

Vhromon: An Android Based Tourism Application

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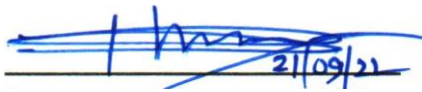
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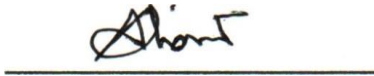
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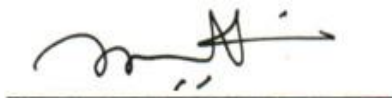


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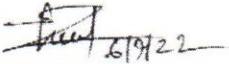
We hereby declare that, this project has been done by us under the supervision of **Mr. Raja Tariqul Hasan Tusher, Assistant Professor, Department of CSE Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award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

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ABSTRACT

Vhromon an android based tourism application which specialized about tourism gives information about tourism of Bangladesh. In the recent years tourism industry has been booming into high level. We live in the modern age of technology but consider the tourism sector of our country there are a few use of technology in this sector. There are several application and websites based on tourism out there but this application is different from any other app which has been developed before. The already existing application and websites helps the tourist such as hotel booking function, information about tourist places etc. But in this application we have combined all of this features. Tourist now can see about the details of their desired destination, they can also book hotel by using third party website, they can also see the information about guides of different places, they can also use google map to see the distance of their destination, choose the destination they like, Book bus and train ticket all of the functions which are available in websites and apps, we have brought all of them together in an one single application, which will help the user to get accurate information about their travel destination.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

An interactive android based mobile application “Vhromon” can be defined as a platform for tourism which provides an environment to select your favorite location, what’s the distance from your current location to your selected location, nearby hotels and their information, travelling cost, also it offers to hire a tour guide in that specific location. Android based apps are getting very popular in this modern era. It is very popular among developed country and also some developing country is started enjoying its benefits.

As the modern world is changing so rapidly and each year we are introduced to new technologies and ideas which is basically making our life easy and simple. An Android based tourism apps is actually providing us that simplicity and comfort. Once it was considered as a different task to make a plan for a tour which includes lot of things like money, time, cost, lack of information etc. But a tourism apps fills those gaps for the user and make it very simple for them. With the help of tourism apps one can effortlessly find their favorite destination and necessary information in a matter of a second, which saves their money, time and cost.

Bangladesh has huge possibility of making money from travelling and tourism , it has taken some necessary initiatives to increase its contribution to the GDP but still it’s not employing it’s total capabilities. Bangladesh had reached its highest percentage of GDP in travelling and tourism, which is 4.4% 2000-2019. From 2019 it started fluctuating then on. An android application like ‘Vhromon’ can open the door for the travelers to visit their favorite places with proper help and guidance. Eventually, this application can serve the country by contributing to the GDP and will help it to become strong economically. Modern world is growing very fast. Each year some countries are coming with new technologies and new ideas. Some of those ideas are being accepted by the people and they are ruling the market, making their economy large. There lots of examples are there: like

Google, YouTube, Facebook etc. Those company not just making money from their own country but they also making money World Wide and making business Internationally.

We have examined our country carefully and found that Bangladesh is far behind from the modern world in terms of knowledge, Technologies and ideas. We are not exploiting properly our man power as it known as a densely populated country, but we still have lots of opportunity all we need is to grab those opportunity. Each year YouTube, Facebook, Google and others social application are taking away lots of money from our country. China is the one of the largest economical country in the world and they are not letting others take their money from there own country. For example in China the mostly used search engine is Baidu, they have replaced Google with Baidu. As a result, firstly there country's people are getting benefited from that search engine which is written in their own language, secondly they have saved money from being transferred to the other country and thirdly their own organization business are getting richer. On the other hand, if we look at our country we have seen a very small percentage of people are solving day to days problems. But in the recent decades we have noticed some significant changes have been made but which are still not good enough. There are some applications which have been widely used in our country which are "Rokomari.com", "Pathao.com", "FoodPanda", "Uber" etc. We also found in some cases we have the technologies but not being widely used one example of that would be "Pipilika" which was the first and only search engine in Bangladesh is not very popular among the netizens. At this moment an android based application could be a better offer for the tourists. GhoraGhuri can helps the tourists with proper direction and guideline. There are currently no dynamic applications are available online on this. And Vhromon would be a more user-friendly platform for the tourists and being an internet based application it requires internet and it can make money by showing ads which not only solve the problem of the tourists sector of Bangladesh but also helps to make money.

1.2 Motivation

In Bangladesh we found a growing number of are using Smartphones and often they search on google, Facebook, and others social media about new places and they most of them are in interested in traveling but for lack of information, and also not having proper guild line they tend to cancel their trips. So, we've seen that as a opportunity and decided to help them so, we tried to meet as much people as possible that we possibly could meet physically and tried to understand what are their obstacles when it comes to traveling. After hearing from them we tried to build a user-friendly platform for our users which will includes all the recommended ideas from them.

In Play Store we find some application which is only providing about some visiting places and their details. So, the complication with them is given below:

- 1.Those application never mentioned where to get on, what are the transportation system?
2. What are their nearby Hotels and Restaurants?
- 3.There were no tour guild.

After considering all the above cases we updated our application according to the user's needs.

1.3 Objectives

The objective of the problem is, to make people's daily life easy and simple. This application has all the features to give user that simplicity. Our motto was to offer them the best user-friendly experience which all the available platform couldn't. Through this application they can explore and find their favorite destination anytime.

- A user can create and update their profile.
- Can interact with tour guide and book transport and hotel
- Can get the necessary information through live chatting session.
- Can set reminder for their upcoming tour and save their favorite places
- Can change languages according to their preferences
- Can get information of tourist spot of Bangladesh

1.4 Expected Outcomes

The expected outcome of this project to help people in their day to day life when it comes to traveling. Using this application one can save their money, time and effort. With this user-friendly platform user can update, delete and create their profile any time they want. They can share their experiences with others. Users will have the access to the huge amount of information of particular place whenever they want. Also, with the help of the tour guide they can have information about the particular place in details. They can contact to the tour guide of their selected location and with the help of their tour guide they will be able to calculate cost of their journey, total time they would need to visit all their favorite places. User who have never experienced any new place can visit his/her favorite place with very less effort. User can also book a bus and train ticket through this application. User can also know the nearby hotels that are available for them. User's and tour guide's data will be saved in the database with the help of Firebase database system. There will be a live chat session for the user if any query is needed. In a third world country like Bangladesh we believe it can make a massive change in people's life. We believe it will give the user a safe and user-friendly platform. Also it is a business apps from which we believe we are going to make a substantial amount of money. Two way we are going to make revenue from our application, one is by showing ads through google ads and another is through third party websites which will help user to find their favorite hotels and restaurants.

Table 1.1: Specific options for user and tour guide

Users	Tour Guide
<ul style="list-style-type: none">• User can create, delete and update their profile.	<ul style="list-style-type: none">• A tour guide can create, delete and update their profile.
<ul style="list-style-type: none">• User can explore the apps and can see their favorite places, set reminder for their upcoming tour, change language	<ul style="list-style-type: none">• User can call the tour guide to book them by given number
<ul style="list-style-type: none">• User can select tour guide and could make a request to them.	<ul style="list-style-type: none">• A tour guide will answer the request if he or she is free.

<ul style="list-style-type: none"> • User can email through the apps if they find any difficulties. 	<ul style="list-style-type: none"> • Tour guide can also notify the admin panel through mail if needed.
<ul style="list-style-type: none"> • Can share their experiences with others through chat 	<ul style="list-style-type: none"> • There is no live chat session for the tour guide.
<ul style="list-style-type: none"> • Can show the distance of their destination. 	<ul style="list-style-type: none"> • Can suggest destination through contact with user
<ul style="list-style-type: none"> • Get an idea of their total traveling cost 	<ul style="list-style-type: none"> • A tour guide will help the user to calculate the traveling cost.
<ul style="list-style-type: none"> • Can change their tour guide if they feel necessary 	<ul style="list-style-type: none"> • Can refer the user another guide if they have any emergencies.

1.5 Project Management and Finance

“Vhromon” is a Dynamic application building wasn’t an easy job. Initially we had to suffer because we didn’t have enough information and guideline. There is very less resources available online for android application compare to a web application’s resources. So, learning android application was a bit challenging for us. Then time was a big factor we didn’t have much spare time to study or practice android but somehow, we manage and did practice as much as we could. After learning android, we had to learn a database management system which was a bit confusing for us. Because none of us knew which database language we should learn cause there are lots of them available like: Firebase, MongoDB, MySQL, SQL etc. Anyway, after lots of discussion we decided to learn Firebase.

So, as we wanted to build a dynamic application and also wanted to try something different that’s why we reach out to the people to collect data and to understand them, their best and worst experiences, what could be done in the first place when it comes to traveling we discuss all of it with them and they help us by providing the that we needed so, it was pretty much challenging for us to do. Sometimes,

people didn’t want to talk and sometimes they provided insufficient information. After hearing all the best and worst experience from the people now the time was to build a user-

friendly platform them. To keeping it mind of people's experience we tried to build an application which will fulfill their requirements and that was a time-consuming moment for us because we didn't know what features we should apply, how to make the application more user friendly but after lots of trial we fixed to one that we all had agreed upon.

We actually didn't have to spend much money after this application but we did spend some money. Our spends are given below:

- We spend the money for the logo design.
- We spend money to take an online course for learning database.
- We spend some money for traveling while we collecting data from users.
- We have spent money to buy books to learn database.

1.6 Report Layout

- **Chapter 1:** Describes an introduction of the tourism application, Motivation, Aims and Objectives, Project Management and finance Expected Outcome and the Report layout.
- **Chapter 2:** Describes the background, the related works, Comparative Studies and Challenges of the tourism application.
- **Chapter 3:** Describes the Android Studio, System requirements, Firebase Platform, logical data model, Use case modeling and description,
- **Chapter 4:** Describes the Block diagram, Description of application, System architecture, E-R diagram and description.
- **Chapter 5:** Describes the Implementation of Front-end design, Back-end design, Data table architecture, Data type architecture, Firebase database, Database table structure, Testing methodology, Functional testing, Unit test, Black box testing, White box testing Compatibility test and result.
- **Chapter 6:** Describes the conclusion where the goal, limitation and future scope have been described.

CHAPTER 2

BACKGROUND

2.1 Preliminaries/Terminologies

There are many applications available for traveling and tourism but very few of them are constructed in the context of Bangladesh. We found some applications available in Bangladesh on traveling and tourism but those are static applications not very user-friendly. We found there are several organizations which are trying to research and develop the Tour and traveling, which are 'Research-gate' and 'Academia'. In the country like Bangladesh where internet is not cheap so, in some cases users can't afford the internet specially in remote areas and rural users. Also, internet Bandwidth is a major issue in the third world country like Bangladesh. Bandwidth in Bangladesh is very low. To use our application a high bandwidth connection is needed. However, some questions have been raised for this project which are given below:

- How to explore the concept of this tour and traveling where and how user and tour guide play their role interactively?
- How to make it more effective in the context of Bangladesh?
- How to make it work perfectly even in a lower bandwidth?
- Where to get an immediate response to get the necessary information?
- Why should trust a tour guide?
- What would be the exact cost of a selected place?
- What types of hotels are available for the users (Five star, Three star, Two star)?
- How to know about the weather for the selected place?
- How to report a tour guide if needed?
- What will be the total traveling time?
- Where to take the bus or train for the traveling?
- How to know about the quality of the food which is available for the selected location?

Some popular apps for tour and traveling is given below:

- Skyscanner
- LoungeBuddy
- Triplt
- OpenRice
- Hotel Tonight

2.2 Related Works

In this part we are going to describe the recent work and related work which have been done in this area.

We looked for the application which have been in the context of Bangladesh. And we found two applications which are available on Play Store which have been built for travelling but the problem with those application are they have been build with insufficient facilities, also not very user-friendly, haven't done any work of database, their apps are static and have been built for offline use so they can't make any revenue through ads, there are no help desk or live chatting session for the user to query anything. There are no option for the tour guide to register into the application. Also haven't provided any transportation systems link.

Here, are some applications which has done the similar works like us below here their features have been described.

Tour Today: Tour today is an application guide line for tourism. It is an offline application it can't operate online. It has done all of it's content like Website where it has included all of it's facilities and describe it's features. It has include the traveling distance of that area from Dhaka, explains in details about that specific area, they have discussed of the hotels of that area, and some restaurants, in rare cases they have included the some tour guide phone number.

As it is not a dynamic application the problem with it is that it can't changes it's data as frequently like an dynamic application, there is a problem with security because the numbers of tour guide that they have provided we don't have any information about them. Also, there is no option to communicate with someone or live chat session if the users have any query, There were no option for users to share his or travel experience with others, User can't interact with each other.

Travel Bangladesh: Travel Bangladesh is also a static platform. It also can't operate online. It has done all of it's content like Website where it has included all of it's facilities and describe it's features. It has include the traveling distance of that area from Dhaka, explains in details about that specific area, they have discussed of the hotels of that area and their cost to book different hotels, and some restaurants, they haven't included any tour guide phone number. As it is not a dynamic application the problem with it is that it can't changes it's data as frequently like an dynamic application, there is a problem with security because the numbers of tour guide that they have provided we don't have any information about them. Also, there is no option to communicate with someone or live chat session if the users have any query, There, were no option for users to share his or travel experience with others, User can't interact with each other.

Vromon Guide: It is an another example of the static website no database work have been done. It has done all of its content like Website where it has included all of its facilities and describe its features. It has included the traveling distance of that area from Dhaka, explains in details about that specific area, they have discussed of the hotels of that area and their cost to book different hotels, and some restaurants, they haven't included any tour guide phone number. As it is not a dynamic application the problem with it is that it can't changes it's data as frequently like an dynamic application, there is a problem with security because the numbers of tour guide that they have provided we don't have any information about them. Also, there is no option to communicate with someone or live chat session if the users have any query, There were no option for users to share his or travel experience with others, User can't interact with each other.

Bangladesh Tourist Spot: This is also the same types of application as we have discussed above. It has done all of it's content like Website where it has included all of it's facilities and describe it's features. It has include the traveling distance of that area from Dhaka, explains in details about that specific area, they have discussed of the hotels of that area and their cost to book different hotels, and some restaurants, they haven't included any tour guide phone number. As it is not a dynamic

application the problem with it is that it can't changes its data as frequently like an dynamic application, there is a problem with security because the numbers of tour guide that they have provided we don't have any information about them. Also, there is no option to communicate with someone or live chat session if the users have any query, There were no option for users to share his or travel experience with others, User can't interact with each other.

Our application is offering better user experience. Keeping it mind of user's demand "Ghoraghuri" apps have been built. We tried to implement some unique features for our applications. As we have built a dynamic application an user can easily register, login, and create profile, can make changes in profile, can delete the profile anytime they want. If they are connected to the internet they can see the active tour guide, they can easily select a tour guide for a particular location, user can make a call with the guide, can get the valuable information from the guide including distances, cost of traveling, popular area, nearby hotels and restaurants and popular foods and clothes. So far we haven't find any application which has the features of a dynamic application. We claim that we are the first to build an dynamic application for tour and traveling. And this is the unique features of our application which outrun all the applications that are available online on tour and traveling.

- By using our applications an user will experience much more flexibility.
- He/she can update, create her profile.
- Can interact with the tour guide.
- Can show the data for his selected location.
- Can save their valuable time.
- Can explore the apps effortlessly.
- Can make sure the security of their data

2.3 Comparative Analysis

Vhromon apps is defer than other available applications in many ways. The major changes that Vhromon made and which is made it prominent than other application is, by adding the database system to the application. Travel Bangladesh, Vhromon Guide, Bangladesh Tourist Spots all of them are static applications means a user can't register into the

applications, can't create any profile account, can't have any secure system to communicate with the tour guide because all of those applications didn't let the tour guide to create any profile, they just have given some tour guide phone number. While, Vhromon lets the guide register into the applications by providing the necessary information and look for the validity of their data. Some of these static applications that are available online didn't even give any option to interact users with the tour guide. Being an internet based application Vhromon can earn revenue by showing Ads on the application.

2.3.1: Affiliated Marketing

Affiliated marketing is a business strategy where any kind of business uses the help of third party medium to promote their business. We are partnered with Agoda which is a hotel booking company to help our users book their hotels. We will earning commission through Agoda when an user will book hotel using our application.

2.4 Scope of the Problem

We believe Vhromon will be the first and the best application for the travelers with it's easiest function and facilities. Travelers who are using iOS, Microsoft operated mobile phones they are going to be deprived of enjoying the benefits of this applications. For being an internet based application a class of tourists are also going to deprived from enjoying the benefits of this application. So, a tourists must have to connected to the internet. Users responses will be taken through the live chat session and will be applied or corrected. Also, for any query and suggestion user can inform us.

2.5 Challenges

With changing user's demand, maintaining user's databases, maintaining tour guide, collecting user's response and work accordingly, adding new features and also the poor networks in certain area are not a easy task to deal with.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Android Studio

Android studio is the official integrated development environment (IDE) powered by INTELLIJ IDE. This special software is designed and developed by google to develop native android application. This software support different operating system such as Microsoft windows, MacOS, Linux. It is a replacement for the Eclipse Android Development Tools (E-ADT) as the primary IDE for native Android application development.

Android Studio was announced on May 16, 2013, at the Google I/O conference. It was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014 The first stable build was released in December 2014, starting from version 1.0. On May 7, 2019, Kotlin replaced Java as Google's preferred language for Android app development. Java is still supported, as is C++.

Android studio has been developed to help the developed and make the developer to develop the app easily. Android studio has been developed with several functions on mind. The functionality of the IDE has been made in such a way that the developer can develop their desired application dynamically. Also, there are several options to import a project and edit them. Those dynamic functionality has made android studio one of the most trusted IDE for developing any kind of application. There are several versions of android studio. Those versions has been changed with time also their functionality has been changed. The changing of function also brought many several development evolution. Now with help of constrain layout user can use android development component such as Button, Image view, text view, edit text by using drag and down option. Also layout such as frame layout, linear layout also available to develop the application.

In the android studio IDE there are several functionality and files such as java and Kotlin file depend on the choices of the programming languages of the user. An Android project usually consist of Manifest file where all the information about the applications are stored. User Can edit the manifest file if the wanted to change the main activity also if the want the application to use internet.

Then there are Java or Kotlin files according to the choice of the developer where the developer can develop their desired project with their desired programming languages. The Java or Kotlin file is connected with layout resource files.

Then there are resource files. The resource files are divided into several category such as drawable resource file, layout resource file, menu resource file, value resource file. Layout resource files are used for developing the user interface of the application, Xml code has been used to develop the user interface there are several types of layout such as liner layout to work dynamically, then there are frame layout also relative layout. There are drawable resource file which the user can use to store images, logo, icon etc. After that there are string resource file, the string resource file has all the string values used on the project where the user will store their string values and use them whenever is necessary. There are also value resource file. The value resource file has used to store values such as color, custom, values. After that there are menu resource which has been used for menu item on places such as app-bar, nav bar etc. There are also resource file called theme which has been use for theme of the application such as background, UI design etc.

Android Studio uses Gradle, an advanced build toolkit, to automate and manage the build process, while allowing the developer to define flexible custom build configurations. Each build configuration can define its own set of code and resources, while reusing the parts common to all versions of an app. Also, there are API (Application Programming Interface) in android studio. API is a set of definitions and protocol for building and integrating application software. There are several API which can be used to develop android application such as google map API to allow the application to use google map.

SDK or software development kit is used in android studio. A SDK is a collection of software development tools in one installation package. They have compiler, debugger and

sometimes framework with them for development purpose. Those SDK are specified according to hardware and software.

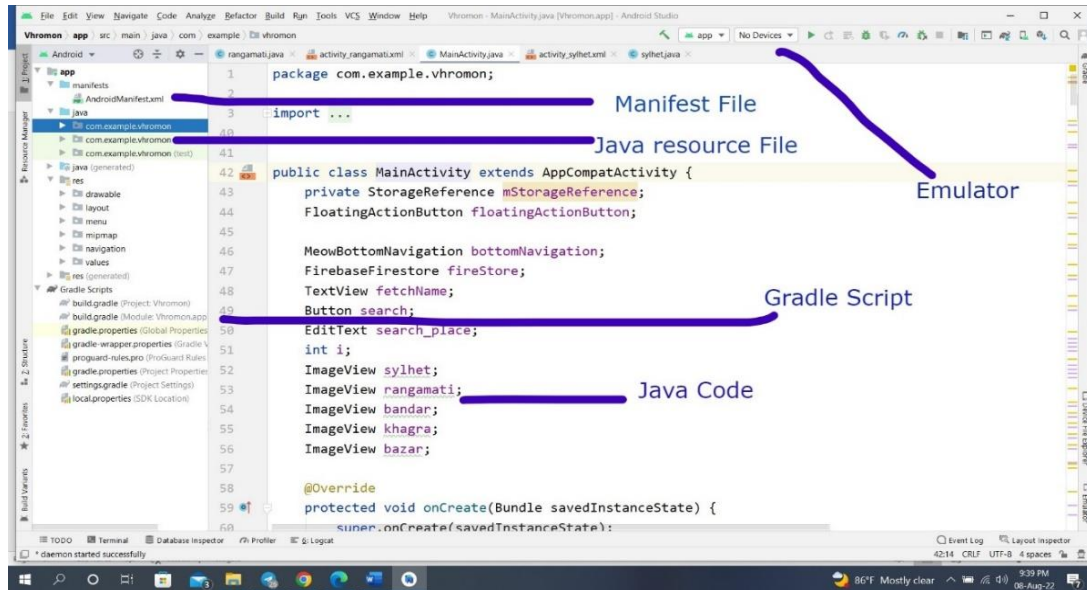


Figure 3.1: Interface of Android Studio

3.1.1 System Requirements

Table 3.1: Windows version

Criterion	Description
OS Version	Microsoft® Windows® 7/8/10/11 (32-bit or 64-bit)
Ram	2 GB RAM minimum, 8 GB RAM (recommended); also 1 to 2 GB for the Android Emulator 2
Disk space	8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
Java Version	Java Development Kit (JDK) 6

Screen Resolution	1280 x 800 minimum screen resolution
Processor	x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor

Table 3.2: MacOS version

Criterion	Description
OS Version	MacOS® 10.14 (Mojave) or higher
Ram	8 GB RAM or more
Disk space	8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
Java Version	Java Development Kit (JDK) 6
Screen Resolution	1280 x 800 minimum screen resolution
Processor	ARM-based chips, or 2nd generation Intel Core or newer with support for Hypervisor Framework

Table 3.3: Linux version

Criterion	Description
OS Version	Any 64-bit Linux distribution that supports Gnome, KDE, or Unity DE; GNU C Library (glibc) 2.31 or late
Ram	8 GB RAM or more
Disk space	8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
Java Version	Java Development Kit (JDK) 6
Screen Resolution	1280 x 800 minimum screen resolution
Processor	x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD processor with support for AMD Virtualization (AMD-V) and SSSE3

3.2 FIREBASE

Firestore is a platform developed by Google for creating mobile_and web applications. It was originally an independent company founded in 2011. In 2014, Google acquired the platform and it is now their flagship offering for app development. Firestore has several sections such as real time database, Firestore authentication, Firestore storage database

Both of these sections of database is separate with their work. Introduction about of all of them are given below:

3.2.1 Firestore Realtime Database

Firestore real time database is used for those types of data which has been changed frequently. For example, the price on stock market can be changed very quickly. So, the database which store data of stock price data is needed to be dynamic. For, this case it is necessary to use real time database because real time database is dynamic. Firestore real time database is a real time type database which change dynamically and used for dynamic data.

3.2.2 Firestore Authentication

Firestore authentication is used to authenticate a user. Authenticate a user is necessary for most of the application because most of the application has the feature of authentication program such as login, registration, forget password, email verification. Authentication of a user is very necessary because it makes the database safe from any kind of unauthorized user which also prevents any kind of cyberattack. If the user forget his password, it is possible to reset it using the firestore authentication program. An email will be sent to the user by his given verified email address he/she can then change it by going to the link. Email verification is also possible just like forget password process firestore will be sent an email to the user provided email then he/she can verify it by clicking the link. That's how firestore authenticate the user.

3.2.3 Fire store Database

Fire store database is a NoSQL based document database which is built to perform high performance, automatic scaling and also for easy application development. Even though Fire store has many of the traditional feature of database but it describes the relation between data object which makes it different from other traditional database.

3.2.4 Firebase Cloud Storage

Firebase cloud storage is a Firebase based service offered by google where the developers can store files of their application also files of users generated through the application. No server side code is needed to access the Firebase cloud storage.

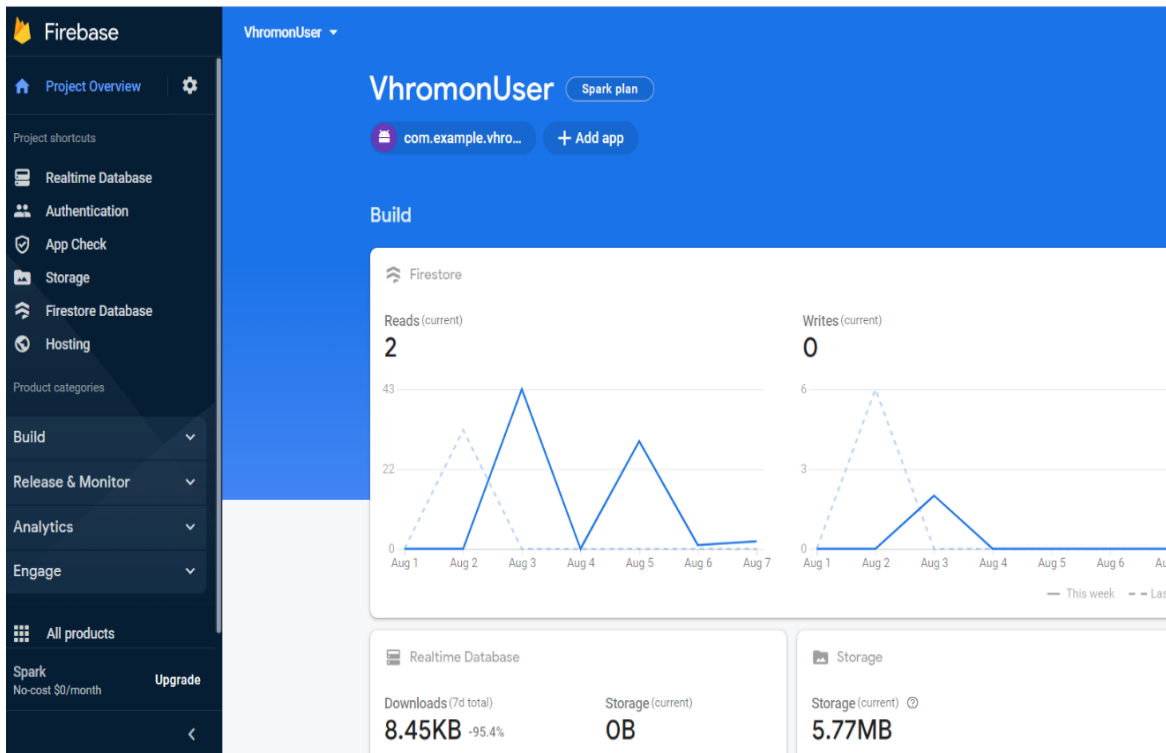


Figure 3.2: Firebase User Interface

3.3 Use Case Diagram

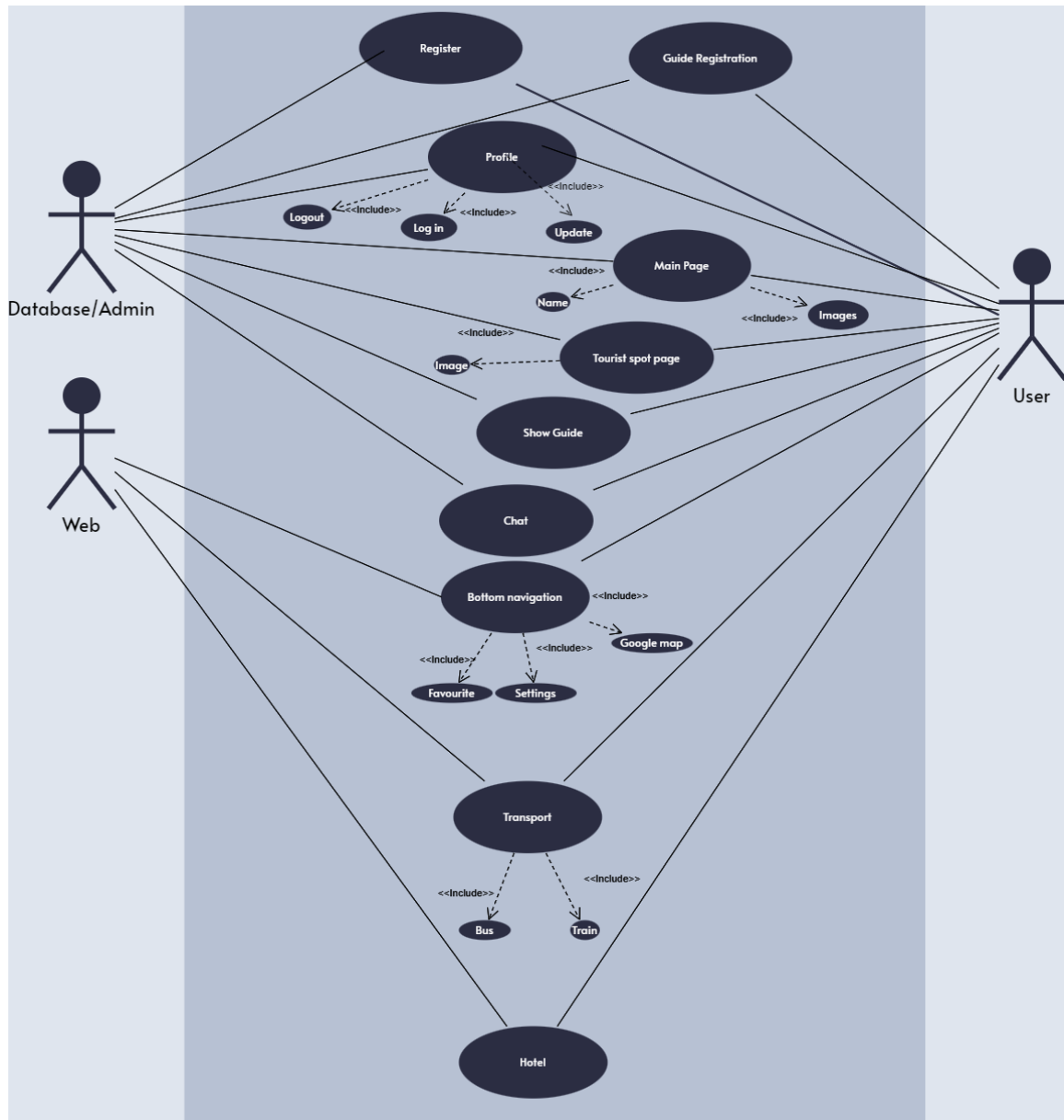


Figure 3.3: Use case diagram

Table: 3.4 Use Case analysis

<p>Use case: Register</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: To access the app the user must provide information to the database.</p> <p>Usage: To register information in database</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Guide Registration</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Every user must have an profile.</p> <p>Usage: To register information in database as a guide</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Profile</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: To access the app the user must provide information to the database.</p> <p>Usage: Profile contains registered information about the user fetch from database</p> <p>Extended By: None</p> <p>Extends: Logout, Login, Update</p>
<p>Use case: Main page</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Contains information about places and has navigation to surface the site by the user easily</p> <p>Usage: Provide information to the user</p> <p>Extended By: None</p> <p>Extends: None</p>

<p>Use case: Bottom Navigation</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: User can navigate the application easily</p> <p>Usage: Navigate the application</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Log in</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: User access the application by login through providing email and password registered in database.</p> <p>Usage: Give user the access to the application</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Log out</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Destroy session and make the user leave the application</p> <p>Usage: make the user leave the application</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Update</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: user update the information they register at the time of sign up</p> <p>Usage: User edit their registered data</p> <p>Extended By: None</p> <p>Extends: None</p>

<p>Use case: Tourist spot</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Show the user information about places. User can also book transport and hotel</p> <p>Usage: Show information, book transport and hotels</p> <p>Extended By: None</p> <p>Extends: Image</p>
<p>Use case: Image</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: User can visit another page by clicking image</p> <p>Usage: Make the user go from one activity to another</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Show guide</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Show guide information registered in database</p> <p>Usage: Give user information about guide</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Chat</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Chat with other user</p> <p>Usage: user can chat with other user</p> <p>Extended By: None</p> <p>Extends: None</p>

<p>Use case: Favourite</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: User can view their favourite destination</p> <p>Usage: Show favourite places of user</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Transport</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: User book train and bus by using the web</p> <p>Usage: User book train and bus through web</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Hotel</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: User book hotel and bus by using the web</p> <p>Usage: User book hotel through web</p> <p>Extended By: None</p> <p>Extends: None</p>
<p>Use case: Setting</p> <p>Actors: User</p> <p>Type: Primary</p> <p>Description: Change theme of the application</p> <p>Usage: Change theme</p> <p>Extended By: None</p> <p>Extends: None</p>

3.4 Logical data model

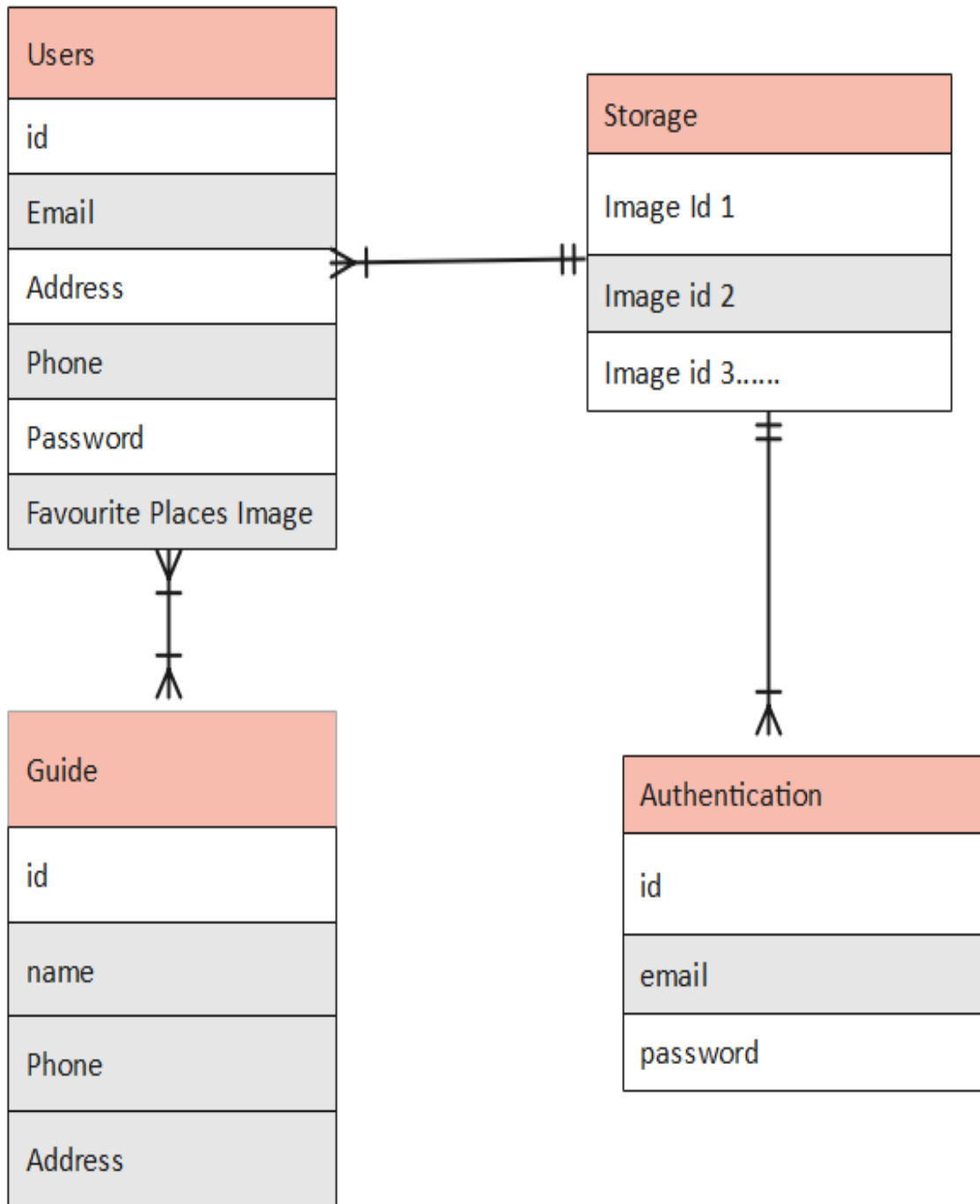


Figure 3.4: Logical data model of database

CHAPTER 4

PROPOSED MODEL AND DESIGN

4.1 Block Diagram

The given block diagram has listed all the functionality and interaction of the user of application. The block diagram is given below:

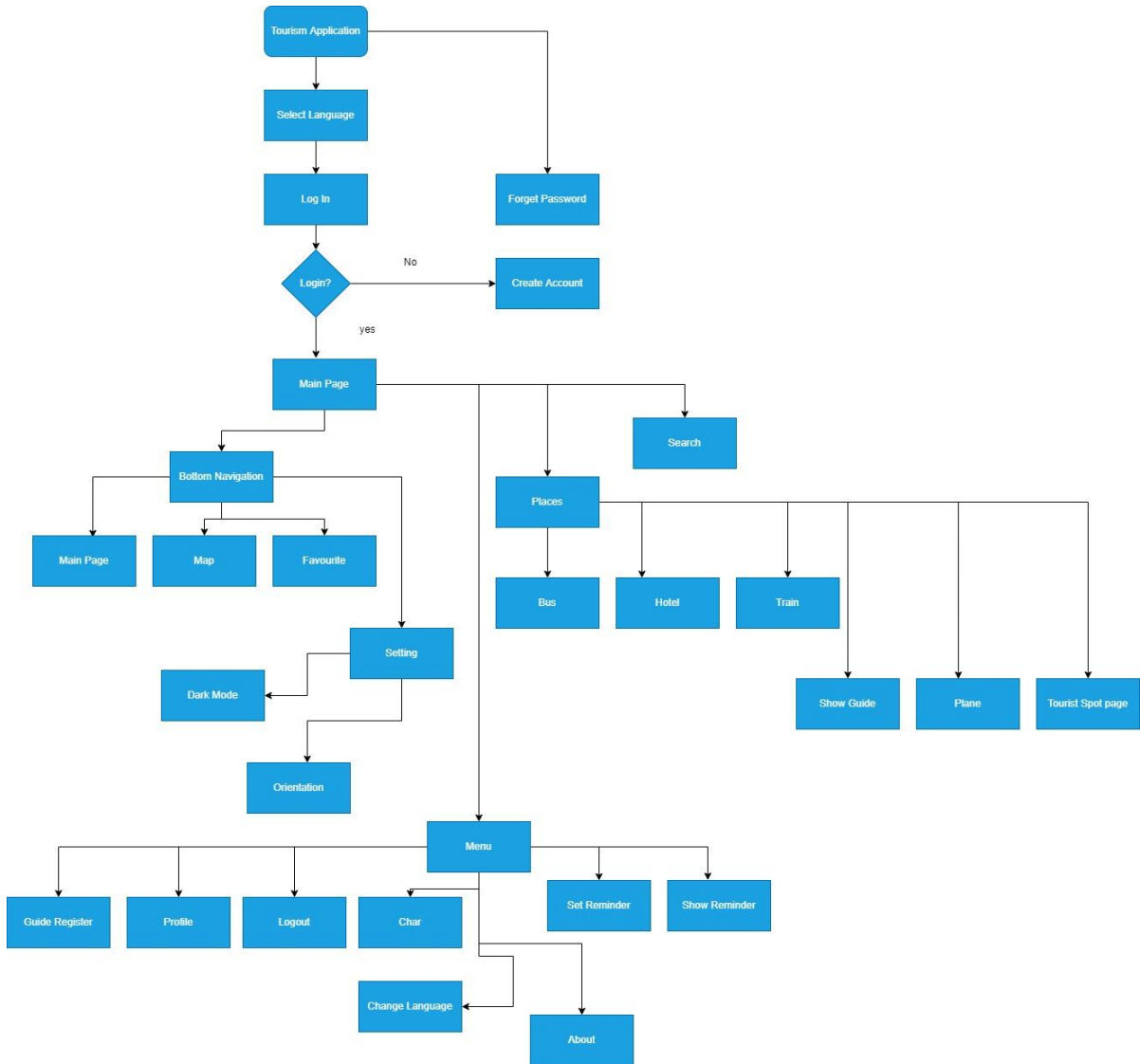


Figure 4.1: Block Diagram

4.2 Description of Application

Log in: Log in is a process where the user will be logged in the application using the email and password he/she has been used while creating the account.

Create account: Create account is a process where the user will create an account by registering his name, email, phone, password, address and register them into the database.

Forget password: This process the user can change the password if he/she has forgotten his/her password. Password can be changed by clicking an email link provide by the admin.

Profile: Profile is where the user can show his registered details and also can change them if necessary.

Main Page: Main page is the main activity of the application where the user can go everywhere from there.

Search: Search is a function in main page where the user can search the desired places to view the information about the particular place.

Bottom navigation: Bottom navigation is an action bar at the bottom of the main page and other pages this section has offer the user to show google map, change setting, view the places which they have marked as favourite.

Menu: This is a part of main page menu has some functionality such as logout, guide registration, profile, chat, about.

Logout: Logout page is a page where the user can logout and destroy all the session created by them.

Guide registration: One of the main functionality of this application is that it can show guide of several places. This page registered a user as guide.

Chat: Chat page works as a messaging function between the user. All the users can view the message of other users and can also send their message.

Map: Map page will show the user google map where they can determine their location and also can determine the distance of their desired location from their location.

Favorite: User can have places which they like. So, by using this function they can save the places they like and can also view them in this page.

Setting: User can change the theme of their application light or dark by using the setting option also can view the version and update information of the application.

Places: There are total 5 pages consist of the most visited districts of Bangladesh such as Sylhet, Rangamati, Khagrachari, Bandarban, Cox's bazar. Users can go to those pages and can view the tourist places they offer.

Hotel: This function will redirect the users to a third party hotel booking website where the user can visit to view, book their favorite hotel.

Bus: This functionality will bring the user to a third party website called Sohoz where they can book tickets of buses of their desired destination.

Train: This functionality will redirect the user to Bangladesh railway website where they can buy the online ticket of trains of their desired places.

Guide: This page will show guide information of the tourist places to the user.

Subpage: There are total 22 sub page of the application of various tourist places included in the application. Users can go to those pages view the information about their favorite places and can also use the favourite button on the top of the image to save it to the favorite page.

Language Page: Users can choose between English and Bengali according to their preferences.

Set reminder page: Users can set reminder for their upcoming tour

4.3 System Architecture

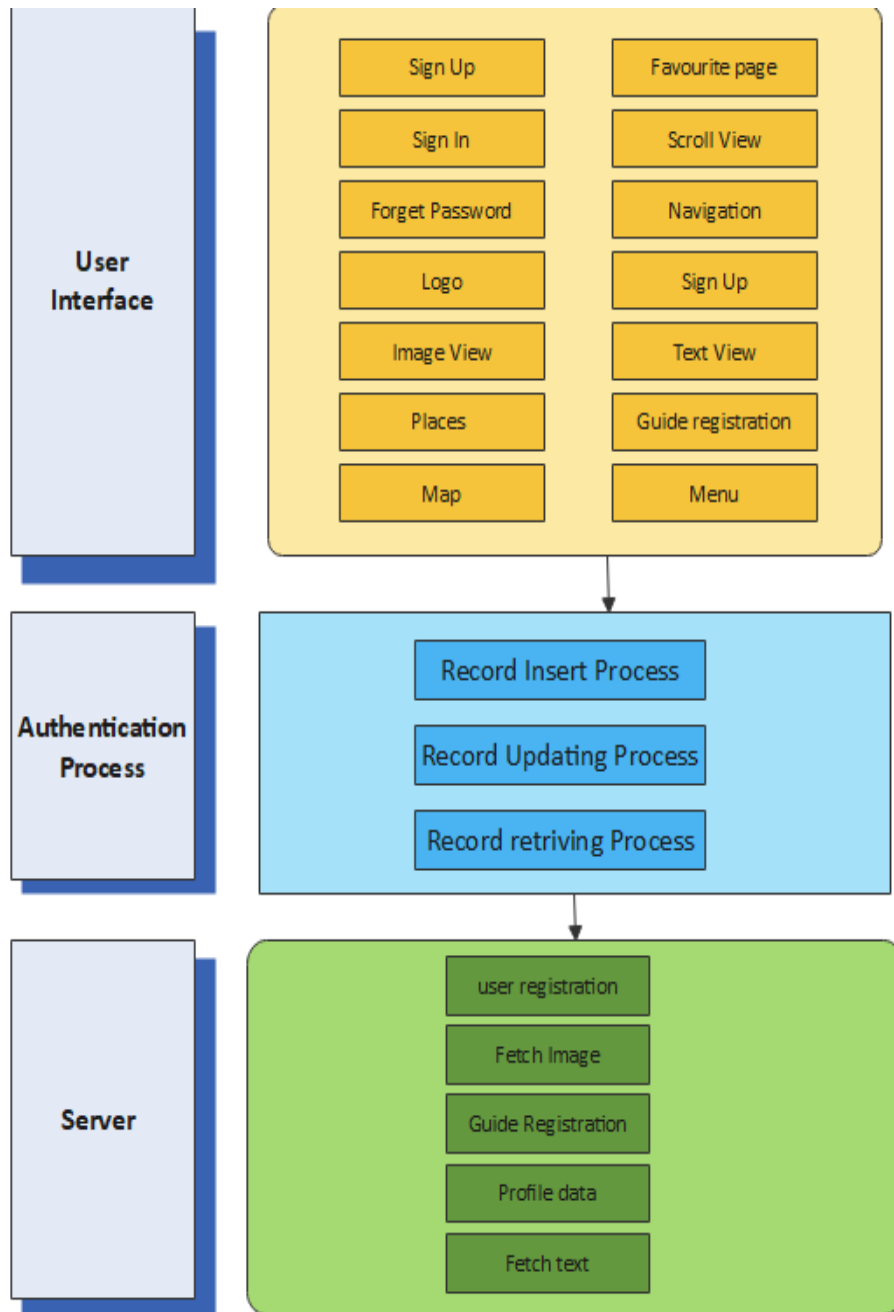


Fig 4.2: System Architecture

4.4 ER diagram

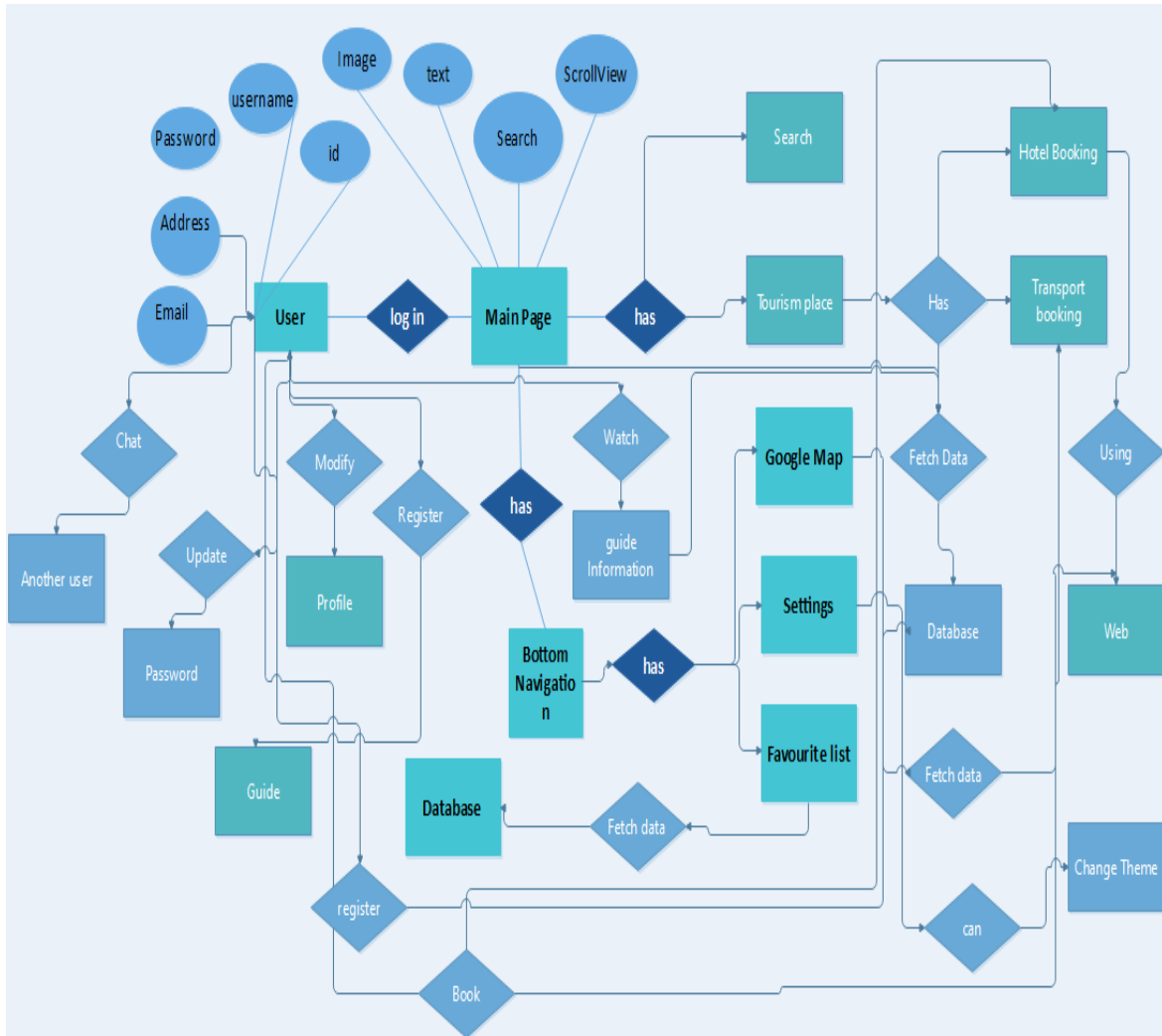


Figure 4.3: E-R diagram

4.4.1 E-R diagram description

Tourism application user database has several sections such as user information, images, guide information. Now the user has password, email, phone, address, user id and also favorite image. User use email and password for authentication to the application.

The main page has image, text, search and scroll view. User can modify their profile. User can chat with another user. User can show their favorite places. User can book transport and also hotel with the help of the web. Main page has transport, bottom nav, search and various booking system for the user.

Bottom nav has functionality to show google map, show user their favorite places, offer the functionality to the user to change theme of their application. Menu option has logout, guide register, chat, about us, profile function.

Main page has the functionality to fetch image and data from the database and show it to the user. User use the logout process to destroy the session and exit the application.

Users can also choose their language and can also set and see reminder of their upcoming tour.

CHAPTER 5

IMPLEMENTATION AND TESTING

This project was entirely made on our collected documents, concepts from existing work and imagination. There are many other developers who has claimed that they have created unique applications based on tourism. Every application is unique on their own ways just as ours. Here we have tried to implement an application which is unique then other application according to our knowledge.

5.1 Implementation of Front-end design

Main Activity: The main activity has search option also has bottom navigation

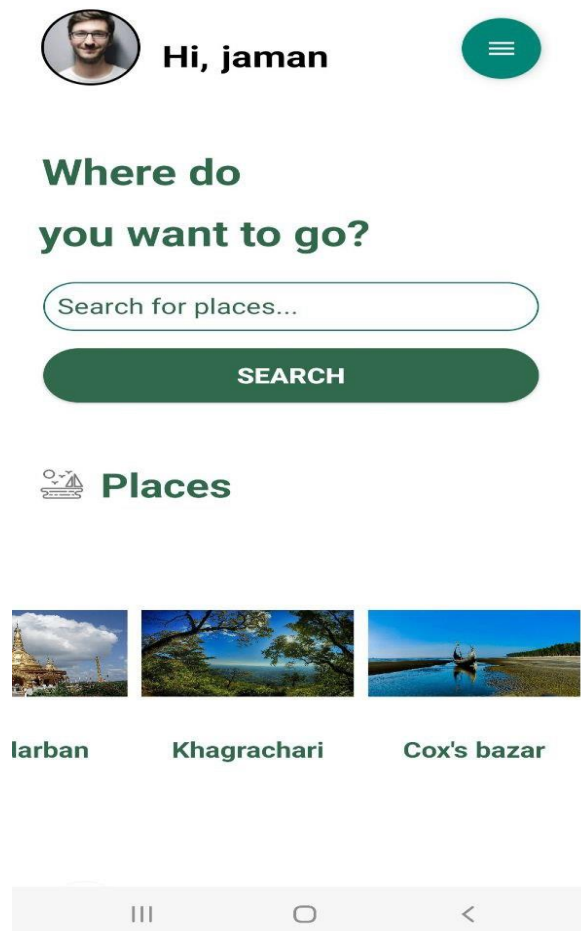


Figure 5.1: Main Activity

Sign-Up: User will register through these page with firebase database

Sign-In: User will log in by this activity and enter the main activity

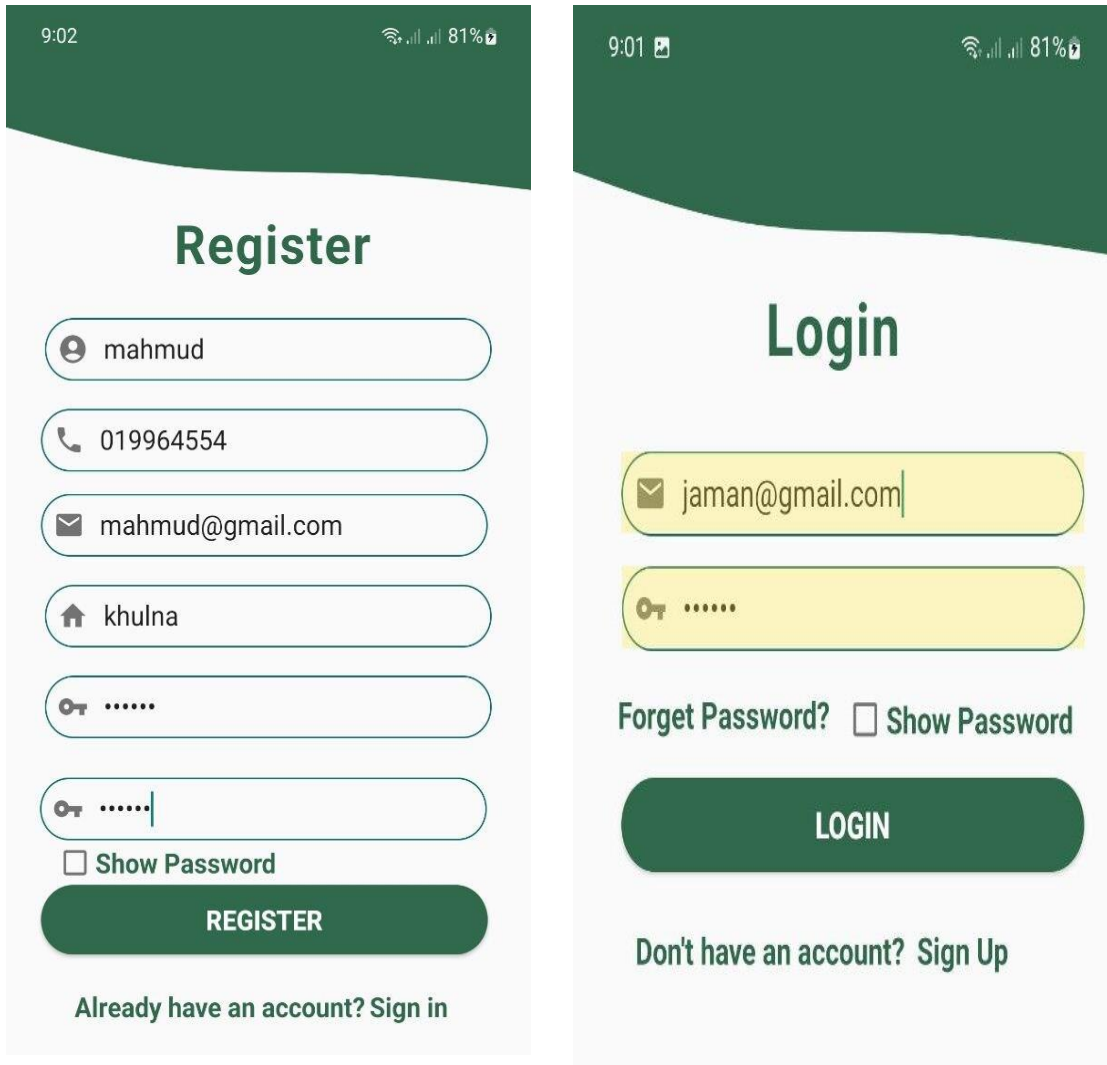


Figure 5.2: Login and Registration activity

Menu Item: Menu item contains functionality such as profile, guide registration, chat, logout, about us

Profile: Profile activity shows the recorded data of users

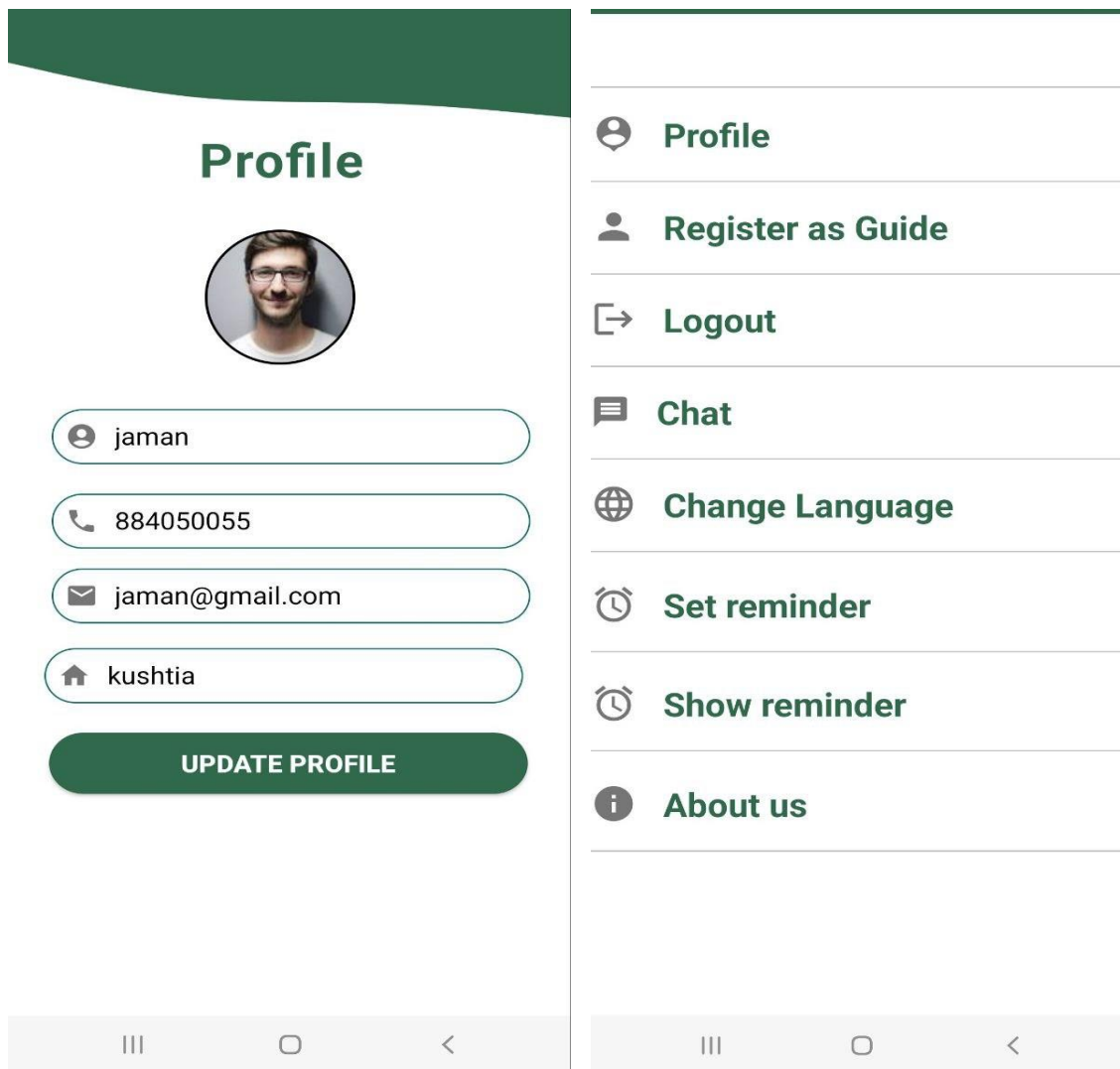


Figure 5.4: Profile and menu item

Chat Activity: User can chat with another user.

Guide Page: This activity shows information about tour guide of tourist places

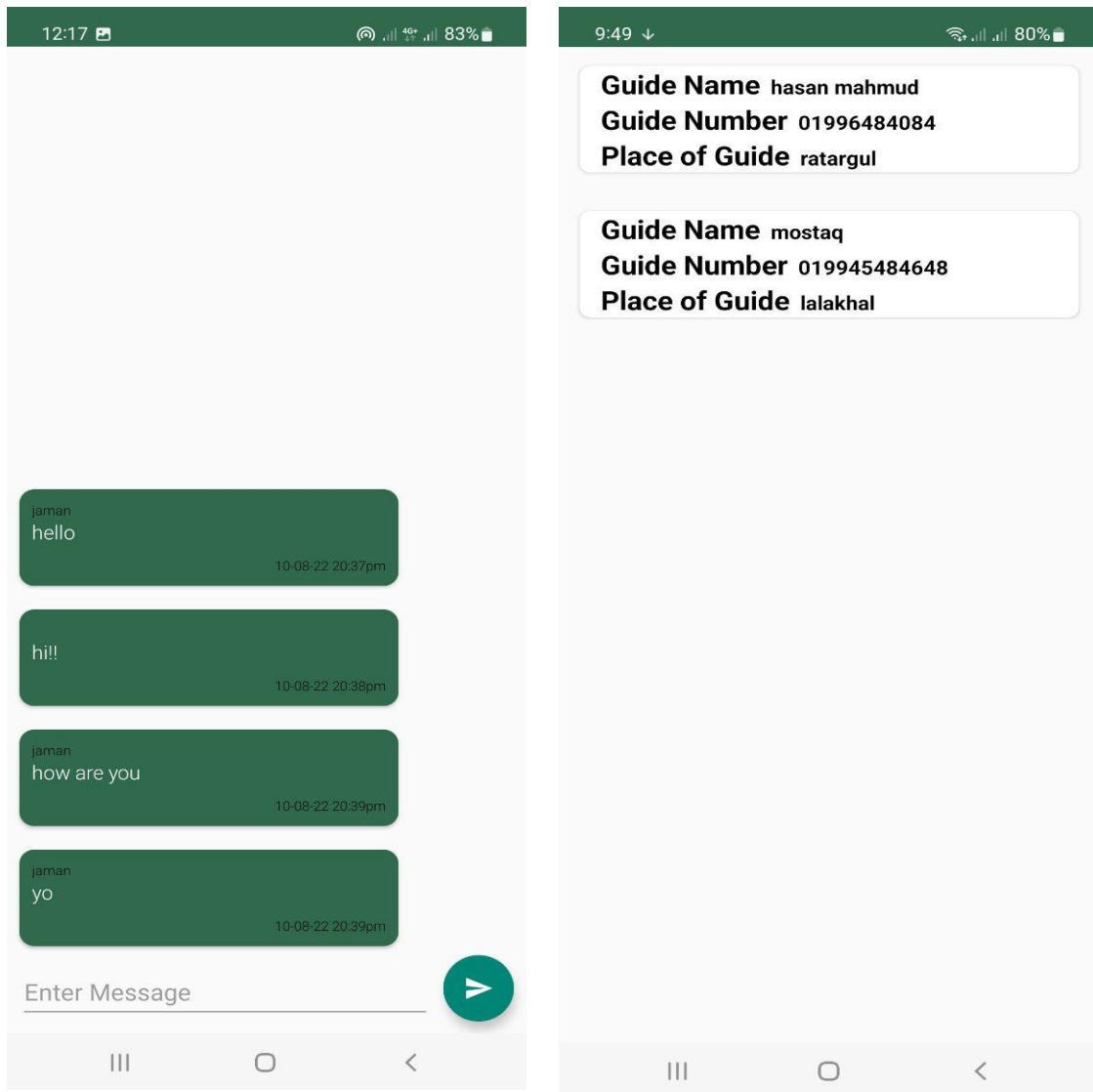


Figure 5.5: Chat and guide page activity

District activity: This activity will show the user several district such as Sylhet, Bandarban, Khagrachari, Rangamati, Cox's bazar. Also user can book transport and hotel.

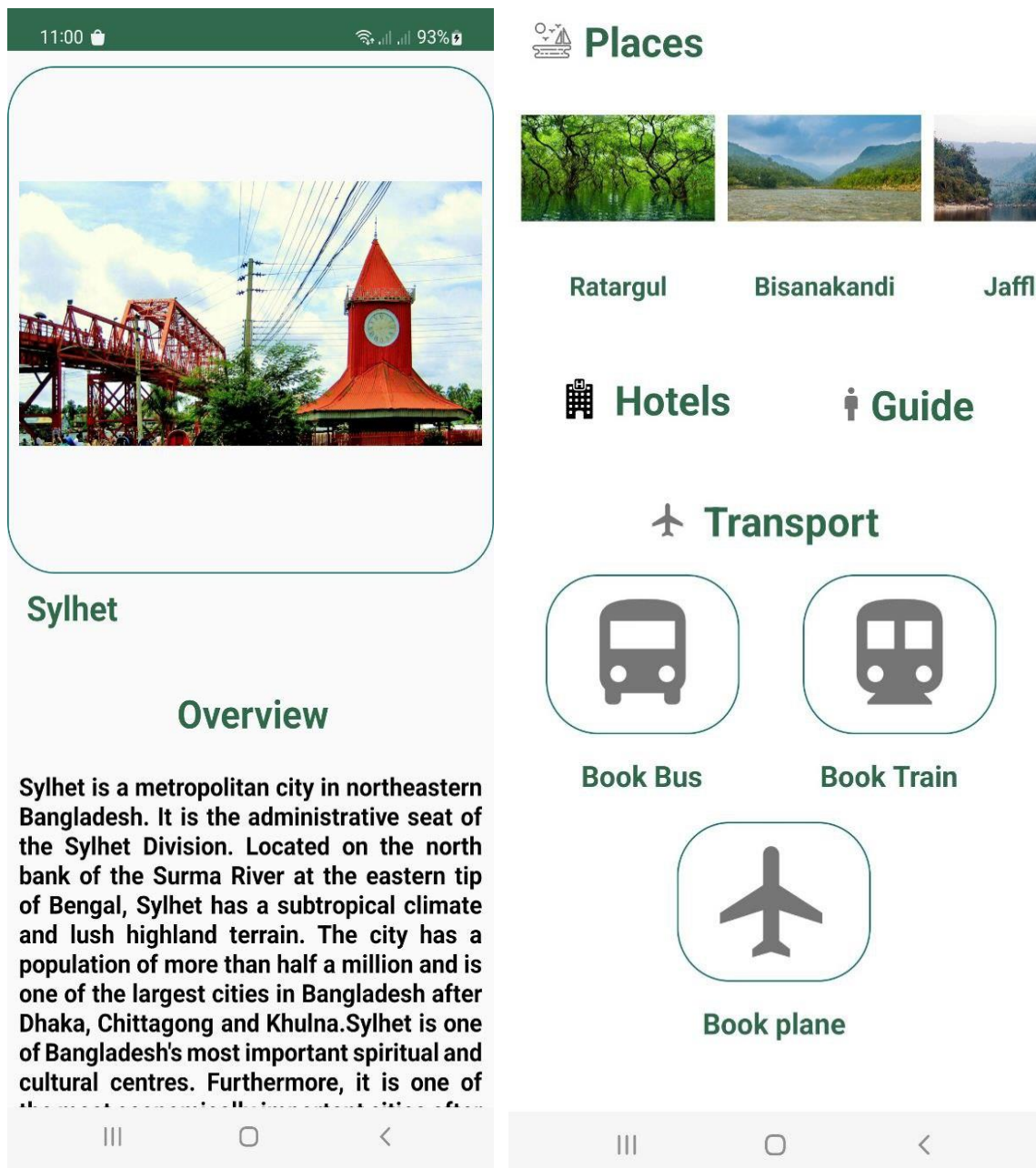


Figure 5.6: District Activity page

Place activity: This activity will give the user information about a specific tourist spot and user can also mark them as their favorite.

Hotel booking: This function will give the user access to our website Vhromon then it will redirect them to Agoda to book hotel. We are affiliated partner with Agoda

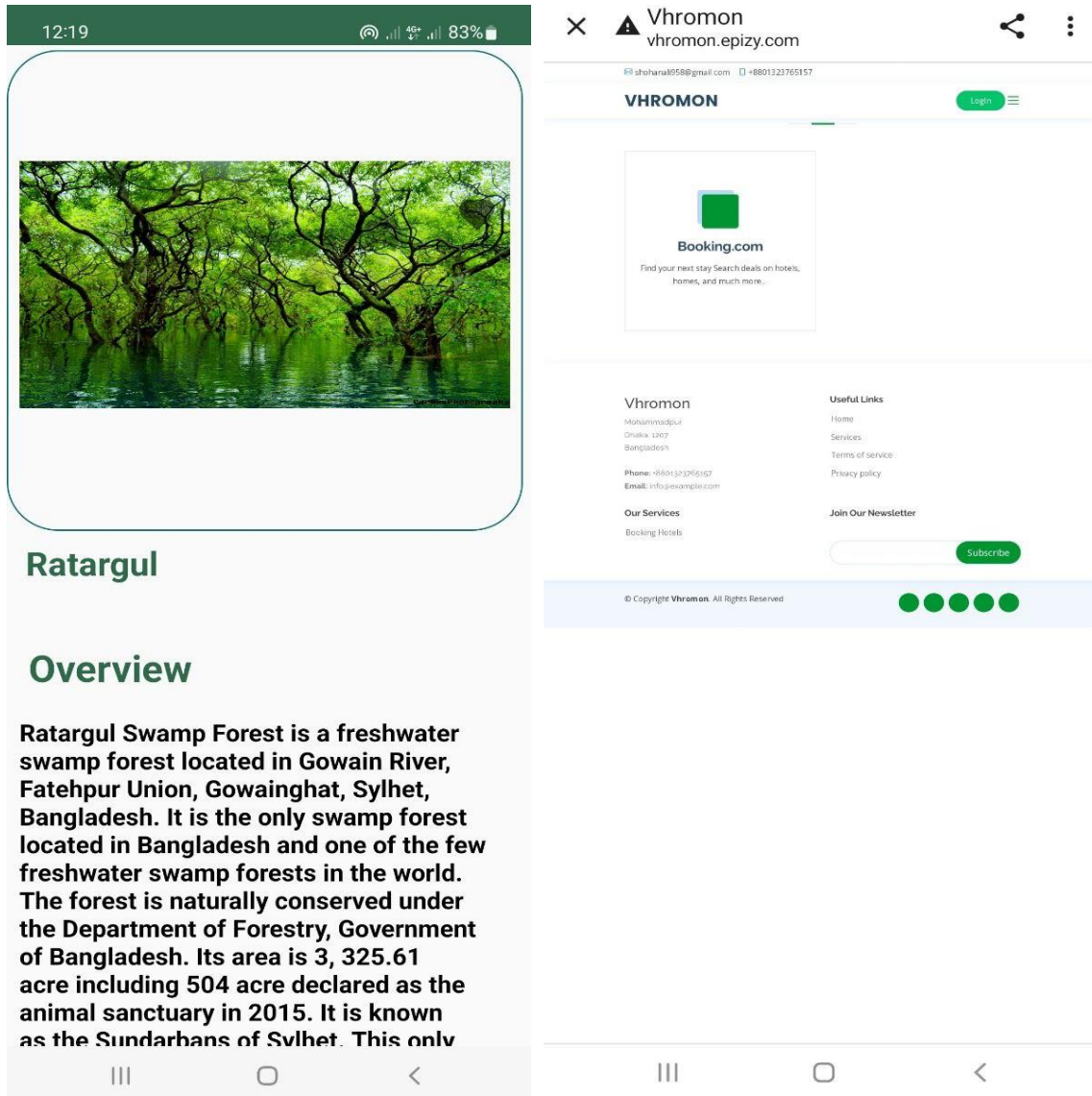


Figure 5.7: Place Activity and Hotel booking

Transport booking: This functionality will help the user to book bus and train and plane through third party website BD railway, Sohoz and Gozayan.

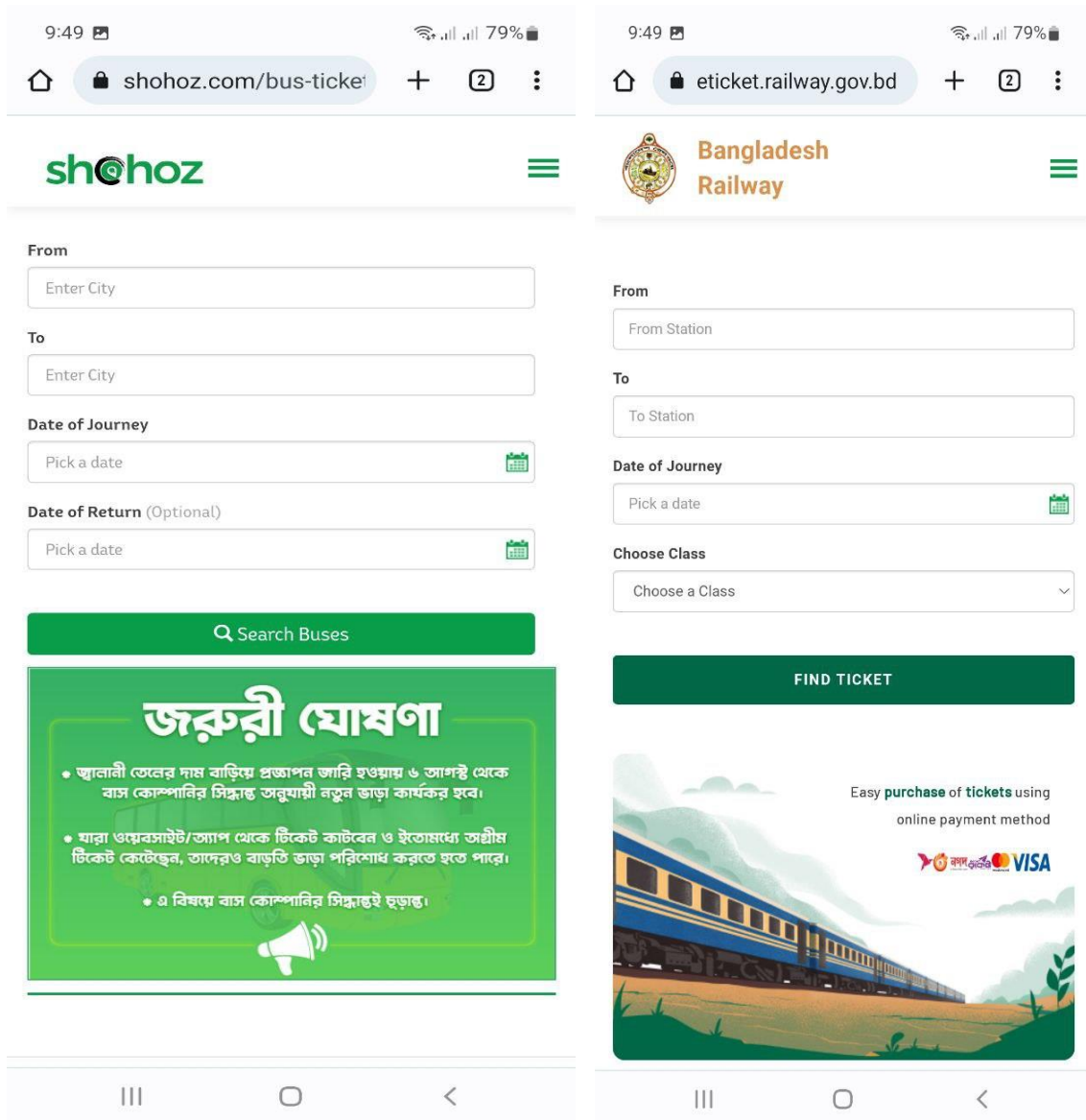


Figure 5.8: Transport Booking

Favorite places: This activity will show the user the places they have choose as favourite

Google Map: This functionality will show the user google map to see the distance of destination

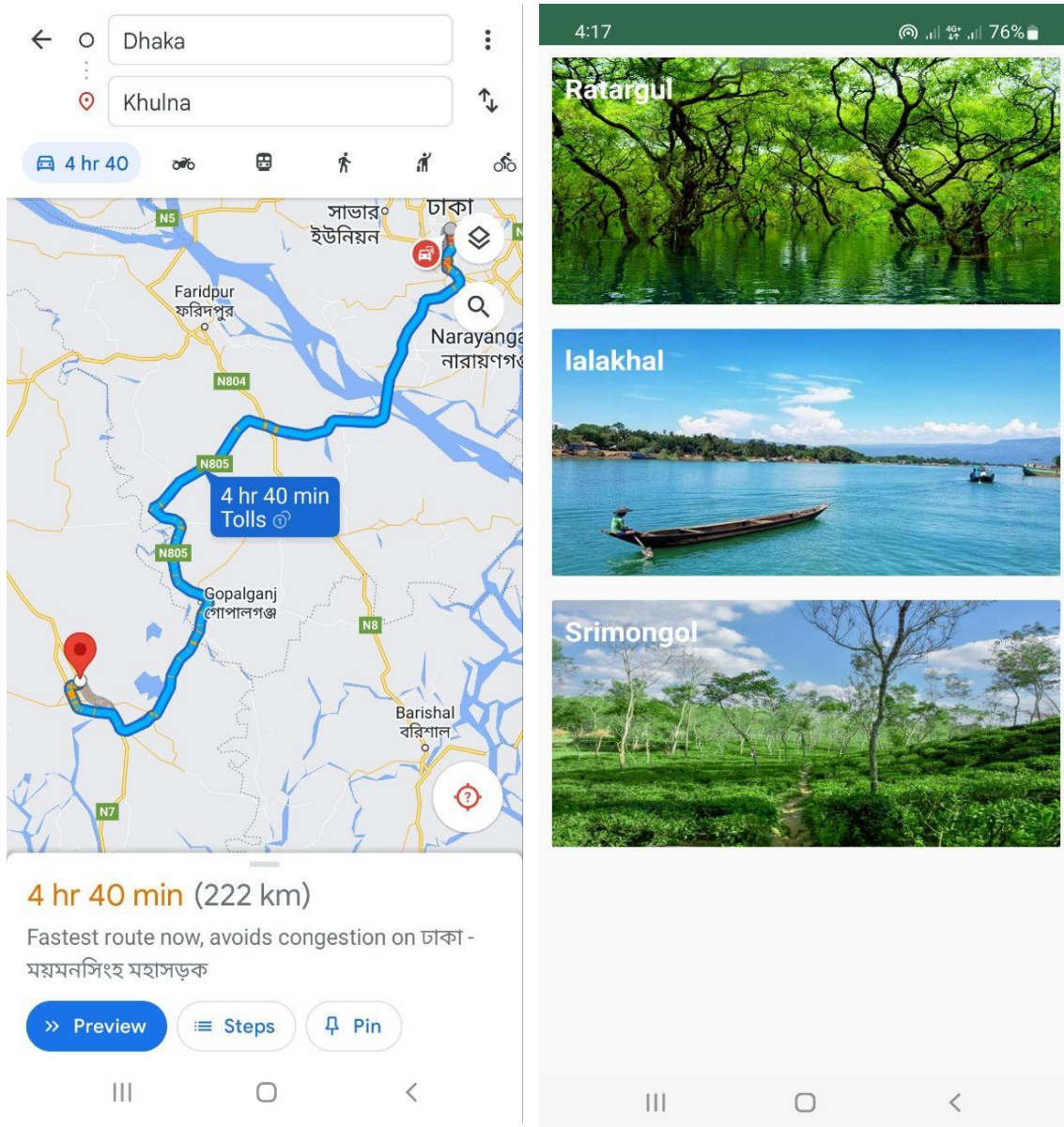


Figure 5.9: Favorite activity and Google map

Set reminder: Users can set reminder for their upcoming tour

Language: Users can choose their app language between Bangla and English

The image displays two mobile application screens side-by-side. The left screen, titled "Tour Reminder", features a vertical stack of seven rounded rectangular input fields with the following labels: "Enter district name", "Enter name of tourist spot", "Enter hotel name", "Enter room number", "Enter guide name", "Enter guide phone number", and "Enter tour date (dd-mm-yy)". Below these fields is a prominent dark green button labeled "SET REMINDER". The right screen, titled "Select your language", shows the instruction "আপনার ভাষা পছন্দ করুন" (Choose your language) above two dark green buttons: "ENGLISH" and "বাংলা" (Bangla). Both screens include a standard Android navigation bar at the bottom with icons for home, back, and recent apps.

Figure 5.10: Tour Reminder and Set Language

5.2 Implementation of Back-End Design and Functionality

This project is mostly based on database. In this project we have used Firebase as database platform. Firebase has divided into four sections.

- Firebase Realtime database
- Firebase storage
- Firebase Authentication
- Fire Store

This project contains not only text data but also image data. Those data have been stored into Firebase platform. While developing this application all four types of firebase platform has been used. There are several tables of each database platform. Interaction with user and database is one of the most important features of firebase. Firebase is easy to use and it has several functionality which other databases don't offer.

In this project we have used images of different places and show them into the application. We have also used several trees some of them contains text and some of them has url for images.

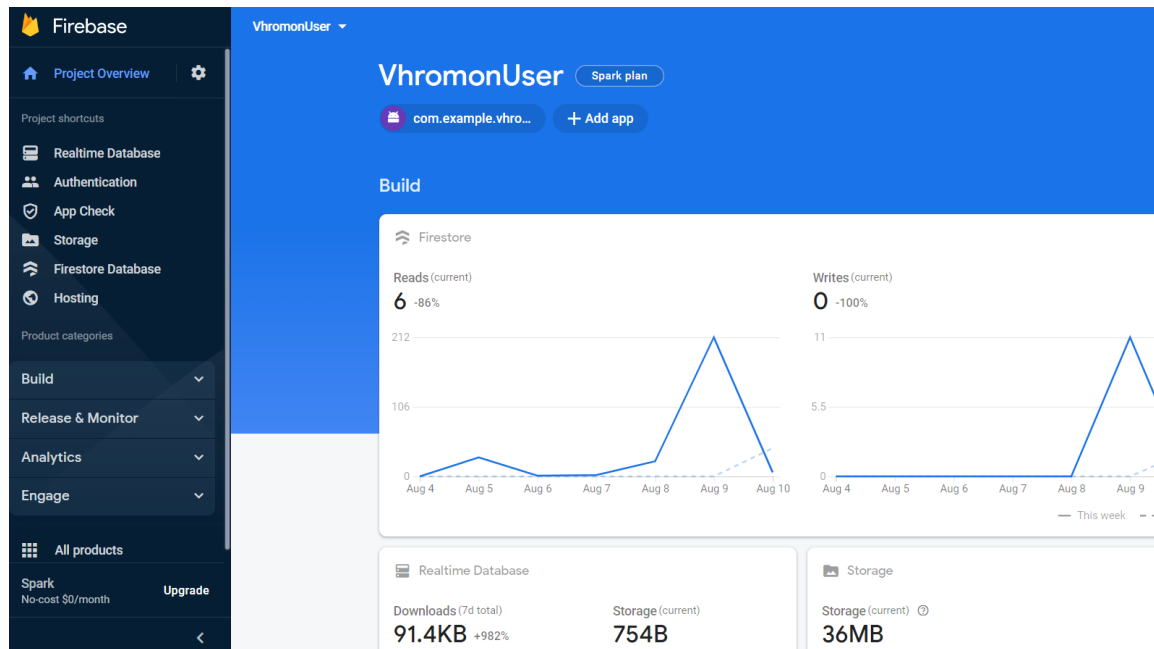


Figure 5.10: Firebase Console

5.2.1: Tree structure and database view



Figure 5.11: Text type table



Figure 5.12: Table contains text and url

Identifier	Providers	Created ↓	Signed In	User UID
jaman@gmail.com	✉	Aug 9, 2022	Aug 11, 2022	yMzMKODzFkbGi0UK2mXMbZnw...
hasan@gmail.com	✉	Aug 4, 2022	Aug 11, 2022	gwYWg7ID00dr2laplEXiUyGcikE3
niloyint97@gmail.com	✉	Jul 27, 2022	Jul 27, 2022	1ngpbrYuR8SfsCVWwJdCCirWO1L2
zubaershahriar005@gmail....	✉	Jul 27, 2022	Jul 27, 2022	8K0RWS9DE7Nms6fMXX2MFmdX...
saman@gmail.com	✉	Jul 26, 2022	Jul 26, 2022	MZidRHBGblY4yrYPCGSZdjwDCW...
peter@gmail.com	✉	Jul 26, 2022	Jul 26, 2022	skhG1r9o4WYpP8gNwG11hp0MW...

Figure 5.12: User Authentication table

gs://vhromonuser.appspot.com > syhlet







<input type="checkbox"/>	Name	Size	Type
<input type="checkbox"/>	 Ratargul.png	2.44 MB	image/pn
<input type="checkbox"/>	 bisanakandi.png	1.46 MB	image/pn
<input type="checkbox"/>	 jafflong.png	1.82 MB	image/pn
<input type="checkbox"/>	 lalakhai.png	866.56 KB	image/pn
<input type="checkbox"/>	 srimongol.png	1.82 MB	image/pn
<input type="checkbox"/>	 tanguar.png	1 MB	image/pn

Figure 5.13: Firebase storage of images

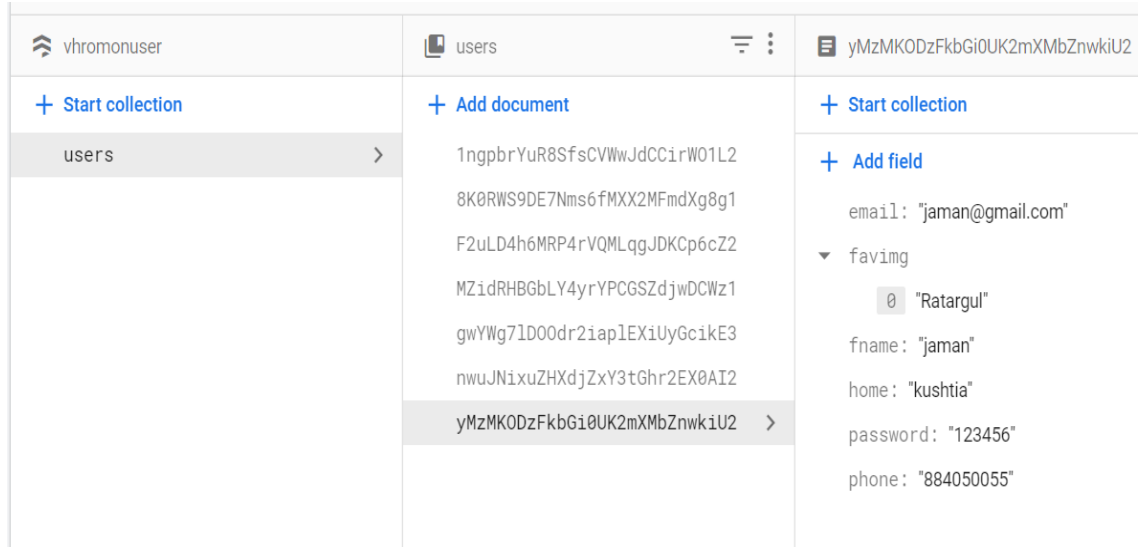


Figure 5.14: Fire store database

5.2.2: Data Type Architecture

Table 5.1: Data architecture of databases

Message (Table for chat) String dateTime String message String username	Sylhet (Table for Guide) String name String number String place	Favourite image table (based on userID) String name String url
User Authentication table String email String password	Firebase Storage (Image file name) Ratargul.png Lalakhal.png Sejek.png	User table String email String (Array) faving String fname String home String password String phone

5.3.1: Testing Methodology

Software testing is usually used for finding the error of a project. Software testing is necessary to ensure the quality of the software. There are several software testing available out there. Software testing can be defined as examine the code, design and implement of the project and simulate them. using software development model is also necessary to ensure the quality of the testing of the project. Reviewing every step by step of code and execute on several stages is a part of software development. The main Standard for software Testing is contained in the ANSI/IEEE standard 829/1983- Standard for software testing Documentation. Some software testing may also be performed by CAST (Computer Aided Software Testing).

5.3.2 Functional Testing

Functional testing is a testing to check if all the described functionality has been implemented into the application

There are two types of functional testing:

Positive functional testing: These testing has been carried out by giving valid input and also verify if the output is correct

Negative functional testing: This type of testing is carried out by giving some invalid conditions and also by some "out-of-bounds" scenarios.

5.3.3 Black Box Testing

Black box testing is a type of testing carried out by only checking out the output of application.

5.3.4 White Box testing:

White box testing is a type of testing carried out by not only checking the output of the application but also the inner functionality of the application.

5.3.5 Unit Testing

Unit testing is used while designing and implementing the application in detailed process. Unit testing has been used in this project to find out if there is any defects in the application.

5.3.6: Compatibility Testing:

There are more than two billion devices running on android platform. There are several types of screen size which running android platform such as smartphone, tv, tablet, watch. Running compatibility testing is very necessary to observe if the developed application is supported by various screen size and density. Our project is based on smartphone so we have performed compatibility testing on smartphone with different screen size.

Table 5.2: Compatibility Test Result

Android device name	Screen Resolution	Test	Result
Google Pixel	1920 x 1080	Yes	Okay
Samsung Galaxy A51	1920 x 1080	Yes	Okay
Samsung Galaxy j5	1920 x 1080	Yes	Okay
Samsung Galaxy A7	1920 x 1080	Yes	Okay
Nexus 6P	1440 x 2560	Yes	Okay
Google Pixel 3aXL	1080 x 2160	Yes	Okay
Google Pixel 4	1080 x 2280	Yes	Okay
Nexus 5X	1080 x 1920	Yes	Okay
Nexus 7	1280 x 800	Yes	Okay
Pixel C	2560 x 1800	Yes	Okay
Android tv	1920 x 1080	Yes	Okay
Android tv	1280 x 720	Yes	Okay

CHAPTER 6

IMPACT ON SOCIETY AND SUSTAINABILITY

6.1 Impact on society

We believe Vhoromon will help people to get connected with the people different parts of Bangladesh. Through this application people will be able to learn, explore, enjoy tourists spots. People can easily learn about different parts of Bangladesh, their culture and behaviors. In our country we have seen a large percentage of people are interested in travelling but because of the lack of the knowledge people tend to cancel their trip so, we have come up with the idea of helping them by providing some guides for the particular place so that they can learn about that particular place and can make decision which place could be the better option for them. We also have included a chatting section for the tourists where they can talk to each other about their visited place and their best and worst experiences. Through the chatting section people can get connected with each other easily.

6.2 Sustainability plan

Vhromon provides the user the best user experience by securing their data and it also give them best users friendly experience. Through our application one user can easily create, update and delete their profile which help them protects their data. User can create account which is totally free with means it doesn't charge any money. A user can notify us through emails if they find any problem and they will get response to their mails according to their issues. Our application can work with large numbers of data for which we are using Firebase database system which will give them the best users friendly experience.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 Conclusion

Android based tourism application is a platform for tourist. It is primarily an information application which gives information about various tourist places of out country. This application is user friendly and easy to navigate and also dynamic. This application works as a bridge between the user and tourist spot. We hope that this application will become a user friendly guide and management system to the tourist and make their tourism more enjoyable and hassle free.

7.2 Goal

The goal of our project is to make an application which will give users information about various tourist places and also give them the functionality to easily book transport and hotels. Creating a virtual guide for tourist is our main goal.

7.3 Limitation

- Firebase has only 1 GB of free storage for developer
- It is not possible to create as much as database in Fire Base without paying.
- Sometimes images can take time to load because of internet connection
- Even though we have tested this application in many devices but it can have compatibility problem on some devices because it is not possible to test it on all kind of devices.
- User must need to verify the guides because they are not verified by developers.

7.4 Scope for Further Developments

- More Language options will be available.
- Application will be an international platform by adding international tourist spots.
- More database storage will be available for more user.
- More functionality will be added and guide will be verified by application.
- Hotels will be added by ourselves by not relying on third party hotel booking system.
- We will add hotel by ourselves and different types and categories of hotels will be introduced.
- Rating system of transport and hotel will be available.
- System will be more interactive by allowing the hotel owners to add their hotels to our application.
- App will be more fast by improving functionality.

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