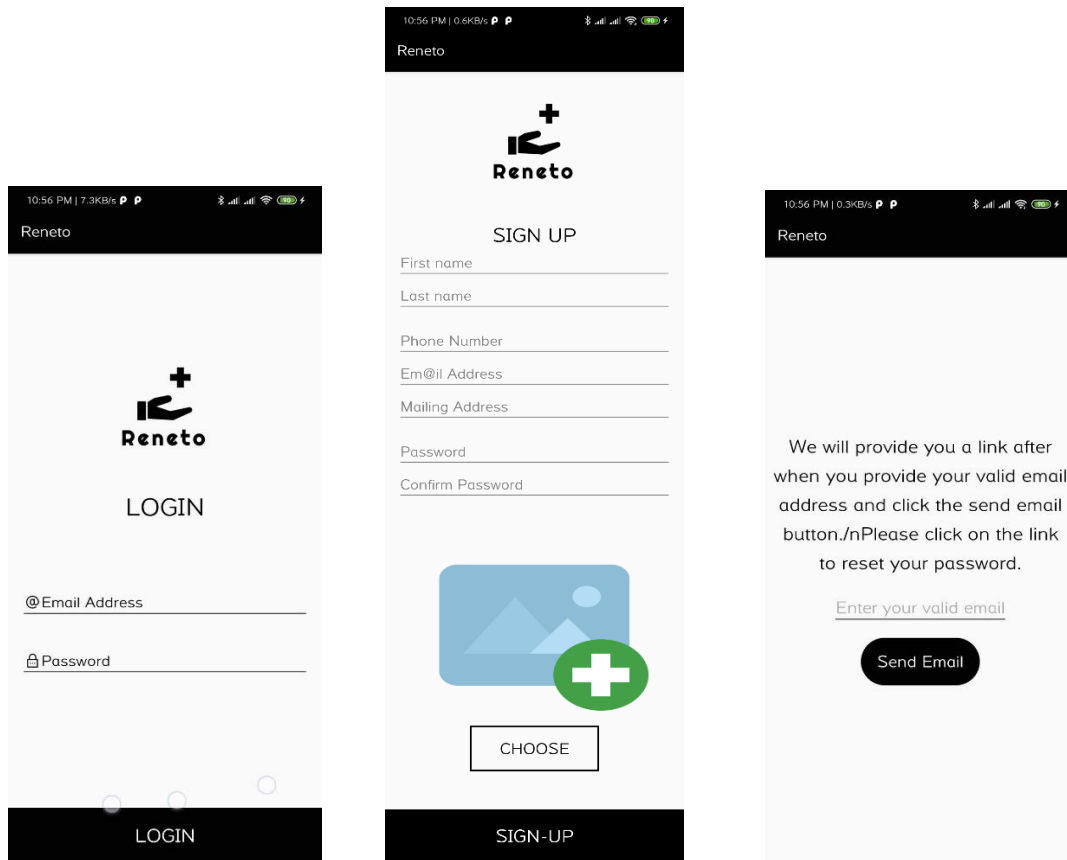


Figure 4.2: Login page. Figure 4.3: Sign-up page. Figure 4.4: Password reset page.

In Login activity user must have to input the correct email address and password to get logged in and in the sign-up activity user must have to input all required information. After giving all the information, Users must have to choose and upload the picture of their NID. Without providing all the information and the copy of NID the registration won't be completed. We have also added some extra conditions to get the correct information from the user, phone number has to be 11 digits, no text or nothing will be accepted in the email box without the email address format, and password should be 6 digits minimum.

User can also reset password via providing valid email in password reset page.



Figure 4.5: Main Menu.



Figure 4.6: Order Menu.

After successful login, user will go to the main menu which is shown in **Figure 4.5** and can order medicine, look for healthcare centers in Dhaka city and doctor's visiting schedule of that healthcare center and user also can read some health-related articles or blogs to keep themselves healthy. In the Order Menu section we have put two options to order medicine. One is to order prescribed medicine and another one is to order non-prescribed medicine which is shown in **Figure 4.6**. There are lots of medicine in our market which are not allowed to sell without any prescription and also have some medicine which are allowed to sell without prescription. So, we have put both options to make it easier and safer for the user.

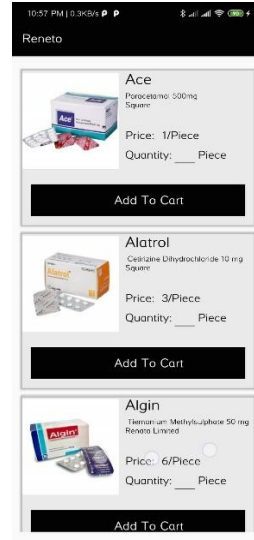
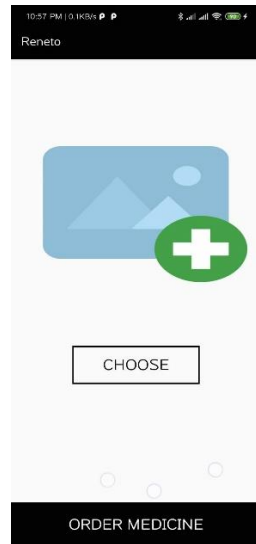


Figure 4.7: Order Prescribed Medicine. Figure 4.8: Order Non-prescribed medicine.

By clicking Choose button user could select the picture of his/her prescription that he/she wants to order, shown in **Figure 4.7**. After choosing the prescription it will be displayed in the image view to make the user sure if he/she has selected the correct prescription or not.

To order non-prescribed medicine, user have to just click add to cart button shown in **Figure 4.8**. after clicking add to cart user would be able to set the quantity of medicine and total price to order in **Figure 4.9** and **Figure 4.10**.

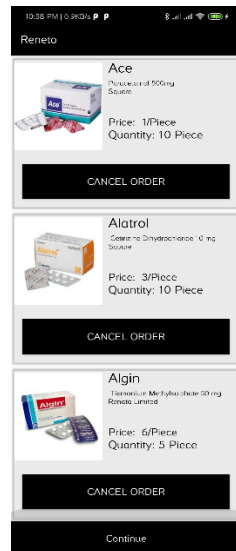


Figure 4.9: Added Medicine. Figure 4.10: Order description.



Figure 4.11: Healthcare page.

In healthcare section, user can find basic information of healthcare centers in Dhaka city. By clicking on the information of a healthcare center user will be taken to a new activity where user will see the visiting schedule of all doctors of that healthcare center.

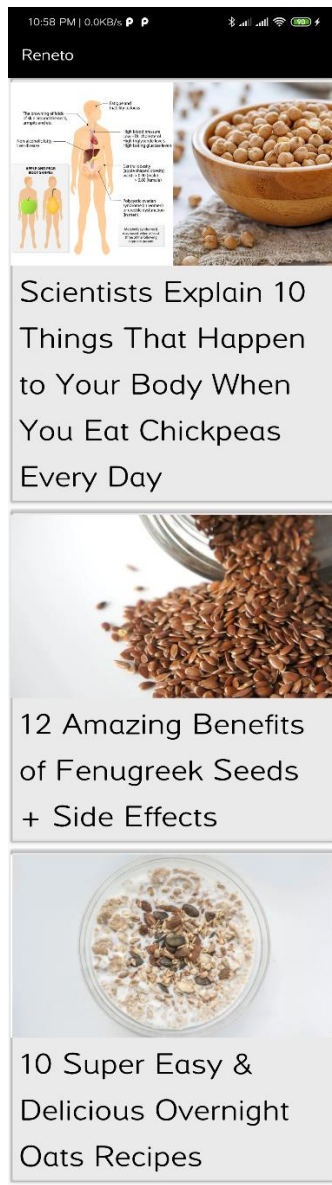


Figure 4.12: Health Tips Page.

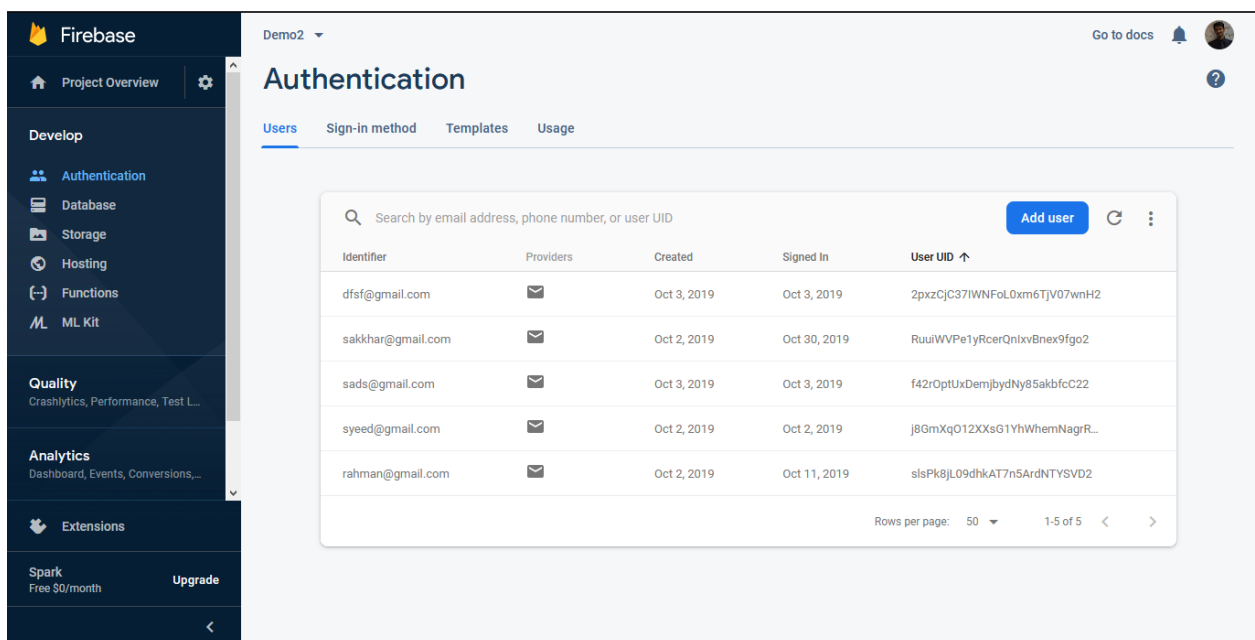
In health tips page user will find some link of some health related articles or blogs from reliable sources to maintain their dieting plan or workout plan in order to keep themselves healthy. User could study more by clicking on these thumbnails.

4.2 Back-End Operations

Since we are developing an android application, we had to use a database to store and retrieve data in the application. We used Firebase Database to show and retrieve data to user. Back-End Operation of our application consists three parts of Firebase Database, Firebase Authentication, real-time database, Firebase storage, and Java classes.

We used Firebase Authentication to register users to our application, Firebase Authentication gives users proper privacy that admin will not able to see user's password. But admin can disable or delete the user's account if he wants. We used Firebase real-time database to store user's personal information and retrieve data of our application to the user and we used Firebase storage to store pictures which are uploaded by the user and retrieve pictures to the users in different activities.

All this Firebase Database facilities are connected to our application through java classes, various libraries and dependencies. To execute our application with the connection of database we used many methods to upload data, retrieve data and register user via Firebase Authentication. And another reason for using Firebase Authentication is it gives every user a Uid(Unique Id). By this Uid, admins can easily find the information of the users and images which are uploaded by the user shown in the figure below.



The screenshot shows the Firebase Authentication console for a project named 'Demo2'. The 'Users' tab is selected, displaying a table of registered users. The table has columns for Identifier, Providers, Created, Signed In, and User UID. There are five users listed, each with a unique User UID. The interface includes a search bar at the top, an 'Add user' button, and pagination controls at the bottom of the table.

Identifier	Providers	Created	Signed In	User UID ↑
dfsfg@gmail.com	📧	Oct 3, 2019	Oct 3, 2019	2pxzCjC371WNFoL0xm6TjV07wnH2
sakhar@gmail.com	📧	Oct 2, 2019	Oct 30, 2019	RuuiWVPe1yRcerQnlxvBnex9fgo2
sads@gmail.com	📧	Oct 3, 2019	Oct 3, 2019	f42rOptUxDemjbydNy8SakbfcC22
syeed@gmail.com	📧	Oct 2, 2019	Oct 2, 2019	j8GmXq012XXsG1YhWhemNagrR...
rahman@gmail.com	📧	Oct 2, 2019	Oct 11, 2019	slsPk8jL09dhkAT7n5ArdNTYSVD2

Figure 4.13: Firebase Authentication Database.

4.3 Interaction Design and UX

it is the design of the interaction between users and products. Most often when people talk about interaction design, the products tend to be software products like apps or websites. The goal of interaction design is to create products that enable the user to achieve their objective(s) in the best way possible. Interaction design is the proper way that observes the interaction between a system and its user.

On the other hand, user experience focuses on the overall experience design between a user and an application.

4.4 Implementation Requirements

To implement this project we needed Android Studio to design and develop the whole project, web browser to control database, android emulator which is internally installed in the android studio for testing the project and we also needed to install jdk and sdk files, internet to make android studio work properly and to make the database connection stable to test the project. Without internet connection this application cannot be tested.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

In this phase, DBMS is installed on the required hardware and optimized to run perfectly on the hardware and application. The main task is to create database and tables and load the data. This is the implementation of DBMS.

We used database for storing and retrieving data in our application. Firebase Database was used for this task. Three parts of Firebase Database were used in the back-end operation of our application. We also used Firebase Authentication, Real-Time Database, Firebase Storage and Java Classes. Java classes were used to all of our logical operations.

Firebase Authentication: Firebase Authentication was used to register users in our application. It provides privacy to user so that the admin won't be able to see the password user is using to login. But admin is able to disable any account if the user doesn't follow our policies.

Firebase Real-Time Database: We used Firebase real-time database to store user's personal information and retrieve data of our application to the user.

Firebase Storage: Firebase storage was used to store the pictures which are uploaded by the users and admin.

We connected all of the facilities of Firebase Database to our application by java classes, various libraries and dependencies. To execute our application with the connection of database we used many methods to upload data, retrieve data and register user via Firebase Authentication. And another reason for using Firebase Authentication is it gives every user a Uid(Unique Id). By this Uid, admins can easily find the information of the users and images which are uploaded by the user shown in the figure below.

5.2 Implementation of Front-end Design

In front-end design there are two parts. XML files and Java classes. XML files are used for the design and structure of the user interface. We added text and buttons which will take to the other activities by clicking on them. Java classes were used to develop logical operations of the user interface. The home page of our application is implemented by using XML files. We used to make our homepage attractive and user friendly. The login and sign up section is under the java classes of that XML file. These classes are used to perform the logical operations.

5.3 Implementation of Interactions

We asked our friends and other mentors including our supervisor and faculty members about their opinion. We shared our visions. We listened to what they have to say and took their suggestions. For a friendly user interface, we used pictures and buttons with enough information so that the user will know how he/she has to use this application. It is very easy to order, learn and communicate with the admins.

5.4 Testing Implementation

System Testing is the testing of a complete and fully integrated software product. Usually, software is only one element of a larger computer-based system. Ultimately, software is interfaced with other software/hardware systems. System Testing is actually a series of different tests whose sole purpose is to exercise the full computer-based system.

Table 01: Test case for the system

Test case	Test input	Expected outcome	Obtained outcome	Pass/Fail	Tested date
1.Sign-up	Sign up with necessary info	Create account successfully	Account created	pass	19.10.19
2.Sign-up	Sign up with not necessary info	Create account unsuccessfully	Unsuccessful account creates	pass	19.10.19
3.Login	Login with valid email and valid password	Login successfully	Successfully login	pass	19.10.19
4.Login	Login with invalid email or invalid password	Login failed	Login failed	pass	19.10.19
5.Select option	Select option	Select successfully	Successfully selected	pass	19.10.19
6.Select category	Select category	Select successfully	Successfully selected	pass	19.10.19
7.Selecting Prescribed and non-prescribed medicine	Select between Prescribed and non-prescribed medicine	Select successfully	Successfully selected	pass	19.10.19
8.Upload prescription	Upload prescription and order medicine	Upload and order successfully	Successfully ordered medicine in progress	pass	19.10.19
9.Upload prescription	No prescription upload	Can't order Prescribed medicine	Order failed	pass	19.10.19
10.cart	Add cart	Cart information saved successfully	Successfully ordered medicine	pass	19.10.19
11.Open in browser	Click to open in browser	Link open in browser	Successfully opened	pass	19.10.19

5.5 Test Results and Reports

Test report is needed to reflect testing results in a formal way, which gives an opportunity to estimate testing result quickly. It is a document that records data obtained from an evaluation experiment in an organization manner, describe the environment or operating conditions. And shows the comparison of the test results with objectives.

- Login System
- Registration System
- Selecting Options
- Uploading Images
- Getting Information
- View Information
- Order Medicine
- Logout

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

We tried to make an application which will become a part and parcel of healthy lifestyle. Our ambition is high. We hope people will get benefit from our application. We will be able to help them at their emergency. They don't have to worry if they need medicine at midnight. We will be at their door with medicine as soon as possible. We hope our application will be used to make a safer environment. Right now we don't have any intention to make it a commercial application. We are not looking forward to make a profit out of it. But we have some big plans to make it bigger. We also hope that our application will become an organization one day and we will provide jobs to the jobless people.

6.2 Scope for Further Developments

This application will be updated regularly. We also have a plan to create a reminder section by which users can set their customized reminder for remembering to take their medicine in time. Currently our UI language is in English. We are planning to add the Bengali as well so that it can be easy to use for the general people. Also, we have plane for an application for admin to get easy access of user information and ordered medicine.

Reference

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