

SHOHOZ DHAKA – SMART WAY TO EXPLORE DHAKA

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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/internship titled “**SHOHOZ DHAKA – SMART WAY TO EXPLORE DHAKA**”, submitted by MD.NASAR UDDIN SUMON, ID No: 181-15-10892, KANIZ FATEMA SUPTI, ID No:181-15-10615, & UMMA THAMIMA LABONE, ID No: 181-15-10857 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 04 January, 2022.

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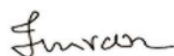
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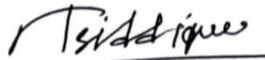
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **SHAH MD. TANVIR SIDDIQUEE, 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. [Font-12]

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ABSTRACT

With the advancement of time and information technology, smartphone apps have become more common for city exploration. This project, "SHOHOZ DHAKA – SMART WAY TO EXPLORE DHAKA" an Android-based mobile application, was created to support the general public and information about rising issues and other topics. They will give clear instructions on navigating our beloved Dhaka city to resolve issues and obtain information. All significant phone numbers, hospitals, city corporations, mosques, police output, ATMs, pharmacy parks, and other locations are mentioned in the app, along with brief descriptions and an embedded information to find easily. It is an application that is simple and interactive. The general public will quickly navigate around the application and obtain the precise information it requires. Android Studio was used to create the project, and Firebase was chosen as the application's primary database. We hope that by using this application, users will significantly benefit and be able to solve their problems and obtain information conveniently. They do not have to keep asking people for directions or circling the same area repeatedly without discovering what they are looking for.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

We live in a scientific epoch. The development of applications in our country is increasing by the day. Slowly but steadily, we are moving closer to realizing the ideal of a digital Bangladesh. So much is being produced for our smartphones these days, from online shopping to online transportation systems. We have numerous types of applications for food delivery, hospital management, and medical advisors. So we are working on an app called SOHOZ DHAKA for people who live in Dhaka and deal with 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. We came up with a concept just for those who desire to live a simple and safe life in this city but are having trouble finding information about the City Corporation. This application allows users to set sources and create issues for our system to resolve. The application will display the department in charge of rising issues and local services. There is certain information about a city that we must have. We occasionally require information about hospitals, pharmacies, police stations, mosques, ATMs, and other locations. We included all of this information in our apps so that consumers may readily access it.

1.2 Motivation

Everything happens for a reason. As a source of inspiration, a variety of factors came together to create this smartphone application. Around 88 percent of people in the globe now use the Android operating system. We can observe that some smartphone applications for Dhaka city guided are available in our country. However, these applications do not provide all of the necessary information on city services. If someone wants to use our system to handle local increasing concerns such as traffic, mosquitos, waste, street lights, public restrooms, drainage, illegal structures, and water logs, they only need to take a picture and add it to a list. Especially when someone is new to the city, they may encounter problems with local location, such as not knowing where to go or information about the city corporation.

we have to faces to lots of challenges in our lives. Sometimes we require immediate assistance, such as an ambulance phone number, a nearby hospital's phone number, a nearby fire station, or a police station's phone number, but we are unable to obtain such assistance immediately. So, we're attempting to solve this problem by combining all of the emergency assistance information into a single application. It will be extremely beneficial to all residents of this city

1.3 Objective

This app is something we'd want to work on. These features will be included in this app:

- Daily life-rising problem issues like traffic, mosquitos, garbage, street lights, public toilets, drainage, illegal structures, water logs solving.
- Information about emergency numbers.
- Get Emergency Alert by contact list from our application.
- Call 999 service.
- Local services like hospitals, pharmacies, police outposts, mosques, ATMs information.
- Get all information about City Corporation ➤ Rising issues solving history. ➤ Its guided as Dhaka city daily-life ➤ Simple and easy to use.
- Time saving with efficiency information.

1.4 Expected Outcome

This app will have a wealth of knowledge about the areas where the city people have daily life issues, local services, and city corporation information. It will make the users able to find the service with relatable information in a short time and effort. We will discuss here what features or goals we have. A lot of information will be added to this project. This time it's only made for Dhaka. After that, we would like to add the whole Bangladesh in our application. Users can use the app and access all its features. While admins can add their new places and their important information. We divide our next features into some groups:

- Information guide
- Service Guide

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 modeling, requirement analysis and modeling, 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

Every day, a large number of mobile applications are created. In so many areas of our country, we will be digitalized. As a result, engineers are attempting to create a mobile application based on earlier work. We're attempting to create a mobile application based on past work. We are attempting to overcome the limitations of past efforts. We are attempting to eliminate the complexity in our application that we discovered in past efforts. We are looking for ways to improve the efficiency of our application. People nowadays are looking for systems that are less time demanding. On the market, there are several programs to choose from, but not all of them are user-friendly. We are concerned about time consumption and strive to make our apps as user-friendly as possible.

2.2 Related Works

To create this mobile application, we looked up related works or projects that were already available on the internet. We also received something that is pertinent to our work. Rajshahi Ad is one of the most popular classified websites in Rajshahi. People can now obtain a wide range of Rajshahi-related information on this single website. People can utilize Dhaka wheels to find buses by entering their source and destination. We are giving an "SOHOZ DHAKA" literature assessment, which will discuss the similarities and differences between our project and the existing ones.

2.3 Comparative Studies

Many mobile applications have been developed in our country. However, we have come up with the idea that will aid in the digitalization of a city. We are now attempting to transform Dhaka into a smart

city. To create "SOHOZ DHAKA," we'll need several themes that are directly related. As a result, we research previous work and look for something that can assist us in completing this task.

2.3.1 Rajshahi Ad

Rajshahi Ad is one of the largest and best directory portals in Rajshahi. Anyone can easily find their desired directory by utilizing this software. This mobile application allows anyone to get in touch with the information they need for a certain listing. All of the information they provide is verified and original. They do not, however, provide information on city corporation and emergency alert, local services. This is the most significant distinction between the two applications. They haven't personally assisted anyone in getting to their location, but we do have rising issues problem solving service area where folks may look for a solution of their problem. Aside from that, the complexity of two mobile apps differs. There are numerous variances between two apps' physical architectures. We make an effort to build apps that are more user-friendly.



Figure: 2.3.1 Rajshahi Ad application

Here we present some of the features of the Rajshahi Ads application to compare the two simply. They did it with the government's support and provided a wealth of information by working on

their project for an extended period. In addition, we make every effort to give all relevant information in our apps.

We discovered some applications that are based on our project but are not identical to ours.

GPS Navigator City Guide [1], Lonely Planet Guides [2], Visit a City [3], City Guides Offline [4], Foursquare City Guide [5], and City Guide Demo [6] are some examples.

The front views of their apps are as follows:



Figure 2.2.1: GPS Navigator City Guide

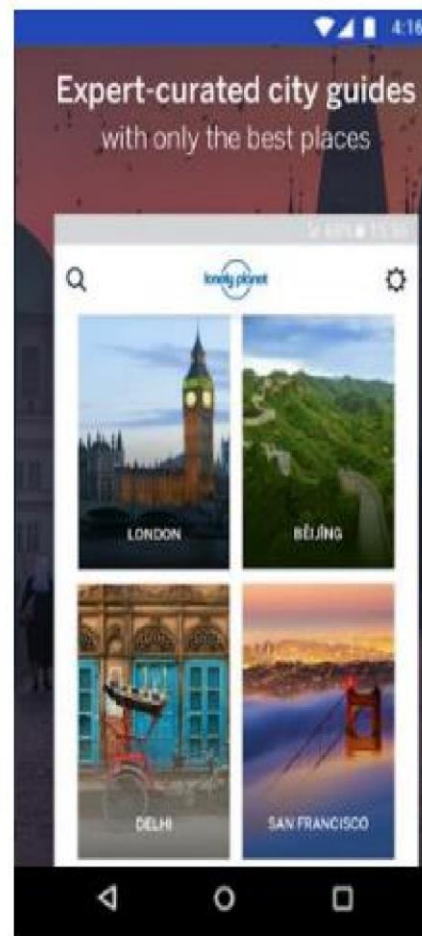


Figure 2.2.2: Guides by Lonely Planet



Figure 2.2.3: Visit A City



Figure 2.2.4: City Guides Offline



Figure 2.2.5: Foursquare City Guide



Figure 2.2.6: City Guide Demo

2.4 Scope of the Problem

When it came to finishing our project, we ran into several issues. Some problems are extremely tough to solve, while others are straightforward. We eventually acquired the correct system after fixing all kinds of problems. Here are some of the issues we are working on to improve the system:

- To maintain our application
- Solving rising issues with in time
- Putting all of the data into the database in the correct order. Our goal is to assist people by providing accurate information.
- Due to vast population all kind of emergency service will be delay.
- Verification on play store
- Create something unique to pique people's attention in our app and allow them to enjoy the user interface.

2.5 Challenges

We experienced various difficulties in developing the greatest city insider solution. The following are a few of them:

- User-friendly process due to the functionality and UI design
- Ensure user security
- Embedding a Google map,
- Providing all relevant data, and
- Implementing a multi-authentication mechanism.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

A business process model (BPM) is a tool that allows you to create a flowchart. It generates a model that depicts the proper data flow from beginning to end. BPM can be used to describe the project's capacity. Almost every engineering project has a business process model. A well-established business process model aids in increasing the speed of work before beginning the project implementation effort.

A business process model allows the user and developer to see the project in a variety of ways. Places are the entity in our project. The program categorizes all of the relevant information for various Dhaka city services. After a thorough search, the application will present the user with the requested services. Regardless, the user can go through the application's many areas and obtain the necessary information independently.

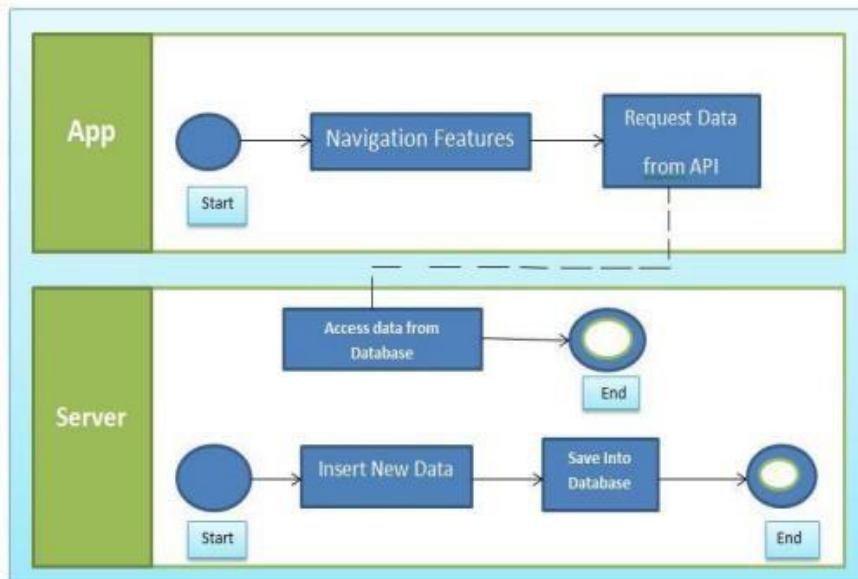


Figure: 3.1 Business Process Model (BPM) of the system.

3.2 Requirement Collection and Analysis

The collecting and analysis of requirements is a key aspect of any project's development. We must have a thorough understanding of the system and how it will interact with the user. We consider ourselves to be users in order to comprehend their demands and problems with the suggested solution. To our project team, we assessed all of the user needs. We'll also need some software and hardware prerequisites, which are outlined in the design criteria points below.

3.3 Use Case Modeling & Description

Use case model of the user is given below in figure 3.2

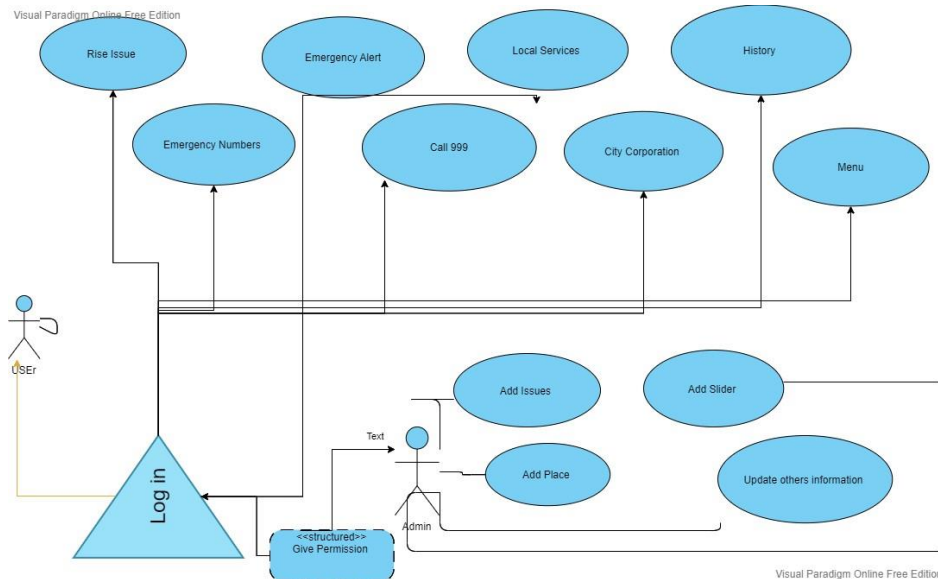


Figure 3.2 Use Case Model for User

Use Case Description for User

In software and systems engineering, a use case is a list of actions or event steps typically defining the interactions between a role (known in the Unified Modeling Language as an actor) and a system to achieve a goal. The actor can be a human or other external system.

Use Case 01: Rising Issues

Primary Actor: User.

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Issues like traffic, mosquitos, garbage, street lights, public toilets, drainage, illegal structures, water logs will be display on screen.

Exception Scenario: No data found because of internet connection.

Use Case 02: Emergency Numbers

Primary Actor: User

Precondition: Internet Connection.

Secondary Actor: Null

Main Success Scenario: Click the Emergency Numbers and there will be a list of Emergency Number.

Exception Scenario: No data found because of internet connection.

Use Case 03: Emergency Alert

Primary Actor: User

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Click the Emergency Alert button and search a message will forward from the application.

Exception Scenario: No data found because of specific Number is not in the contact list.

Use Case 04: Local Services

Primary Actor: User

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Click the Local Services button and we will provide local service like Hospitals, pharmacies, police outposts, mosques, ATMs.

Exception Scenario: No data found because of internet connection.

Use Case 05: About City Corporation

Primary Actor: User

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Click the City Corporation button and the user will be seeing a list of City Corporation all information.

Exception Scenario: No data found because of internet connection

Use Case 06: History

Primary Actor: User

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Click the History button and one can see which issues are pending or solved.

Exception Scenario: No data found because internet connection.

Use Case 06: Menu

Primary Actor: User

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Click the Menu button then one will see all of menu in one slider.

Exception Scenario: No data found because internet connection.

Use Case 06: Admin

Primary Actor: User

Precondition: Internet Connection

Secondary Actor: Null

Main Success Scenario: Click the Admin button then admin will add data, add information and update all of services by admin application.

Exception Scenario: No data added because internet connection.

3.4 Logical Data Flow

The relationships between entity sets recorded in a database are depicted in an entity-relationship diagram (ERD). In this case, an entity is a data component. ER diagrams, in other words, depict the logical structure of databases [8]. The entity-relationship diagram depicts the relationship

between the database's entity sets (ERD). The ER diagram can be used to depict the logical structure of a database. It delves as deeply as possible into the database and describes the data model. The graphic depicts all of the entities and their relationships. All of the entities' attributes and the main key [9] and foreign key [10] are defined here. The application's ER diagram is shown in the following figure.

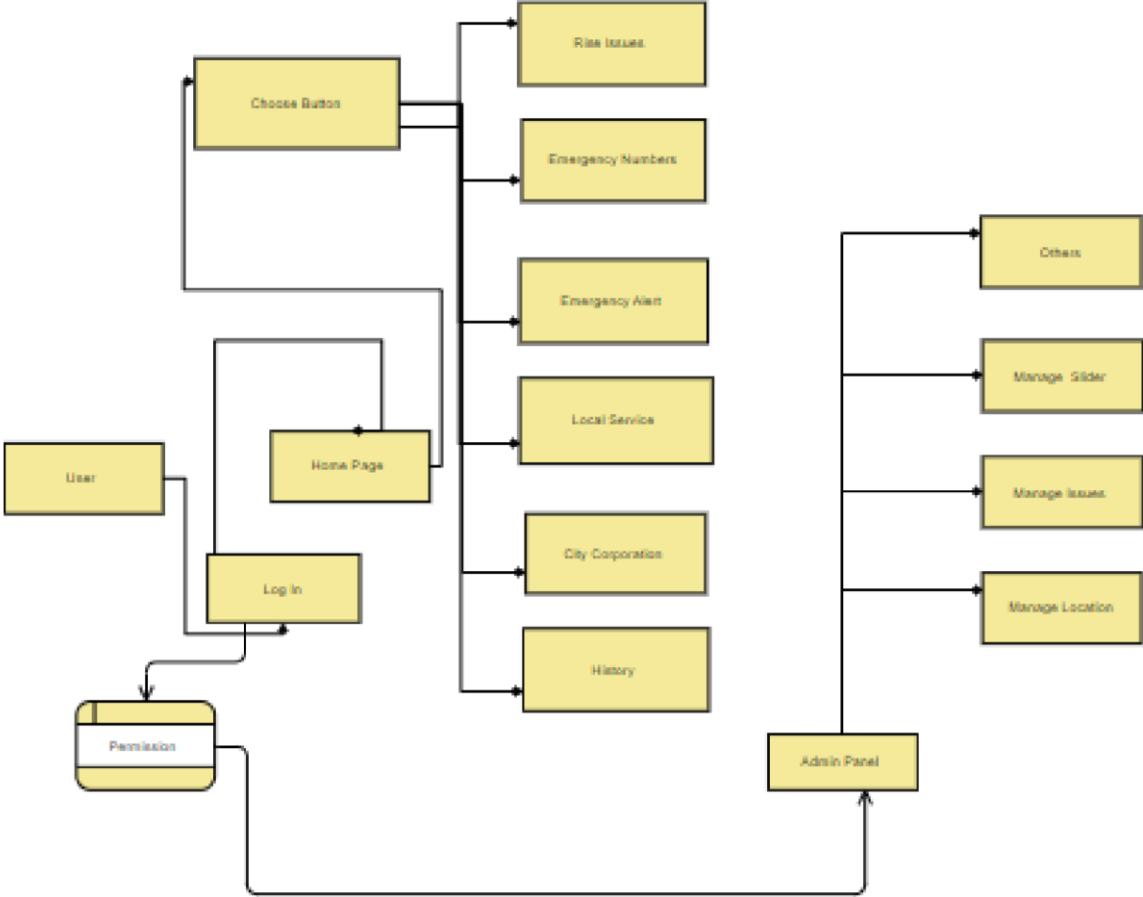


Figure 3.3 ER Diagram

3.5 Design Requirements

3.5.1 Software Requirement

To create an Android application, we'll need certain applications that will assist us in creating our app. The following software is required to finish our project:

- IDE for Android Studio
- Virtual Android device (AVD Manager)
- Android Debug Bridge (iii) (ADB)
- Firebase Database
- Sublime Text 3 ➤ Adobe XD

3.5.1 Hardware Requirement

In order to create an Android application, we'll need some hardware. The following hardware is needed to finish our project:

- Windows as a working system
- Mobile phones that run on Android
- Java Development Kit (JDK ➤ Setting up the computer:
- 4GB RAM (min)
- For the Android SDK, you'll need at least 1GB of hard disk space and a 1.5GHz processor (min)

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 [17]. 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 **Welcome Motivator**
app and website receive some

Slider: At first the user can open the our motive Quotes



Figure 4.1.1: Welcome Motivator Slider

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.

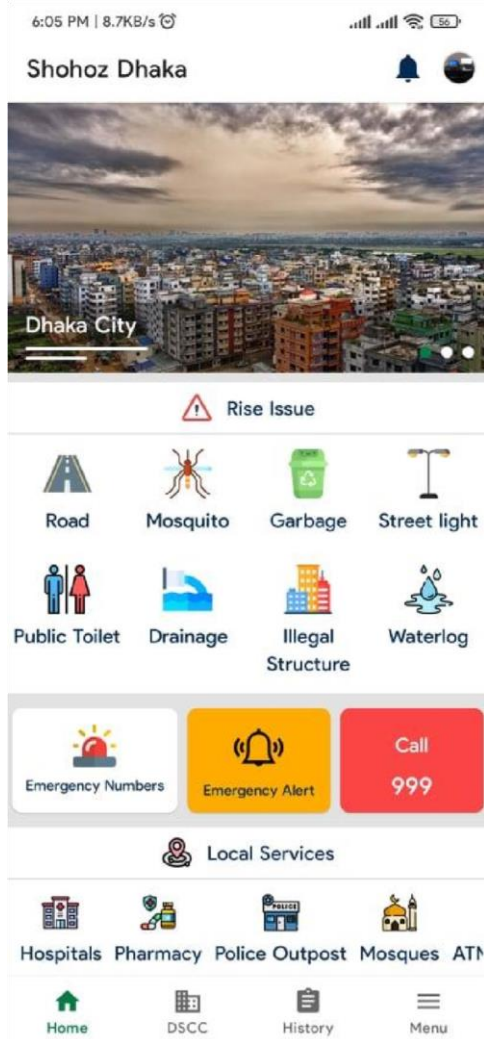


Figure 4.1.2 Home Screen (English)

4.1.3 North City Corporation: Here all kind of north city corporation information will be display.

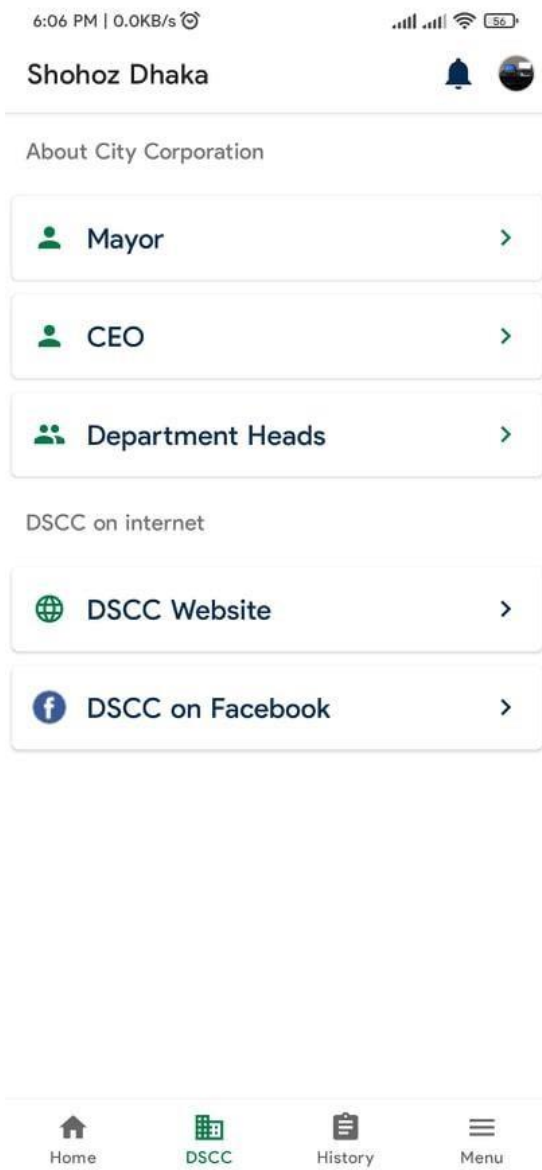




Figure 4.1.3 North City Corporation

4.1.4 Rising Issues: In there, user can submit all kind of daily life raising issues.

6:05 PM | 2.4KB/s

← Road

Title

Location

Issue Type

Details

SUBMIT

Figure 4.1.4 Rising issues.

History

This figure shows us the history of our rising issues which is solved or pending.



Figure 3.1.4 history of our system

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. [13]

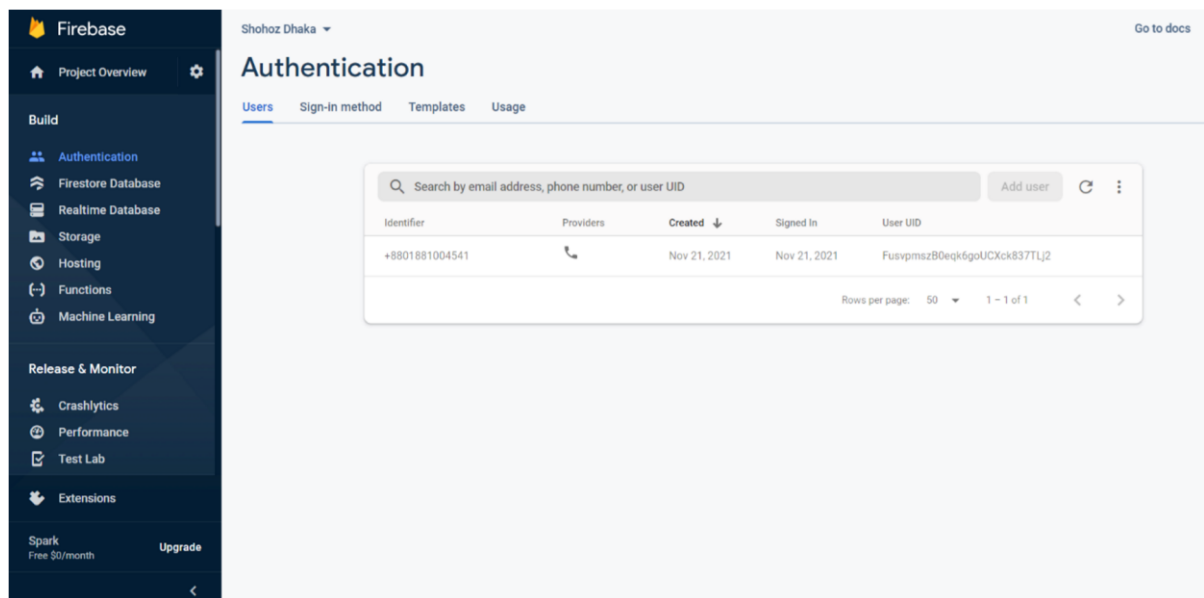


Figure 4.2.1: Database page on Firebase

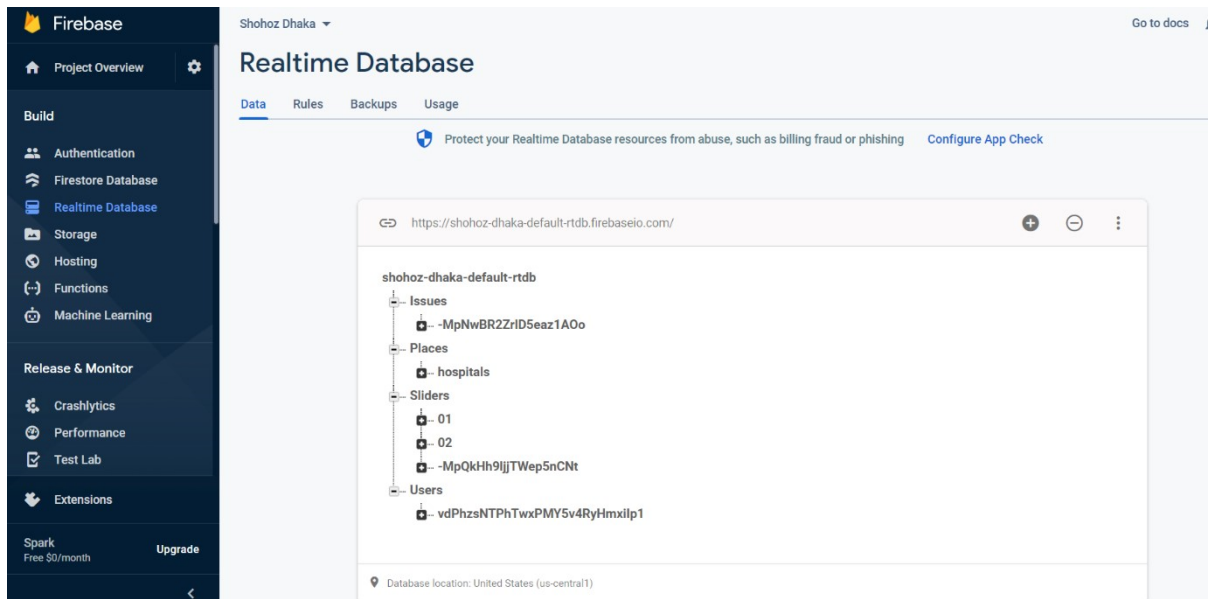


Figure 4.2.2: Details of entities on database

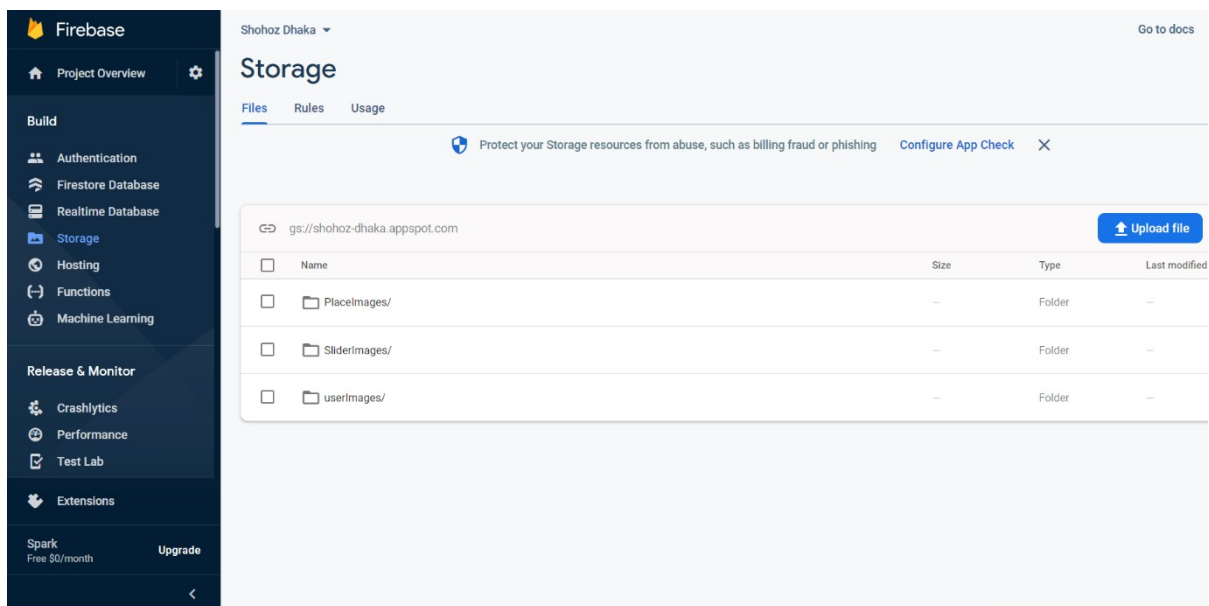


Figure 4.2.3: Categorized storage page on database

4.3 Interaction Design and UX

Interaction design, often abbreviated as IxD, is "the practice of designing interactive digital products, environments, systems, and services." While the digital side of this statement is true, interaction

design is also useful when creating physical (non-digital) products, exploring how a user might interact with it [6]

Maintaining excellent and easy contact between the system and the user is critical for the project's success in any application. In particular, this type of application, "SOHOZ DHAKA," requires regular data updates from users to deliver improved service. In such instances, awkward user interaction can lose users' attention and be detrimental to the application's and website's features. We can identify the user's problem and fix the problem they encountered while using the program by using the interaction design approach. The user's interaction with an application, on the other hand, determines how the user feels when using the app and website. The user interacts with the system.

We had numerous individuals test our application for UX. Most of them felt the application's user interface is welcoming and valuable, while some claimed it needs more diversity in marketing Bangladeshi sessions, Session cuisines, and flues.

4.3.1 Design Interaction

User experience design, or UX design, is incomplete without interaction design. The way we communicate with our brand and our clients or users is called interacting design. We ensure how to benefit our users in this section.

4.3.1.1 Usability: Usability is more significant in the UX system; usability refers to how engaging and accessible our website is and how quickly we can go from one page to the next. In this stage, we must consider user interface design elements such as the navigation bar, logo or icon placement, how familiar our website is, maintain consistency, and address any errors or defects.

4.3.1.2 Accessibility: The speed with which our site appears when searched on Google or another search engine is determined by accessibility. We must focus on SEO (Search Engine Optimization) in our industry so that when a user searches for our website, it is found much faster than other review websites.

4.4 Implementation Requirements

We need Android Studio to implement the project because we are going to use Kotlin and XML coding. To design the UI/UX we used Adobe XD. Since our application need to store data that is why we have used an online server Node.JS and for authentication, we use firebase system.

Internet connection must be needed while using the server.

In our website we are doing dynamic website, easy to use easily managed easy to purchase foods easier to interact easy to access that requirements have given us a good understanding of how user-friendly our site is and how simple it is to utilize all implementations.

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

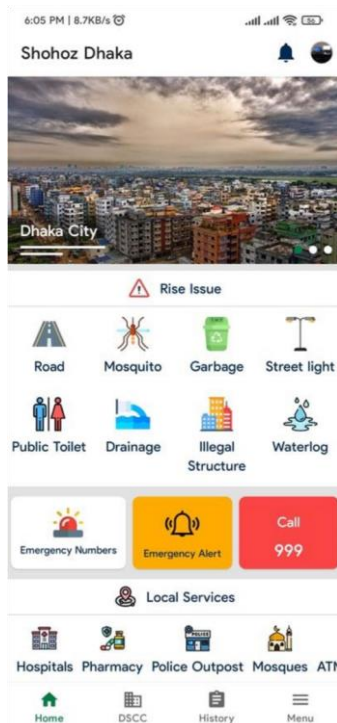


Figure 5.1.1 Home page of the application

Implementation of Back-End Design

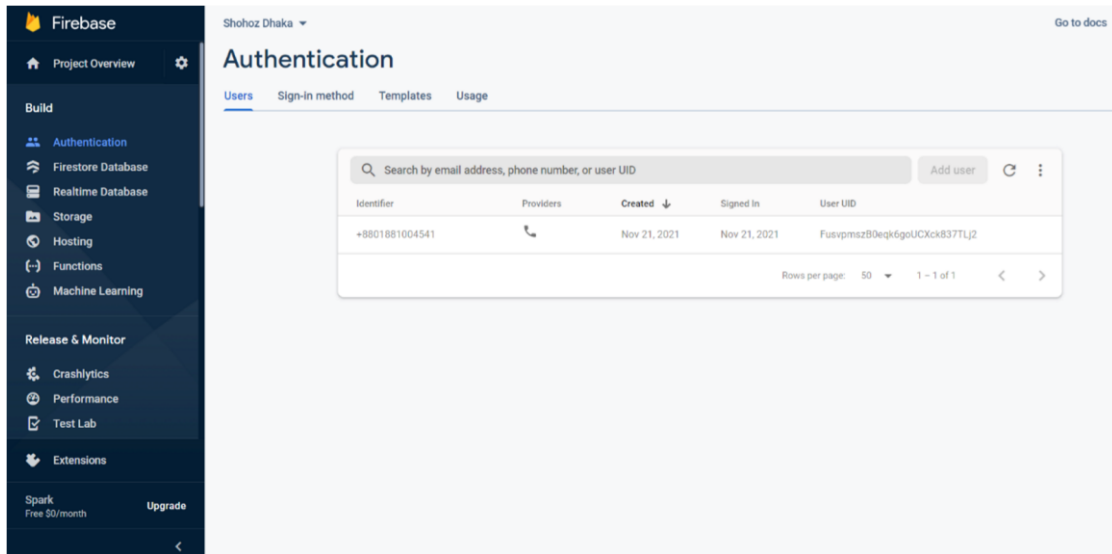


Figure 5.1.2 Back-end database of our system

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 Interactions

A responsive user interface was employed to make the application more interactive. Individual buttons with a call to action are preferable for the mass user than text information, as we know. As a result, easy buttons for making a phone call and browsing the location's website have been added to the app. The admins have a login option that allows them to add new locations to the database.

5.4 Testing Implementation

System testing is a technique for evaluating the interaction of a complete and integrated system with the defined user criteria. This is significant because testing allows the tester to assess the system's limitations and potential for development.

5.5 Test Results and Reports

Here in table 5.5.1 we are going to show the test we have performed on the application and their result –

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 daylife 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 message sent successfully	Emergency Alert message 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. Internet access permission	Connect through application and browser	Connected	Connected	Pass	20-10-2021
13. SDK testing	Checking in 2130 SDK of version	Support in all version	Support in all version	Pass	27-10-2021

14. Database	Database connection	Support in all version	Support in all version	Pass	25-10-2021
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CHAPTER 6

IMPACT ON SOCIETY, ETHICAL ASPECTS AND SUSTAINABILITY

6.1 IMPACT ON SOCIETY

- Save transport costs
- Saving time
- Proper treatment

We asked the patients 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 Local Service due to lack of awareness. The Government needs to launch necessary programs to help to common man get ICT Local Service.

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 Dhaka 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 & FUTURE SCOPE

7.1 Discussion and conclusion

Our main goal was to create a smartphone application that would assist individuals in locating all important information in Dhaka. We hope we did it as well as we could. We strive to complete our task with a few key qualities. We faced obstacles and hurdles, but we learned a lot during the construction of this project, including technical, ethical, and professional lessons. The old method of searching for civic concerns and problem-solving information was insufficient. So, now that we've produced this mobile application, we're hoping that users will be satisfied with the information they can obtain utilizing our apps. Although there are many things we can add to our apps in the future, we now have enough useful features in place. Initially, we basically looked for a way to get it done by utilizing the necessary characteristics.

7.2 Scope for Future Developments

Our mobile application's concept is one that has a lot of potential in the future. And it is for this reason that government assistance is valued. If we can build this application in the future, everyone who travels outside of Dhaka will be able to get information about that city as well. Any person in a city can effortlessly move by obtaining the information that he or she requires. And, if we can extend our mobile application in this way, it will benefit our country's economy.

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