DESIGN AND DEVELOPMENT OF AN ANDRIOD BASED HEALTH CARE MEDICAL VIBE

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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 "**ANDRIOD BASED HEALTH CARE MEDICAL VIBE**", submitted by SHRABONI GHOSH, NUSRAT JAHAN NISHA and SAJIB PAUL SPHARSHA 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 *4th January, 2022*.

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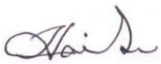

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Declaration

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

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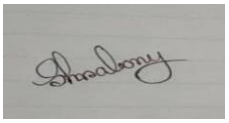

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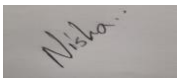

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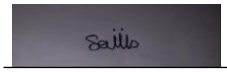

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Finally, we must acknowledge with due respect the constant support and patients of our parents.

Abstract

Prevention is always better than treatment for health problems, making it easier than ever to prevent. In the age of electronic information technology, you can get all the information you need with just a few taps of your finger. Mobile and wireless technologies benefit millions of people around the world in all sectors, including health. But the healthcare system in our country is still running as well.

However, people have many problems when using medical services. For example, the medical report is often lost, or the scheduled test is forgotten. Because we do not archive the 's medical condition, we cannot monitor our health or obtain data when needed. On other thoughts, sometimes we have to call for medicine at night or in bad weather, we haven't several emergency ambulance services and lack of knowledge of digenetic center, its test information, and price. Such activities often cause serious health problems. This motivated us to take-up a project on "Mobile Application for Medical Vibes" which will target to achieve the expected. This project was conceived based on fundamental life experience requirements. The project is implemented on the Android platform. This application was tested in real-time and found to be very useful.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Due to a lack of proper information, the prevalence of uncomfortable inquiries posed to patients appears to rise. Unfortunately, there is a lack of good health care. It takes much effort, and it all stems from one central concept: knowledge. Android By supplying the appropriate information, the program can recommend a solution. It will make life easy for the patient. It is the current requirement. It develops an Android app that will process and communicate information about the patient's needs, such as a pharmacy, a doctor's information, a diagnostic center's information, and an emergency contact system service to the public good.

1.2 Motivation of Work

People who come to Mymensingh Division for treatment are notable. I couldn't find a suitable hospital, or I was often scammed by scammers. It is also difficult. You can find drug prices, doctor information, iagnostic center test results and price information, and emergency contact information in one plabvbvbce. Not to mention in pricing information for testing, most applications, along with all diagnostic center information, are excluded from the priority list. So we created this app to solve these annoying problems.

1.3 Objective

This app is something we'd want to work on. This app will provide the following features:

- Keep all important information about a doctor organized by disease categories.
- To supply medicine with a prescription from our Medical Shop and to have it delivered to your home.
- To maintain track of all diagnostic centre information, including test lists, price estimates, and other pertinent data.
- Keep track of any medical report reminders and data.
- Provide information about numerous helplines and emergency contacts.
- Maintain the feedback option in order to suit the needs of the user.

1.4 Expected Outcome

Using this app, people can find what they need. Healthcare systems include finding doctors by specialization, cost and checklists, getting reports, and home delivery prescription reports. You can also save valuable time with all the information you need without asking anyone what comfort is. For example, contact information can be obtained in an emergency where blood or an ambulance is required. They can also use this app to find pharmacies.

1.5 Report Layout

Chapter 1: Introduction

In this chapter, introduction, objectives, motivation and the expected outcome of our Project will be discussed.

Chapter 2: Background Study

Chapter 2 includes the works related with our app, comparative studies and the challenges we had to face to develop this app.

Chapter 3: Requirement Specification

In chapter 3, requirement specification such as business process modelling, requirement analysis and modelling, logical data model and design requirement will be discussed.

Chapter 4: Design Specification

The description of Front-end design, back-end design, interaction design and UX and implementation requirements are given in this section.

Chapter 5: Implementation and Testing

The implementation of database, implementation of front-end design, implementation of interaction, testing implementation, test results and reports are discussed in this chapter.

Chapter 6: Conclusion and Future Scope

Chapter 6 discusses about the conclusion and the future scope of our app.

CHAPTER 2

BACKGROUND

2.1 Introduction

An Android app that offers a solution by allowing you to share your concerns and information with other patients, as well as information about doctors, diagnostic centre examinations and prices, and emergency contacts, all of which work together to provide information about health care providers so that problems can be resolved more quickly. There are fewer resolutions and misunderstandings. The app's goal is to facilitate communication between patients and healthcare professionals. App for Medical Vibes It's made to help people by giving them extensive information on themselves. Medicines delivered to your home, doctor information, diagnostic centre tests and pricing, and emergency contact information Having all emergency information in one app, such as a blood bank, diagnostic centre analysis and costs, pharmacies, ambulances, and more, will be a crucial tool to safeguard our patients' long-term future.

2.2 Related Works

There is an Android app that is almost similar to the Medical Mood app. But they have many differences. Some of them:

DIMS: This application does not provide a detailed description of the information in the diagnostic centre with information about doctors by category, checklists, knowledge, and a helpline [1]. Disease Dictionary: Contains only detailed information about the disease, not by type [2]. Patient Assistance: This application has only a list of medications, doctors, and helplines but no reservation system and detailed patient information.

2.3 Comparative Studies

Apps for patient support can only show a list of doctors. However, the user can access Pharmacy Listings, Medical Test Lists, Test Prerequisites, Test Prices, Receive Couriers and Report Reminders, and Emergency Contacts using our program. Everyone can use our application because it has features like registration and login for individuals. Isolate the service and don't allow anyone else to connect to it.

Users can acquire information on patients from the hotline, for example, using our app, in addition to the unique capabilities stated previously. Help and extensive informal and thorough information on a variety of conditions, as well as a list of specialty doctors, the Medical Shop, and the test information app are all available. Action on a variety of ailments, as well as a list of specialist doctors, as well as the Medical Shop and test information app. It's the same thing. It addresses all of the facts in one place, unlike most other health apps.

2.4 Scope of the problem

Because it is an Android app, if you do not have an Android smartphone or Not know how to manage them would be zero for them. Also, providing the card is a matter of financial matters. This is because you will need to purchase an API key to use this feature. We couldn't afford it because we were students.

2.5 Challenge

1. The biggest problem is the language barrier, not our native language. English. Most of the inhabitants of our country do not know this.
2. English is used as the main language for our application
3. The application can access the Internet. Therefore, users need a stable internet connection.
4. To use a reliable database that stores and processes all information Backend design and provisioning security.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Business Process Model

BPM, or business process modelling, is the practice of identifying ways to improve a business process or workflow. This is commonly done. Separate charting approaches, such as data flow charts, flowcharts, and so on, should be used. We establish a BPM in our system to show how data is moved between users and users. Manager. It also demonstrates what happens if the user provides inaccurate data. If the data is correct, it is saved in the database, with each entity having its own database table.

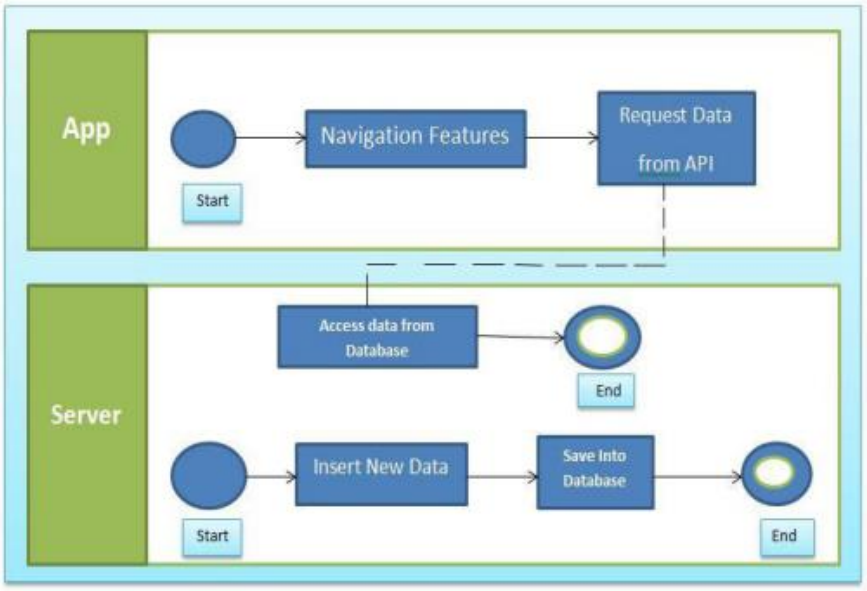

Figure: 3.1 Business Process Model (BPM) of the system.

3.2 Requirement Collection and Analyse

For gathering and analysing the needs of a given system or all Android applications, the terminology is critical. This is in line with the user's objective. We've been attempting to figure out what our program's requirements are for users and administrators because our application is tailored to their needs. Almost everyone advised creating a simple application that could be utilized by anyone. in order to assist This program provides them with essential information regarding medical information

systems and medical services. Because if they encounter any difficulties when receiving medical information, we will be able to select the information or service we desire.

3.3 Use-Case Modelling

A use case model is a graphical representation of how various sorts of users interact. A method of locating solutions to challenges. It specifies the user's objectives, the user's relationship with the system, and the behaviour required by a strategy to achieve these objectives. Figure 3.2 depicts a simulation of the application use case.

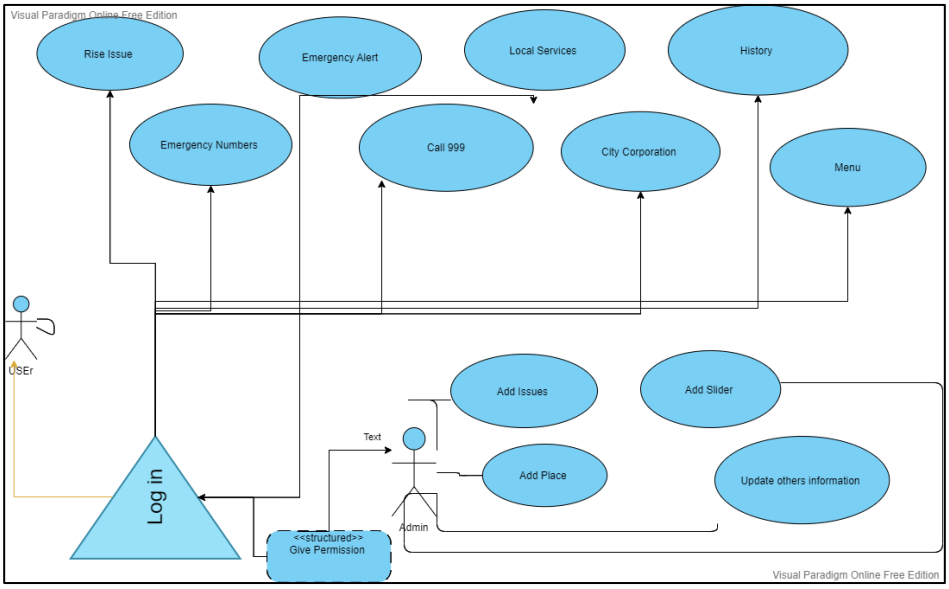

Figure 3.2 Use Case Model for User

Use Case 01: Pharmacies

- Primary Actor: User.
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: List of Pharmacies will show.
- Exception Scenario: No data found because of internet connection.

Use Case 02: Medicine Oder

- Primary Actor: User.
- Precondition: Internet Connection
- Secondary Actor: Null

- Main Success Scenario: Open Medicine Order Page.
- Exception Scenario: No data found because of internet connection.

Use Case 03: Home Delivery

- Primary Actor: User.
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: A Home Delivery base page will show.
- Exception Scenario: No data found because of internet connection.

Use Case 04: Diagnostic Center

- Primary Actor: User
- Precondition: Internet Connection.
- Secondary Actor: Null
- Main Success Scenario: Click the Diagnostic Center and there will be a list of Diagnostic Center.
- Exception Scenario: No data found because of internet connection.

Use Case 05: Emergency Ambulance

- Primary Actor: User
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: Click the Emergency Ambulance button and there will be a list of Emergency Ambulance.
- Exception Scenario: No data found because of specific Number is not in the contact list.

Use Case 06: Health Tips

- Primary Actor: User
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: Click the Health Tips button and application will enlist health tips.
- Exception Scenario: No data found because of internet connection.

Use Case 07: History

- Primary Actor: User
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: Click History button and the application will show one his actives.
- Exception Scenario: No data found because of internet connection

Use Case 08: Doctor Information

- Primary Actor: User
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: Click the Doctor button and application will show doctor information categorized.
- Exception Scenario: No data found because internet connection.

Use Case 09: Update Profile

- Primary Actor: User
- Precondition: Internet Connection
- Secondary Actor: Null
- Main Success Scenario: Click Update Profile button then user will update their profile.
- Exception Scenario: No data found because internet connection.

3.4 Logical Data Mode

Our app's logical data model has relational tables named Admin, User, Database and App. Below, we describe the connection of the entities with each other. The full relational model is shown below:

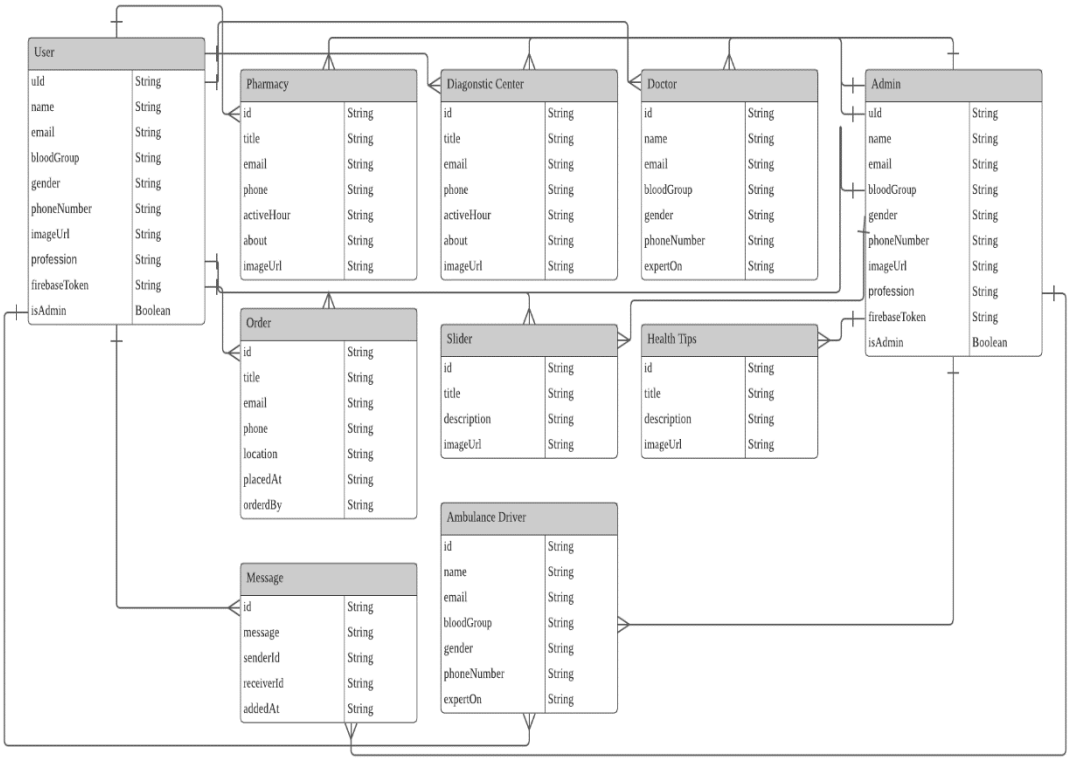

Figure 3.3 ER Diagram

3.5 Design Requirement

Well-designed Android app using is a lot of fun. Our app is a service provider. In the Mymensingh division, local residents and health care enjoy a positive relationship. Because the app's users are all local, make the user interface as simple as possible. Design for Android that is good the importance of applications is crucial. However, we must initially focus on the release in order to draw a user base. Users expect quick service from their applications in general. Great. Our main goal is to make the user interface as simple as possible.

CHAPTER 4
DESIGN SPECIFICATION

A design specification is a detailed document providing information about the born of a project to set criteria the developers will need to meet [4]. Its use is called for where a structure or product has to be specially made to meet a need.

A design specification is a statement that describes how a design for a system will be created. We'll exhibit the front-end and back-end design of our mobile application, website and admin panel in the Design Specification section. We'll also go over the many tools and platforms that we employed in this project.

4.1 Front-end Design

For android, the XML and Kotlin code that makes up a user interface is called front-end design [5]. Kotlin is a general-purpose programming language that may be used for a variety of tasks. Type inference and is cross-platform. JetBrains's open-source contributors created Kotlin. It is a modern, compact, and secure programming language that is simple to learn and use, allowing you to quickly construct complex applications. We'll talk about our front-end design here:

4.1.1 **User Profile:** This scenario shows us the user profile of our application.

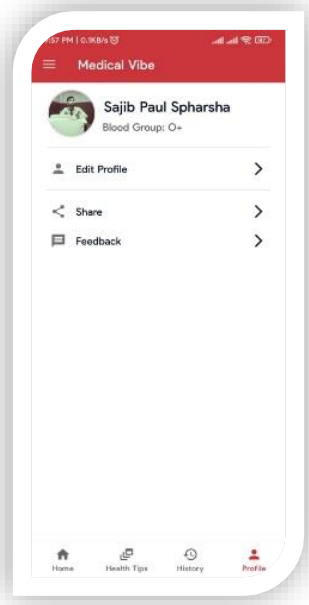

Figure 4.1.1: User Profile

4.1.2 Home Screen: After click on URL or app, the application shows user the home screen. From the home screen user can access all the basic features of the application such issues like traffic, mosquitos, garbage, street lights, public toilets, drainage, illegal structures, water logs, emergency numbers and alerts, local services such as hospitals, pharmacies, police outposts, mosques, ATMs, and detailed information about the city corporation.

Figure 4.1.2 Home Screen (English)

4.1.3 Pharmacies: Here all kind of Pharmacies information will be display.

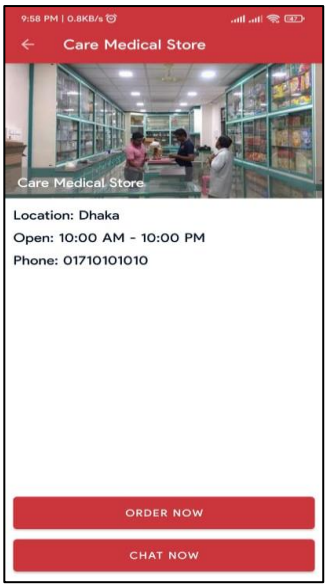

Figure 4.1.3 Pharmacies

4.1.4 Doctor Information: Here all kind of doctor's information categorize will be display.

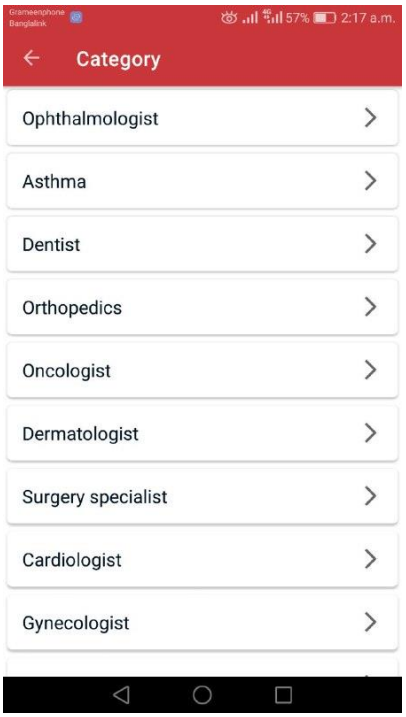

Figure 4.1.4 Doctors information categorize

4.1.5 Emergency Ambulance

This figure shows us the Emergency Ambulance Contact.

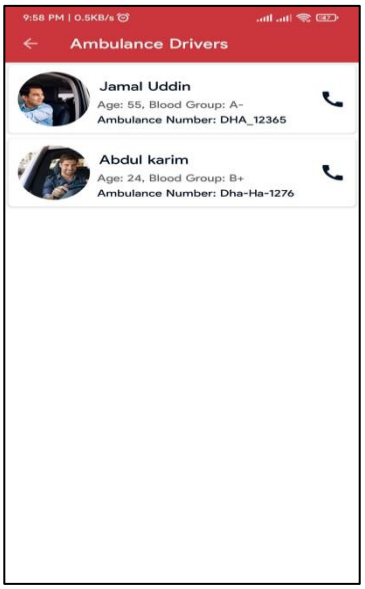

Figure 3.1.5 Emergency Ambulance Contact

4.1.6 Health Tips

This figure shows us the all-health tips information.

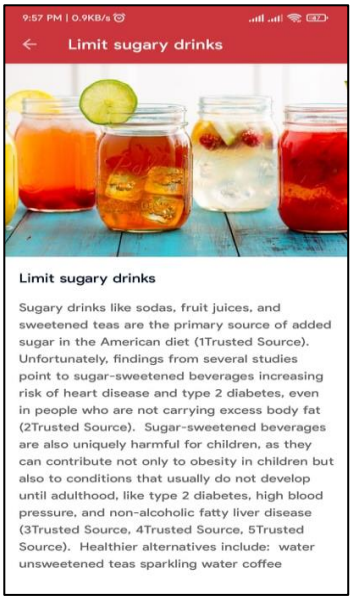

Figure 3.1.6 Health Tips

4.1.7 Diagnostic Center

This figure shows us the Diagnostic Center Information

Figure 3.1.7 Diagnostic Center Information

4.1.8 Medicine Order Page

This figure shows us Medicine Order Page.

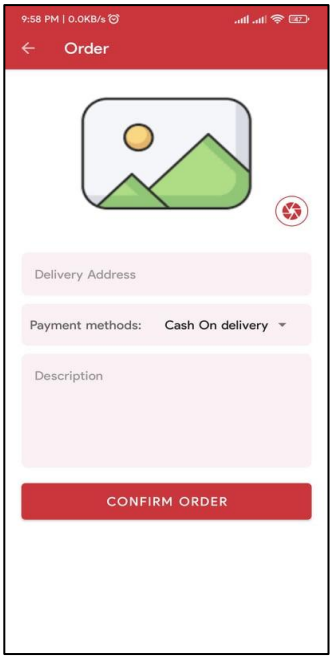

Figure 3.1.8 Medicine order Page

4.1.9 Medicine Home Delivery

This figure shows us Home Delivery action.

Figure 3.1.8 Medicine Home Delivery

4.1.10 Update Profile

This figure shows us Update Profile.

Figure 3.1.9 Update Profile

4.2 Back-end Design

The most crucial aspect of an application is the back-end. Everything that makes sense happens here. The back end of the program determines how the user interface will look, how actions will work, and how items will be represented to the user. In fact, the back end of the application determines all aspects of the application. The back end is responsible for the languages used, the database, the app's security, authentication, authorization, and all other settings. This is an application. For the project's development, Android Studio was utilized. The main languages utilized are XML and Java. The data repository, which is a real-time database, was built with Firebase [7].

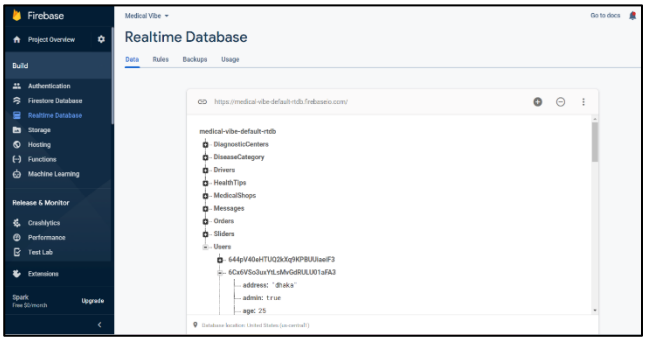

Figure 4.2.1: Database page on Firebase

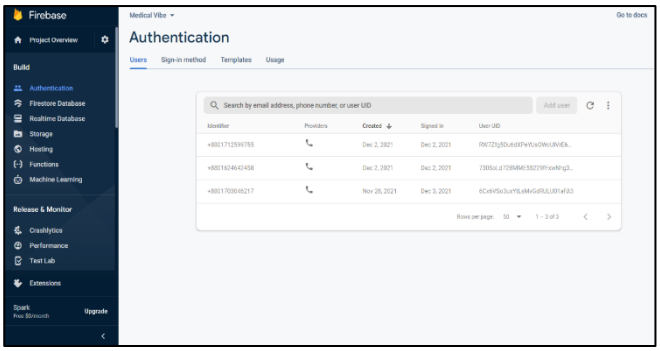

Figure 4.2.2: Details of entities on database

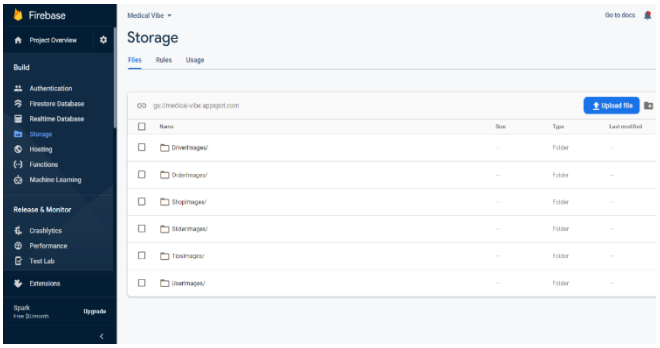

Figure 4.2.3: Categorized storage page on database

4.3 Interaction Design and UX

The link between the application and the user is described as interaction design. The popularity of Android apps among users is determined by how they connect. User's applications. If the application is simple and produces outstanding results, it will gain popularity. Interaction necessitates creativity. Design. Because the majority of user experience focuses on application and user understanding. We have attempted to make the most of the application's functionality through our efforts. Interact with the application's user.

For developers, the most challenging component is UX design. They must pay close attention to the application's user experience and how to use it. The final product will meet our expectations. We tried to concentrate on this aspect. Ensure that our program has a user-friendly interface.

4.4 Implementation Requirement

To complete your project, you'll need several components, tools, and software. We also used third-party tools and functionalities to complete the job. This is a project for an Android app. Our application is built with Material Design components and technologies. The chemicals and devices are described in depth. To create applications, we'll need this.

4.4.1 Android Studio

Google's official integrated development environment is Android Studio (IDE). Android OS and platform for developing Android and Flutter apps based on IntelliJ IDEA. Provides Android developers with practical tools and libraries for creating apps. It comes with nearly all the components, tools, and frameworks we will need to get started. Android apps are quick and straightforward to use. Our primary IDE program was Android Studio. Developers prefer it for various forms of development because it is a versatile tool.

4.4.2 Emulator

Emulators build virtual devices that are optimized for specific applications. We can put it to the test and see how it performs. It runs the same code, dependent on the specs of the device. We can also use other Android versions.

4.4.3 Android SDK

The Android SDK, or software development kit, is critical to the development process. For development, the Android application includes all design and component libraries. An emulator that can use to test apps. On the Java platform, we utilized OpenJDK with SDK.

4.4.4 Firebase

One of the most well-known Real-time Databases is Firebase. Like any other realistic software or application, a dedicated database is required to store user information. We chose Firebase as the primary database for storing and managing our applications. Information about the user. We also had datasheets specialized for specific purposes. That synchronizes real-time data with all app users. It is also employed in the certification and registration processes.

CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Front-end Design

In terms of android application development, the program's front end is actually made up of numerous screens or activities. The design and functioning of these activities are vastly different.

The user interfaces were created using the Android Studio IDE and the XML design language. Extensible Markup Language, or XML, is the standard and official design language for developing Android apps. We had to use Adobe Photoshop and Illustrator to create the app's logo, icons, and background in other circumstances. In some of these scenarios, we also used the Android Studio IDE.

Implementation of Front-End Design

Figure 5.1.1 Home page of the application

Implementation of Back-End Design

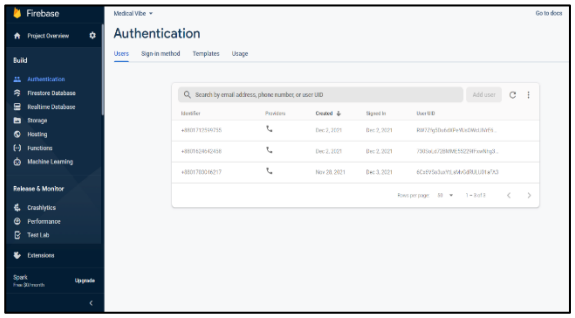

Figure 5.1.2 Back-end database of our system

5.2 Implementation of Database

- We have used four different types of database in this project to increase the efficiency and the speed.
- Shared Preference: Shared preference is androids internal data storage system. It is used to store small amount of data that are required during the runtime of the application. Small data such as, login status, username, password and some other numeric values are stored in this storage. Data stored in shared preference are only accessible to the application itself; user does not have direct access to any data stored in shared preference.
- Room Database: This is offline database management system for android to access phone memory or SD cards. Data stored in Room database can be accessed from the app as well as other applications installed in the device. We used Room to store and access data for offline use.
- Firebase authentication: Firebase is a dedicated to android database management and storage system developed and provided by Google. In terms of storing and managing big number of users online Firebase is much faster and easy to implement than typical other authentication system. Our application uses Firebase to verify users.
- MongoDB Database: For all sessional user info and advice the application relies on MongoDB Database. We kept those web pages on the MongoDB Database and user can access or view them from the app and website.

5.3 Implementation of Interaction

For our users, we have created an application. The proper interactions make the system appealing and desirable to the user. That is why interacting with the user as much as possible is critical. Meet and exceed their expectations. At the same time, we are developing interactive applications for users, Simple and practical. We create a responsive user interface for our program to have a better experience. We used flats to make our dreams come true—options for icons, text, and buttons.

With the help of simple-to-use essential libraries, we successfully implemented our application. Communicate with the user Users smoothly engage with apps.

5.4 Testing Implementation

Our goal is to create a set of test cases with a high chance of detecting flaws. Various software techniques are used to fix the issues. This method gives us step-by-step instructions on how to plan a test system.

- To test the internal logic of software components, and
- To test the program's input and output domains for function, performance, and behaviour problems.

Test Case	Test Input	Expected Outcome	Obtained Outcome	Pass/Fail	Tested On
1.Interface testing	Testing in various android devices and browsers	Perfectly tested in various devices and browsers	App is supported in all devices and websites run smoothly	Pass	08-08-2021
2. ANR (Application is not responding)	Testing in various devices	Very rare not responding	Problem rate is very rare	Pass	05-10-2021

3. Data Load	Data loading in the application and website	Data loaded successfully	Loaded successfully	Pass	08-10-2021
4. Rising Issues	Check and upload on day-life rising issues =	Rising Issues submitted founded successfully	Rising Issues submitted founded successfully	Pass	15-09-2021
5.Emergency Numbers	List of Emergency Numbers	List of Emergency Numbers founded successfully	List of Emergency Numbers founded successfully	Pass	17-09-2021
6. Emergency Alert	Click on Alert and Show me my contact number to send SMS	Emergency Alert massage sent successfully	Emergency Alert massage sent successfully	Pass	19-09-2021
7. Local Service	Click for Local service such as ATM	Local service information founded successfully	Local service information founded successfully	Pass	21-09-2021
8. City Corporation	Lists City Corporation Department wise information	City Corporation information founded successfully	City Corporation information founded successfully	Pass	25-09-2021
9.History	Pending or solving Issues	Pending or solving Issues data founded successfully	Pending or solving Issues data founded successfully	Pass	29-09-2021

10. Admin Login	Admin Login device	Login Successfully	Login Successfully	Pass	10-10-2021
11.Admin add data	Admin Update data	Update data Successfully	Update data Successfully	Pass	12-10-2021 12-10-2021
12. Internet access permission	Connect through application and browser	Connected	Connected	Pass	20-10-2021

5.5 Test Result and Report

The findings of the exam are formally represented in the test report. The data is organized and evaluated methodically and professionally. According to the report, we provide results for working conditions and testing purposes. To summarize, the test report indicates whether or not our application is ready for use. The test case number, test case ID, test case description, test case stage, expected results, actual results, and test case status are all listed in Table 5.1. After several tests, accurate results obtained using these criteria. The precision is perfect. That indicates that the application is free of errors and simple to use.

CHAPTER 6

IMPACT ON SOCIETY, ETHICAL ASPECTS AND SUSTAINABILITY

6.1 IMPACT ON SOCIETY

- **Save transport costs**
- **Saving time**
- **Proper treatment**

We asked the patient's of what they think were their benefits from our app. We surveyed the society and saw that if we could bring this app to the society then their time and transportation cost would be saved. Every people said that they will get safe from suffering.

6.2 ETHICAL ASPECTS

Many people do not know how to get ICT health care due to lack of awareness. The Government needs to launch necessary programs to help to common man get ICT healthcare .

6.3 SUSTAINABILITY PLAN

Thinking about the context of Bangladesh, we want to turn our app into Bengali so that the people of Bangladesh can benefit a lot from using our app. We will now make a run with the Mymensingh Division but we want to make a use of it all over Bangladesh so we are working on this. We are also working to give people more benefits

CHAPTER 7
CONCLUSION AND FUTURE SCOPE

7.1 Discussion and Conclusion

Nowadays, patient health guide and the nearest diagnostic centre in the city of Zilla. Big problem. To solve this problem, everyone needs to know about local doctors, diagnostic centres, blood banks that deliver medicines home, and more. Our application is designed to process this information. So, it will be of great help to local residents. Old Computer science, analogy systems for storing data, is an ancient process. People can use their smartphones to quickly find information and receive services. It also saves valuable time. If users freely use our application and sincerely accept our work, the implementation of the application will be successful.

7.2 Future Scoop

There are some features that have not been implemented for various reasons. But we don't stop here. We will be adding these features along with new features. Convenience to people and government. The main target of our application is local residents. We are our application. Using this feature, people can easily identify their disability at an early stage and Get help from Medical Shop, Doctor information and diagnostic centre information. We want to work with blood groups in our app in the future. So we are collecting blood group data from all users and admins.

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PLAGIARISUM RESULT:

ANDRIOD BASED MEDICAL VIBE BY SHRABONI GHOSH (ID: 181-15-10670), NUSRAT JAHAN NISHA (181-15-11342) AND SAJIB PAUL SPHARSHA (181-15-10929)

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