

DHAKA CITY BUS INFO

BY

MEHEDI HASAN SHAKIL
ID: 142-15-3618

IMTIAZE AHAMMED
ID: 142-15-3825

AND

MD. ALOMGIR HASAN
ID: 142-15-4078

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

Supervised By

Ms. Fariha Tasmin Jaigirdar
Assistant Professor
Department of CSE
Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

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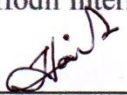
APPROVAL

This Project titled “**Dhaka City Bus Info**”, submitted by **Mehedi Hasan Shakil ID: 142-15-3618**, **Imtiaz Ahammed ID: 142-15-3825** and **Md. Alomgir Hasan ID: 142-15-4078** 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 Bachelor of Science in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **7th May 2018**.

BOARD OF EXAMINERS

Dr. Syed Akhter Hossain
Professor and Head
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Chairman




Dr. Sheak Rashed Haider Noori
Associate Professor & Associate Head
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner

Md. Zahid Hasan
Assistant Professor
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



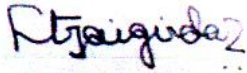
Dr. Mohammad Shorif Uddin
Professor
Department of CSE
Faculty of Science & Information Technology
Jahangirnagar University

External Examiner

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Ms. Fariha Tasmin Jaigirdar, 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.

Supervised by:

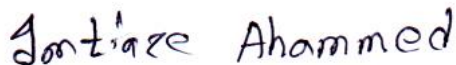


Ms. Fariha Tasmin Jaigirdar
Assistant Professor
Department of CSE
Daffodil International University

Submitted by:



Mehedi Hasan Shakil
ID: 142-15-3618
Department of CSE
Daffodil International University



Imtiaze Ahammed
ID: 142-15-3825
Department of CSE
Daffodil International University



Md. Alomgir Hasan
ID: 142-15-4078
Department of CSE
Daffodil International University

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ABSTRACT

Due to the revolution of internet technology worldwide, the rapid use of mobile applications in various subject have increased in last few years and still increasing day by day. A good mobile application on traveling in the Dhaka City is today's demand for travelers or tourists of the home and abroad. Most of the people need Dhaka City Bus Service for their transport. They need information of these city buses. This project “Dhaka City Bus Info” is based on this concept of development of a mobile application on city buses with maps.

Using this application, a prospective passenger can easily know which bus they should select to travel from one station to another station. They can also know the approximate fare, approximate distance, all possible routes, location maps, their current location, the route to go there, live route preview, distance and approximate time in their Android mobile devices with our application. They can also know the traffic police contact information, police box phone number, fire services number in caes of emergency and also information about shopping mall/center or market etc. In this project, we have studied, analyzed, designed and implemented an intracity Bus Route Finder system for the mega city Dhaka. People will get the idea from long back where exactly they are going and how to go there. Although the user will be a total stranger in an overcrowded city like Dhaka, they will feel confident traveling around the city on their own, without looking for anyone to guide them through phone or any other way. The intended project “Dhaka City Bus Info” is targeted to facilitate newcomers and travelers by giving information and location maps using a mobile application within Dhaka, Bangladesh.

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CHAPTER 1

INTRODUCTION

1.1 Basic Intro

Over the last few years, instant use of communication tools like mobile devices like Mobile Phones, Tablets, Phablets has been successfully introduced to support communication and collaboration processes in work environments. Research suggests that the use of mobile applications also increasing rapidly day by day due to social presence and awareness within a collaborative group along with utility they bring in to human life. Nowadays all over the world, young generation along with elderly people are more interested in a various type of mobile application, and among those dynamic informative applications are one of the top most choices for its very significant matter. This kind of application helps to learn or grab idea about a topic or location easily and patiently, whenever and wherever someone likes to, from anywhere throughout the world. That's why Android based application development is one of the top most choices of the developers in many areas. As a result, we developed an informative android travel application to give information and live location maps of Dhaka City, Bangladesh for the passengers, peoples, newcomers, travelers, and tourist.

1.2 Background

Dhaka is the capital city of Bangladesh, and it is the center of national government, trade, and culture. It is also the 4th most densely populated city in the world. In 2016, the estimated population was about 1.80 crores. To accommodate the transport requirements of this huge population of this city, there are thousands of Buses, Leguna, Baby Taxi, Private Cars, Rickshaw, while Buses serve the most.

Buses serve as the main public transport for travelling within Dhaka City. Bus type and board location differ based on route and location along with provided service. When someone arrives in Dhaka from outside, especially someone from the countryside, they

usually face a big difficulty to move from one place to another in the whole new environment, just because they lack proper information about those transport and route. So, it becomes quite difficult for them to find the proper bus to reach their destination. Guiding over phone does a little help to such complete stranger. Even, they often fall victim of theft and hijack while looking for help from a total stranger.

We are developing this system so that people will be able to find their transports easily whoever has access to an Android device and internet connection.

1.3 Objective with specific aims

We aim to develop an application that will be easy to use, will cost minimal data and will provide the user with traveling information inside Dhaka city when the user primarily chooses to travel with bus. All the available or required information to roam around the city confidently will be available right at their finger tips. They will have a easy, reliable and free of cost service to access information about bus name, ways to identify proper bus for a specific route and they will able to see the route map on their Android mobile device using this particular application.

As often seen, most new comers just miss their targeted bus stop. They will have traffic police contact number, police box phone number, fire services number so they can ask for help in case of emergency. Also, they will get information about shopping mall/center or market etc. There will be a full Dhaka city bus route information available for them in downloadable format. If they want then can download the information for offline use.

The primary benefits that can be acquired by using "Dhaka City Bus Info" are listed below:

- **Saves Time**: User will get their desired information in a flash, without going anywhere, without asking anyone. It will save their valuable time that they currently have to spend on getting reference from a relative or friend if they can help over the phone or to look for someone unknown people around him if they can advise about the particular destination.

- **Personal Security**: Unknown people can easily harm new people in the city. Asking unknown people and following their instruction, is very much like inviting someone to get hijacked or get kidnapped. With the help of this system the user can confidently board on right bus and reach their destination safely.
- **User Friendly Dashboard**: The system will provide a user-friendly functionality, so any one who can use an Android phone can easily use this application.
- **Better Delivery of Service**: Efforts were made to provide simplified and effective services up to the level of expectations of the people utilizing advantages modern technology.

1.4 Who are user of this application

People planning to travel within the Dhaka city by a bus will be the main user. People new to the destination area or people who are new comers to the city will be most benefited using this application.

1.5 Summary

Using this system, the user will be able to travel around the city without prior familiarity with the roads in Dhaka city. This system will give information for a secure and easy way to travel by bus.

CHAPTER 2

TECHNOLOGY REVIEW

2.1 Basic Android Overview

Today, Android powers about 85% of all smartphones globally, while its nearest competitor iPhone accounts for 11%. It started its journey in 2003 by Andy Rubin and later was acquired by Google. Android is being developed by the Open Handset Alliance, led by Google, and other companies. Android is a mobile operating system based on a modified version of the Linux kernel and other open source software and which was primarily designed for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further pushed the development and released Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics. As such, Android is revolutionizing the mobile space.

2.2 Android Versions

The version history of the Android mobile operating system began with the public release of the Android beta in November 5, 2007. The first commercial version, Android 1.0, was released about one year later, in September 2008. Android is continually being developed by Google and the Open Handset Alliance with the most recent major version being Android 8.1 Oreo, released in December 2017. (Reference: know about at: <<<https://www.google.com/>>> , last accessed on 05-04-2018 at 10.00am.)

Table2.1: Android versions specific code names:

Alpha (1.0)	Ice Cream Sandwich (4.0–4.0.4)
Beta (1.1)	Jelly Bean (4.1–4.3.1)
Cupcake (1.5)	KitKat (4.4–4.4.4)
Donut (1.6)	Lollipop (5.0–5.0.2)

Eclair (2.0–2.1)	Marshmallow (6.0-6.0.1)
Froyo (2.2–2.2.3)	Nougat (7.0-7.1.2)
Gingerbread (2.3–2.3.7)	Oreo (8.0-8.1)
Honeycomb (3.0–3.2.6)	Android P (9)



Figure 2.1: Android Versions

2.3 Android and Java

While programming Java, we write our java source file (.java), compile it into a java byte code (.class) using the Java compiler, and then run this byte code on the Java VM. In Android, things are a bit different. We still write programs in the Java source file, and we still compile it to Java byte code using the same Java compiler. But at that point, we recompile it once again using the Dalvik compiler to Dalvik byte code. It is this Dalvik byte code that is then executed on the Dalvik VM.

2.4 Android Package Kit (The APK)

Android Package Kit (also Android Application Package), in short APK is the package file format used by the Android operating system for the distribution and installation of mobile apps and middleware.

APK files are analogous to other software packages such as EXE in Microsoft Windows or DEB packages in Debian-based operating systems like Ubuntu. Applications are typically distributed through Play Store from Google or other third party application stores like Amazon App store, while Play Store is the primary source. To make an APK file the program is first compiled into Oracle JVM Java byte code and then all the class files and jar files used as library are converted into dex file and then all resources along with the dex file are packaged into one file. An APK file contains all of that program's code (such as .dex files), resources, assets, certificates, and manifest file. As is the case with many file formats, APK files can have any name needed, provided that the file name ends in ".apk".

2.5 Implementation of Navigation Drawer

From the beginning many types of android application has been developed with various activity and UI panels. Among them, the navigation drawer is a UI panel that shows app's main menu. The drawer is hidden when not in use but shows when the user swipes a singer from the left edge of the screen. Users navigate back to the previous screen using the Back button.

CHAPTER 3

SOFTWARE MODULE

3.1 Software Development Life Cycle

The System Development Life Cycle provides system designers and developers to follow a sequence of activities. It consists of a set of steps or phases in which each phase of the SDLC uses the results of the previous one. A System Development Life Cycle (SDLC) adheres to important phases that are essential for developers, such as planning, analysis, designs and implementation and are explained in the section below. (Reference: Learn about SDLC at: << https://www.tutorialspoint.com/sdlc/sdlc_overview.htm >>, last accessed on 05-04-2018 at 12.00pm.)

These stages can be characterized and divided up in different ways, including the following:

- **Project planning, feasibility study:** Project planning for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage.
- **Systems analysis, requirements definition:** Refines project goals into defined functions and operation of the intended application. Analyzes end-user information needs.
- **Systems design:** Describes desired features and operations in detail, including screen layouts, business rules, process diagrams, pseudo code and other documentation.
- **Integration and testing:** Brings all the pieces together into a special testing environment, then checks for errors, bugs and interoperability.
- **Maintenance:** What happens during the rest of the software's life: changes, correction, additions and moves to a different computing platform and more? This, the least glamorous and perhaps most important step of all, goes on seemingly forever.

3.2 Feasibility Study

A feasibility analysis usually involves a thorough assessment of the operational (need), financial and technical aspects of a proposal. Feasibility study is the test of the system proposal made to identify whether the user needs may be satisfied using the current software and hardware technologies, whether the system will be cost effective from a business point of view and whether it can be developed with the given budgetary constraints. A feasibility study should be relatively cheap and done at the earliest possible time. Depending on the study, the decision is made whether to go ahead with a more detailed analysis. When a new project is proposed, it normally goes through feasibility assessment. Feasibility study is carried out to determine whether the proposed system is possible to develop with available resources and what should be the cost consideration. Facts considered in the feasibility analysis were-

- Technical Feasibility
- Economic Feasibility
- Behavioral Feasibility

(Reference: Learn about feasibility study at: << <https://www.simplilearn.com/feasibility-study-article> >>, last accessed on 05-04-2018 at 12.00pm.)

3.3 SDLC Models

There are various software development life cycle models defined and designed which are followed during the software development process. These models are also referred as Software Development Process Models.

Following are the most important and popular SDLC models followed in the industry:

- Waterfall Model
- Iterative Model
- Spiral Model
- Agile Mode

3.3.1 Waterfall Model

The Waterfall Model was the first Process Model to be introduced. It is also referred to as a **linear-sequential life cycle model**. It is very simple to understand and use. In a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases. (Reference: Learn briefly about Waterfall Model at: <<https://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm >>, last accessed on 05-04-2018 at 12.00pm.)



Figure 3.1: Waterfall Model

3.3.2 Iterative Model

In the Iterative model, iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the system is implemented and ready to be deployed. (Reference: Learn briefly about Iterative Model at: <<https://www.tutorialspoint.com/sdlc/sdlc_iterative_model.htm>>, last accessed on 05-04-2018 at 12.00pm.)

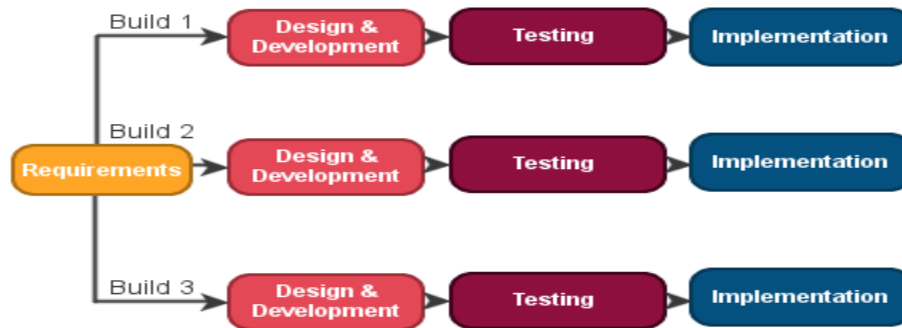


Figure 3.2: Iterative Model

3.3.3 Spiral Model

The spiral model combines the idea of iterative development with the systematic, controlled aspects of the waterfall model. This Spiral model is a combination of iterative development process model and sequential linear development model. It allows incremental releases of the product or incremental refinement through each iteration around the spiral. (Reference: Learn briefly about Spiral Model at: <<https://www.tutorialspoint.com/sdlc/sdlc_spiral_model.htm>>, last accessed on 05-04-2018 at 12.00pm.)

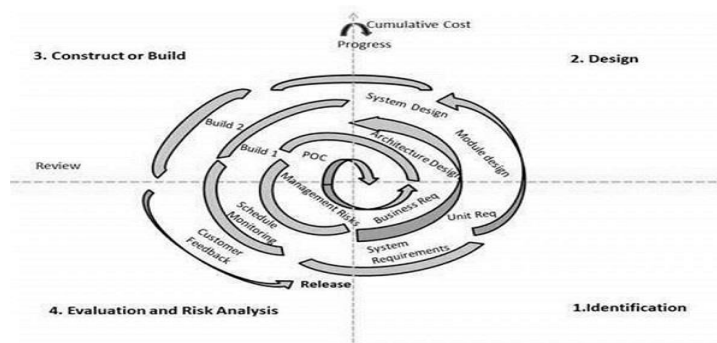


Figure 3.3: Spiral Model

3.3.4 Agile Model

Agile model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. (Reference: for learning briefly about Agile Model at: <<https://www.tutorialspoint.com/sdlc/sdlc_agile_model.htm>>, last accessed on 05-04-2018 at 12.00pm.)

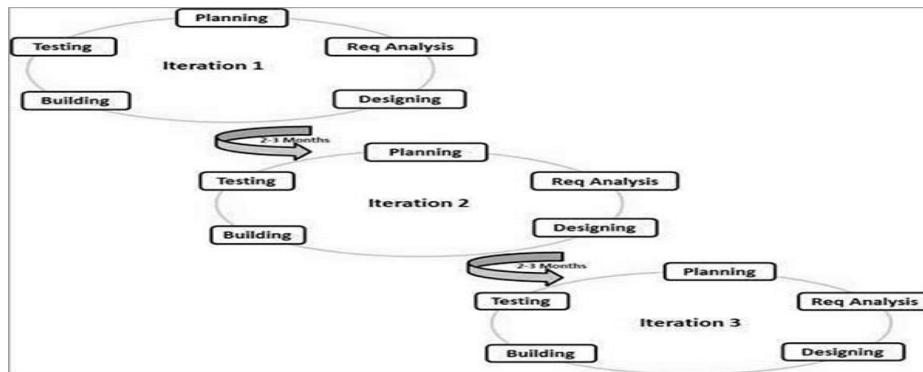


Figure 3.4: Agile Model

3.4 Model Followed for this Project

Every software developed whether small or large scale is different and requires a suitable SDLC approach to be followed based on the internal and external factors. But, it is expected to fit in where the following constraints are met:

- Requirements are very well documented, clear and fixed
- Product definition is stable and technology is understood
- No ambiguous requirements and ample resources with required expertise
- The project is short and easy to arrange by tasks

Comparing all the available methodology, and pros and cons each one brings we followed **waterfall model** for this project. This project is free from ambiguous requirements as the target market is to serve users travelling in Dhaka and bus route and traffic pattern is not going to change too often. That is why users expectation will be the same. All the requirements for the application could be documented and require no modification during the except any serious bug occurs, that will require to be fixed in next cycle.

CHAPTER 4

SYSTEM STUDY

4.1 Introduction

Every Existing system analysis is a detailed study of various operations performed by a similar system if that exists and their way to collect data and serve the user. One aspect of analysis is defining the boundaries of the system and determining whether a candidate system should be considered as candidate system. Here the main concern is to find out few the key question:

- What sort of problems exists in present system?
- What sort of steps can take to solve those problems through improvements?
- Is solving those problems feasible for budget or stake holders?

Enough time should be taken to ensure that the analysts among the developers understand the functionality currently provided by the existing system. This should not be exhaustive, as the existing system is being replaced.

4.2 Existing System

While looking for existing system we found few application on Play Store that was targeted to serve the purpose as this project does. We found many limitations that we tried to solve through this project. Here is a list of available applications on Play Store having the most downloads and best user reviews offering the same service as our application does and that we compared with our project final deliverables:

- Dhaka City Bus Route by Dhaka Studio
- Dhaka City Bus Route by 71 lab
- Dhaka City Bus by Skoogle
- Bus-Jog Dhaka by DreamOgrammerS
- Dhaka City Bus Route by Dot Production
- Bus Route : Dhaka City by Uxlab LLC

4.3 Drawback in the Existing System

Each application in the list has its unique type of limitation. Here we listed limitations we found while reviewing and analyzing these and that we would like to offer further through our project:

- **Lists only major locations instead of each individual stop:** Existing applications list only major locations that do not help much when someone wants help regarding local bus stops. Someone who does not know if their destination location will be in between two certain locations, they will have a hard time figuring out their proper bus.
- **Supports only English, but not Bengali as Input Language:** Almost all the applications listed support only English input language to search and filter. Bangladesh has a literacy rate of 73% and where only 17% of people know how to speak in English. So, it is a huge constraint for the majority of the people.
- **No user defined language preferences:** As English is the only option in the applications, users cannot set Bengali as a UI language in the applications, thus not quite helpful for someone not good in English.
- **No mapping or navigation guides for the user:** It is a great feature to guide a new comer to their desired location, either by bus or even on foot, that the applications could easily offer to the users.
- **No or inaccurate fare information based on boarding location:** None of the listed applications list proper fare information that could help the users to travel with ease.

- **Not using GPS as User's Current Location:** The applications could easily make use of GPS to get user's current location and then guide them to the route, but these applications lack that feature. It would improve the overall experience.
- **No user defined Home or Office Location marking option:** Users cannot save their Home, Office location that would save them from typing the locations each time. If they could save at least five locations, that would save them a lot of time.
- **Lack of proper guide finding bus stop for boarding on the bus:** This is must have for new comers to the city. They should be guided to find the bus stop to catch the bus.
- **Lack of proper information to identify buses:** There is no instruction to properly identify the buses. Images of the buses, along with the bus number marked for each location would help to identify in a much easier way and would be far more user friendly for the users.
- **Filtering work either only with bus name or location name:** Search filtering should work with both Location name along with Bus Name, so if the user have idea about a particular bus or location, that will help them to know more about the buses that serve that area or areas served by a bus.

CHAPTER 5

SYSTEM ANALYSIS

5.1 Introduction

Analysis involves the requirement determination and specification of project or system. Basically it involves establishing requirements for all system elements and then mapping all these requirements to software form. System analysis is the process of studying system to determine how it works and how it meets user needs. The analysis involves an investigation, which in turn usually involves establishing a relationship with the client for whom the analysis is done and with the user of system.

5.2 Requirement Analysis

Requirements of a system are classified in two categories:- Software requirements and Hardware requirements. We gathered all the information that is required from travelers and tried to implement on this application covering as many locations and busses possible to serve widest possible audiences. We made sure that, this application will be compatible with widest range of Android Versions the user might have on their phone. That's why this application will work on devices having Android API Version 16 or later, that covers 99.5% of all phones that regularly visit Google Play Store.

5.2.1 Raw Requirement

- ✓ Free and easy and intuitive application
- ✓ No need to log in or register or pay for information
- ✓ To easily find route or bus searching by bus name or source and destination name
- ✓ Option to get user feedback, recommendation and contribution
- ✓ Anyone can Email us within the application

5.3 Requirement Component

We need two kinds of requirements. The requirements are:

1. Hardware requirement.
2. Software requirement.

5.3.1 Hardware Requirement

One database server must be available to implement the system with following configuration.

1. PC 1 server class brand PC hosting MYSQL Database server
2. An Android mobile phone.
3. A high configuration PC

5.3.2 Software Requirement

1. Android Studio
2. Java Development Kit (JDK)
3. Any computer operating system (minimum update 2007)
4. WAMP or XAMPP Server [PHP, APACHE, MYSQL] installed
5. SQLite
6. Any text editor can be used
7. Any modern web browser

CHAPTER 6

SYSTEM DESIGN

6.1 Proposed System Design

System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture. We are going to follow some basic steps for our proposed system design development phase as follow:

6.1.1 Key features of the App

- **Simplicity and user friendly**

In this app, we have tried to design and develop a user interface, whatever the functionality it will deliver simplicity and what is better for the users. All the content can be accessed in the simplest way possible. That is the things that keeps mobile apps going and makes them popular and user friendly.

- **Android vs. iOS**

These are two platforms to be essentially encompassed. But we developed this prototype in Android platform which is open source and extremely popular and used worldwide.

6.1.2 Creating an Android Projects

After lunching the application Android Studio, a splash screen will be shown containing our apps name and logo and all the platforms we supported. We use navigation drawer. In home page, it contain google map and another function.

Explanation of all the significant fields:

- **Project name:** The project's specific name is most important for any project. It is a good idea not to use any spaces in our project name. This makes it easier to access. The project's name should be unique,

- **Build Target:** We are working with android 4.2 (API level 16) and thus will choose the Android 4.2 option.
- **Application name:** Simply a plain text name for our application. It can be any text. For our app, we gave “Dhaka City Bus Info”.
- **Package name:** We are going to use “dhakacitybusinfo@gmail.com” here.

6.1.3 Graphical User Interface

This is the GUI of our Project:-

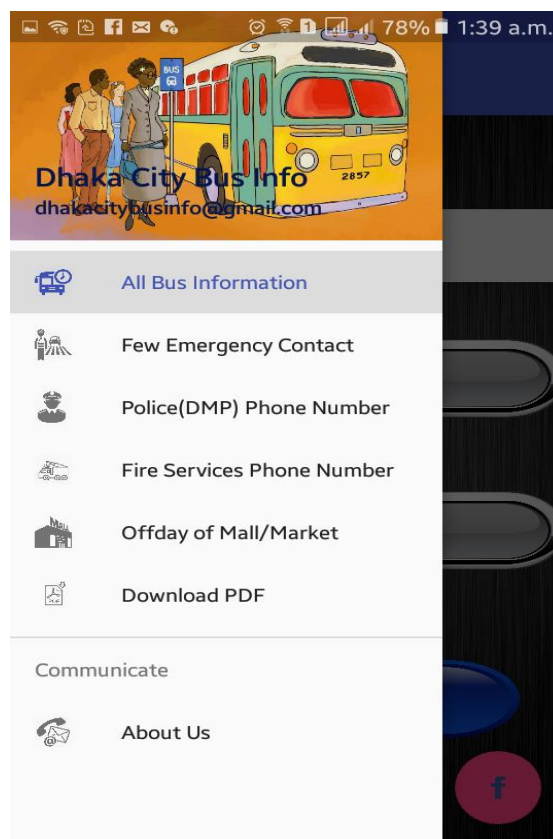


Figure 6.1: GUI of our Project

In this GUI, here we can see a navigation drawer. For this project we use navigation drawer. Among them, the navigation drawer is a UI panel that shows app’s main menu. The drawer is hidden when not in use but shows when the user swipes a finger from the left edge of the screen. Behind the navigation we can see home page which includes many menu of our application.

6.2 Diagram

In this chapter we use many other diagrams like as: Use Case Diagram, Data flow diagram and BPM(Business Process Model).

6.2.1 Use Case Diagram and Description

Use case diagrams are considered for high level requirement analysis of a system. It summarizes relationships between actors and systems. In our Project there are two actors. They are

- Admin
- Users

The descriptions we provide for use cases will use several terms related to the domain in which the system works. Here is the use case diagram of our project “Dhaka City Bus Info”

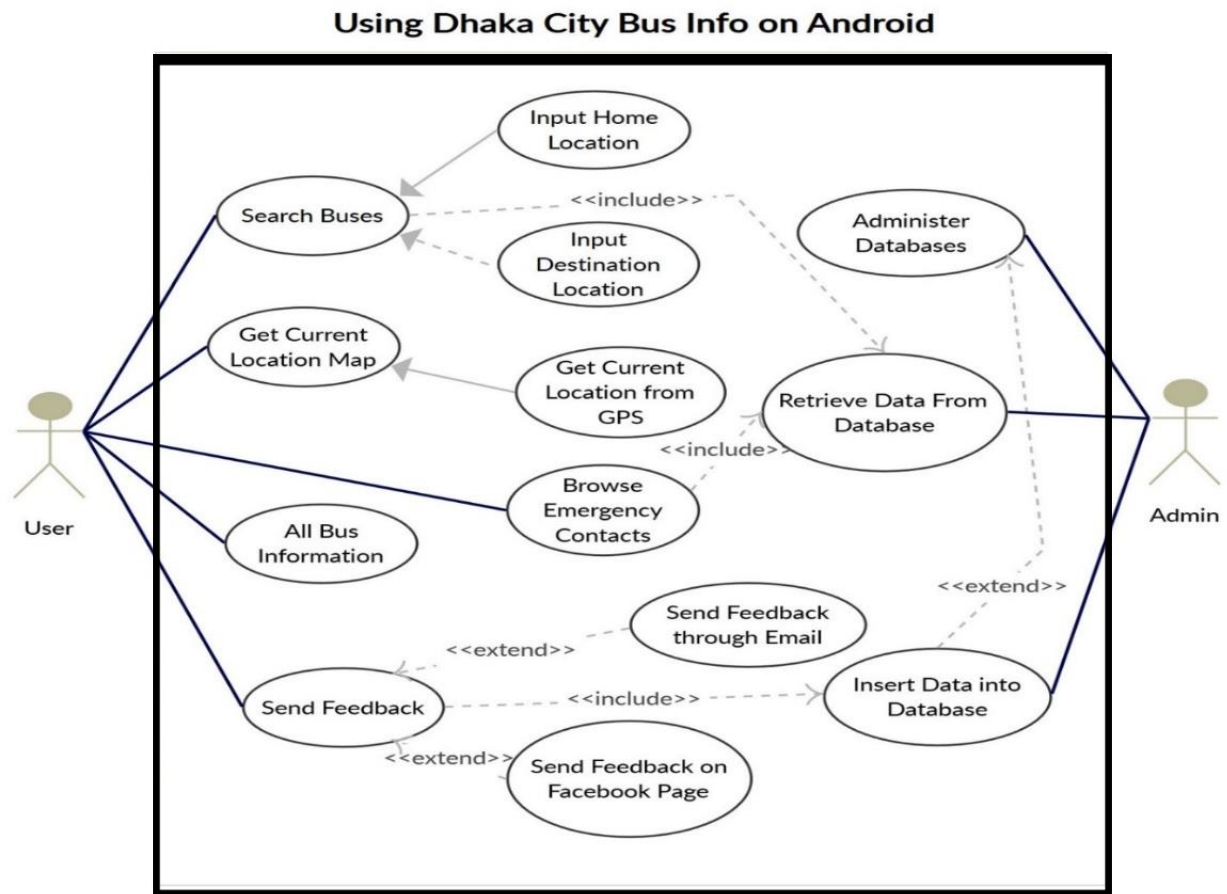


Figure 6.2: Use Case Diagram

Table 6.1: Use Case Description – Search Buses

Use Case Name	Search Buses
Precondition	None
Actor	User
Primary Path	<ul style="list-style-type: none"> • Input Home Location • Input Destination Location • Select Show Buses
Exceptional Path	Mandatory fields are missing, No buses will be shown

Table 6.2: Use Case Description – Get Current Location

Use Case Name	Get Current Location Map
Precondition	None
Actor	User
Primary Path	<ul style="list-style-type: none"> • Turn on GPS • Select Show Location
Exceptional Path	Mandatory fields are missing, No map will be shown

Table 6.3: Use Case Description – All Bus Information

Use Case Name	All Bus Information
Precondition	None
Actor	User
Primary Path	<ul style="list-style-type: none"> • Select All Bus Information from the application
Exceptional Path	None

Table 6.4: Use Case Description – Send Feedback

Use Case Name	Send Feedback
Precondition	None
Actor	User
Primary Path	<ul style="list-style-type: none"> • Select Send Feedback from menu • Send emails writing on the app • Send email from the app
Exceptional Path	Send feedback through email, Send feedback on Facebooks

Table 6.5: Use Case Description – Browse Emergency Contacts

Use Case Name	Browse Emergency Contacts
Precondition	None
Actor	User
Primary Path	<ul style="list-style-type: none"> • Select Contacts Options from menu
Exceptional Path	None

Table 6.6: Use Case Description – Administer Database

Use Case Name	Administer Database
Precondition	None
Actor	Admin
Primary Path	<ul style="list-style-type: none"> • Modify, Update database of the application from Android Studio
Exceptional Path	None

Table 6.7: Use Case Description – Insert Data into Database

Use Case Name	Insert Data into Database
Precondition	None
Actor	Admin
Primary Path	<ul style="list-style-type: none"> Update or update tables of the application from Android Studio
Exceptional Path	None

6.2.2 Data Flow Diagram

A data flow diagram shows the way information flows through a process or system. It DFD describes what data flow (logical) rather than how they are processed, so it does not depend on hardware, software, data structure or file organization. A data flow diagram shows the way information flows through a process or system. It includes data inputs and outputs, data stores, and the various sub processes the data moves through.

Data flow diagram Levels:

- **Level 0 DFDs**, also known as context diagrams, are the most basic data flow diagrams.
- **Level 1 DFDs** are still a general overview, but they go into more detail than a context diagram. In a level 1 data flow diagram, the single process node from the context diagram is broken down into sub processes.
- **Level 2+ DFDs** simply break processes down into more detailed sub processes. In theory, DFDs could go beyond level 3, but they rarely do. Level 3 data flow diagrams are detailed enough that it doesn't usually make sense to break them down further.

Here is the use Data Flow Diagram of our project “Dhaka City Bus Info”

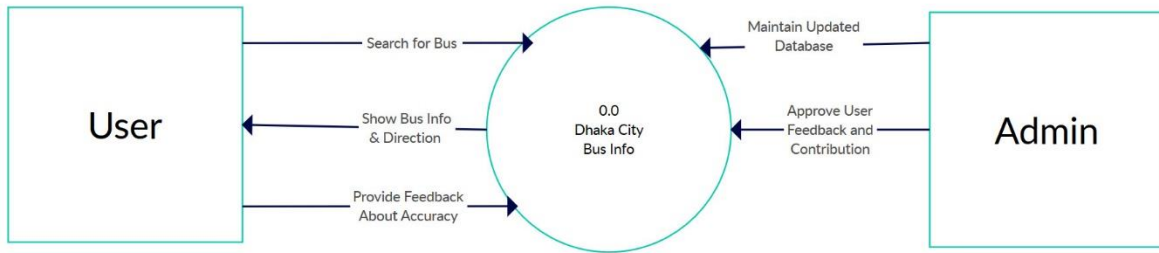


Figure 6.3: Context Level Diagram (DFD)

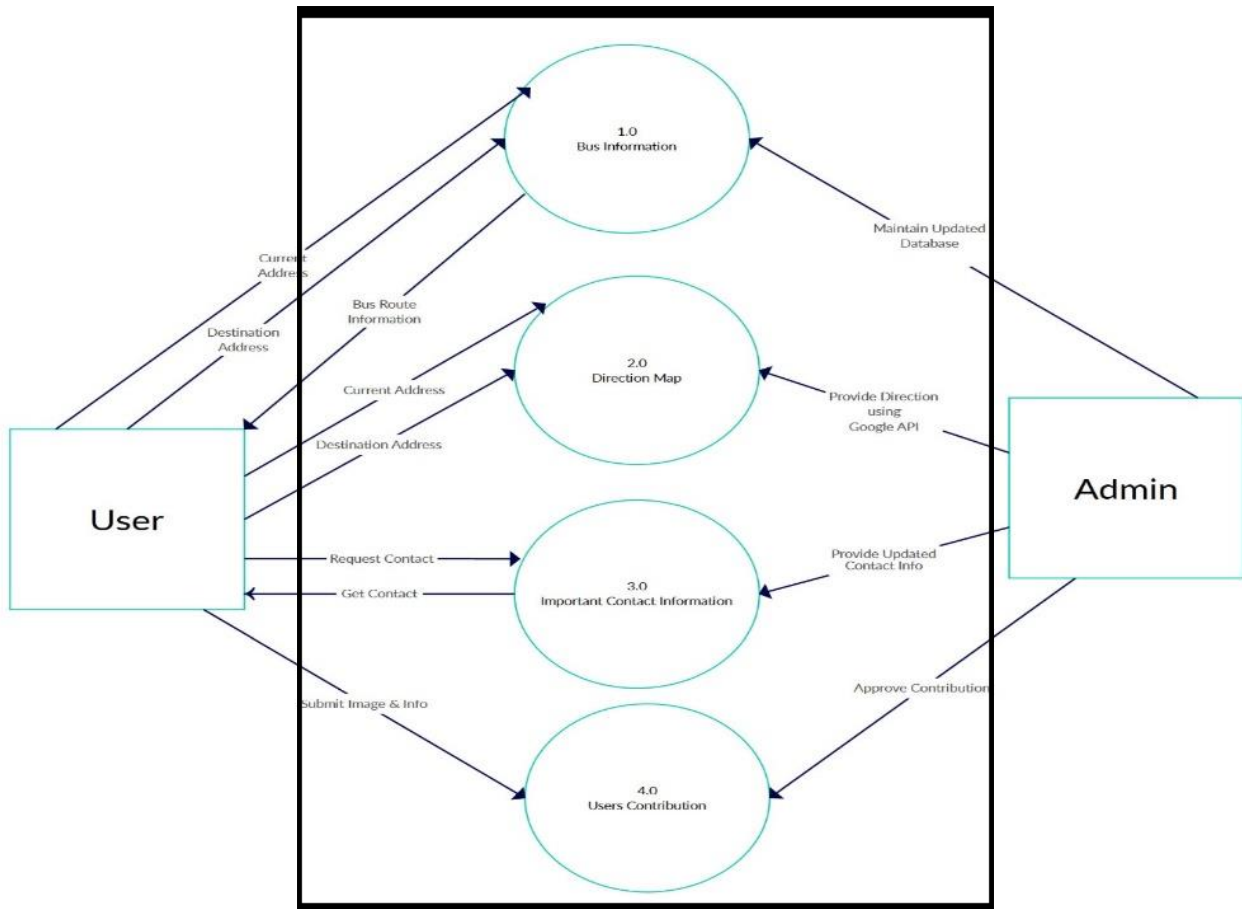


Figure 6.4: Level 1 Diagram (DFD)

6.2.3 Business Process Model

A business model is a framework for creating economic, social, and/or other forms of value. The term 'business model' is thus used for a broad range of informal and formal descriptions to represent core aspects of a business, including purpose, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies.

Here is the BPM for our Project “Dhaka City Bus Info”

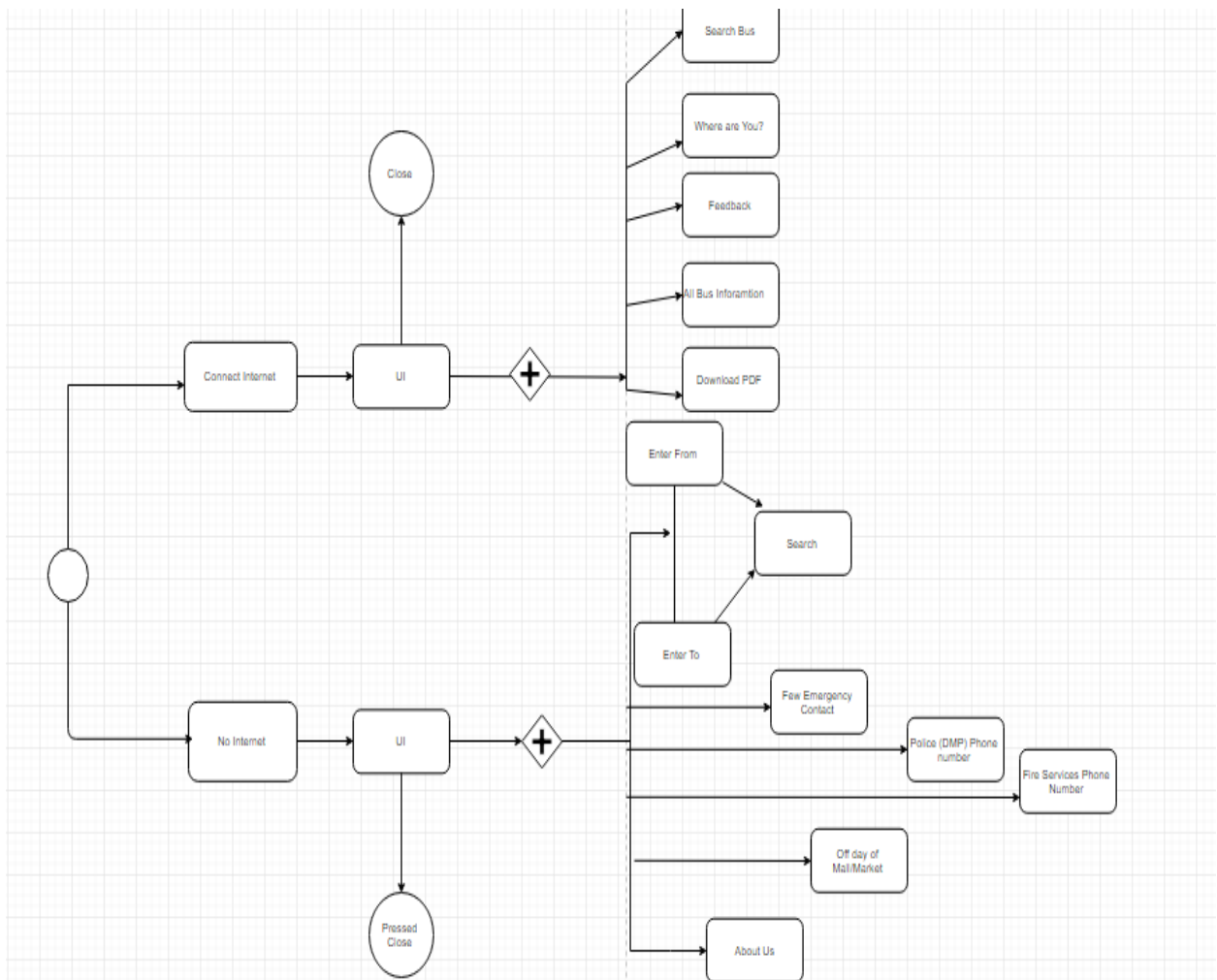


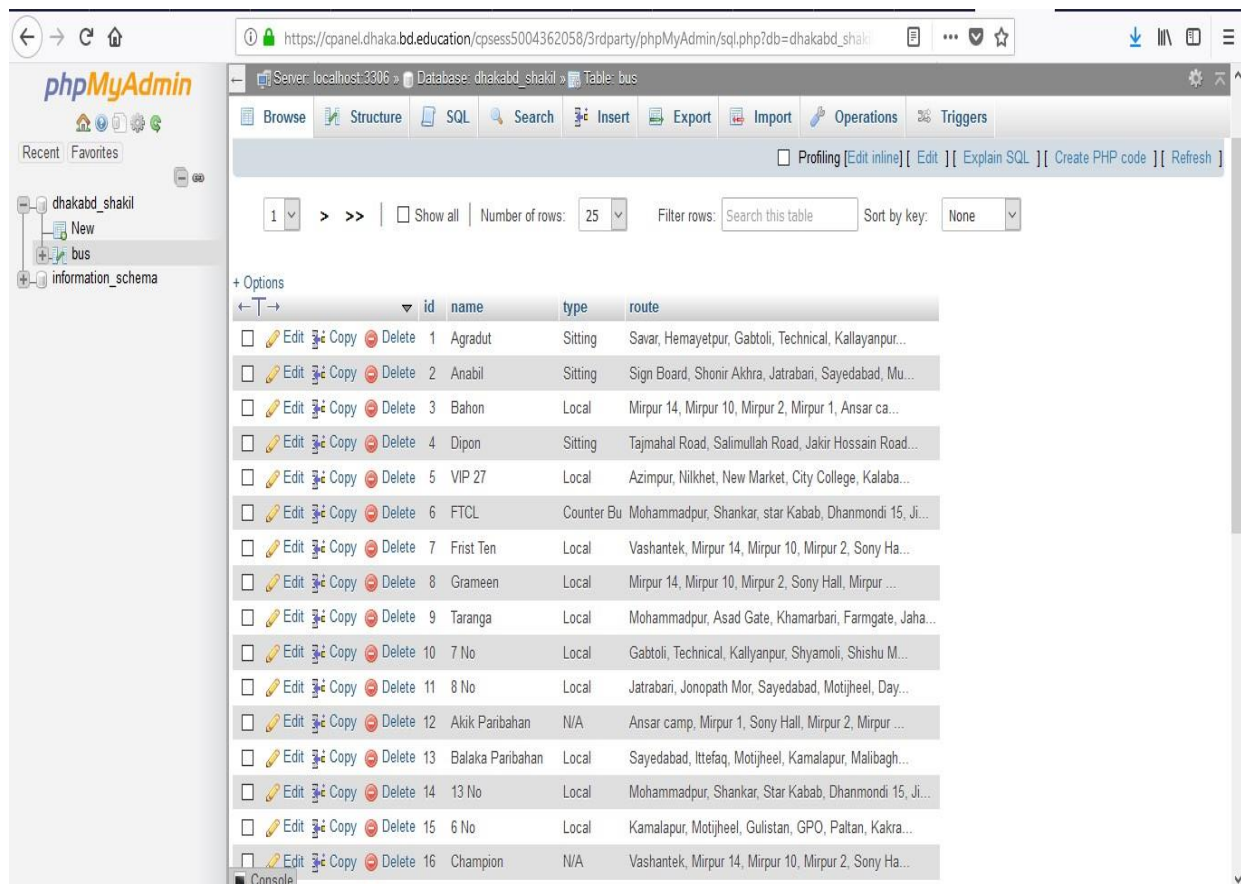
Figure 6.5: Business process Model

6.3 Database Design

A database is an integrated collection of logically related records of files consolidate into a common pool that provides data for one or more multiple uses. Database design is the process of producing a detailed data model of a database. This model contains all the necessary tables and relations needed to manage the system.

In this Project we use two types Database. One's for local database in Android using SQLITE. Another for Web View using PHPMyAdmin for DBMS.

Because of using PHP Raw PHP and MySQL we made migration table which describes about the contents' attribute and the data types. In the model the data can be checked whether user has the permission to input the data directly in the database. There are a table in our DBMS which are-



id	name	type	route
1	Agradut	Sitting	Savar, Hemayetpur, Gabtoli, Technical, Kallyanpur...
2	Anabil	Sitting	Sign Board, Shonir Akhra, Jatrabari, Sayedabad, Mu...
3	Bahon	Local	Mirpur 14, Mirpur 10, Mirpur 2, Mirpur 1, Ansar ca...
4	Dipon	Sitting	Tajmahal Road, Salimullah Road, Jakir Hossain Road...
5	VIP 27	Local	Azimpur, Nilkhet, New Market, City College, Kalaba...
6	FTCL	Counter Bu	Mohammadpur, Shankar, star Kabab, Dhanmondi 15, Ji...
7	Frist Ten	Local	Vashantek, Mirpur 14, Mirpur 10, Mirpur 2, Sony Ha...
8	Grameen	Local	Mirpur 14, Mirpur 10, Mirpur 2, Sony Hall, Mirpur ...
9	Taranga	Local	Mohammadpur, Asad Gate, Khamarbari, Farmgate, Jaha...
10	7 No	Local	Gabtoli, Technical, Kallyanpur, Shyamoli, Shishu M...
11	8 No	Local	Jatrabari, Jonopath Mor, Sayedabad, Motijheel, Day...
12	Akik Paribahan	N/A	Ansar camp, Mirpur 1, Sony Hall, Mirpur 2, Mirpur ...
13	Balaka Paribahan	Local	Sayedabad, Ittefaq, Motijheel, Kamalapur, Mailbagh...
14	13 No	Local	Mohammadpur, Shankar, Star Kabab, Dhanmondi 15, Ji...
15	6 No	Local	Kamalapur, Motijheel, Gulistan, GPO, Paltan, Kakra...
16	Champion	N/A	Vashantek, Mirpur 14, Mirpur 10, Mirpur 2, Sony Ha...

Figure 6.6: Database Table

The table contains Bus Name, Bus Type and bus route information are saved.

CHAPTER 7

Implementation and Testing

7.1 Introduction

Implementation is a very challenging task and Testing is one of the most important parts for a system. Testing the behavior of the whole software/system as defined in software requirements specification (SRS) is known as system testing, its focus is to verify that the user requirements are fulfilled.

In this chapter, we will describe our total development process as well as will try to provide the feel of the application using screenshot.

7.2 Physical Design

In this section, we discuss about our physical design of our application.

7.2.1 Logo Design



Figure 7.1: Logo

This is a unique logo. We create this by Adobe Photoshop. We try to design this logo as simply.

7.2.2 Splash Screen

Splash screen is a attracting part of an application. It is the first opening screen of our app which will show an opening animation for first 0.5 second full screen with our titled name with nice background after one splash screen it will show our home page. A splash screen also called welcome screen.

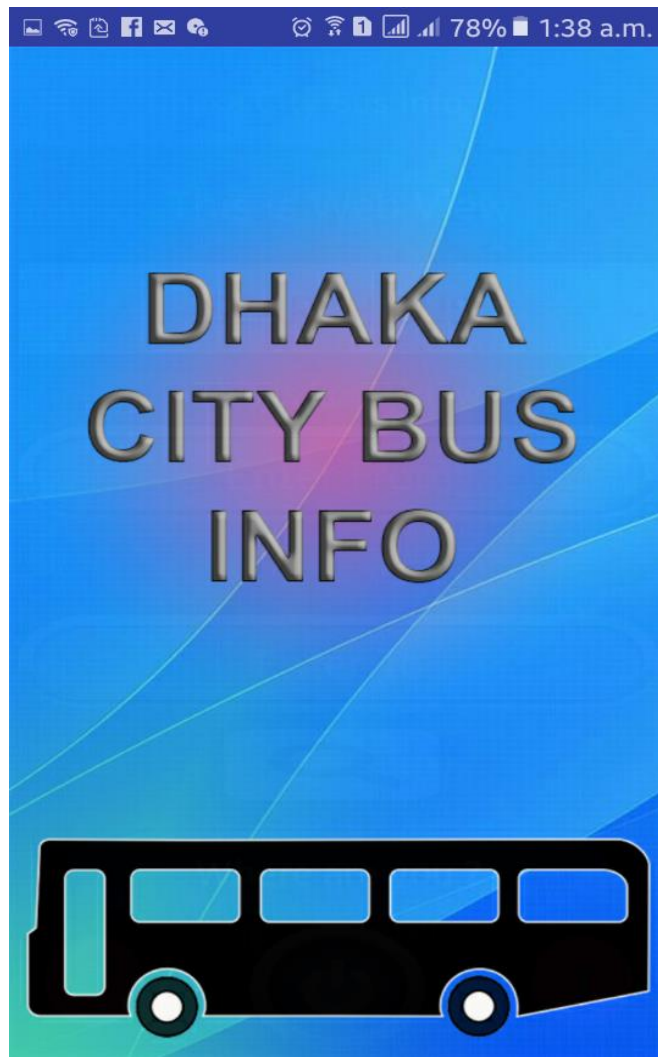


Figure 7.2: Splash Screen

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7.2.3 Home Page

When we launching the application, after splash screen this home page will be shown.

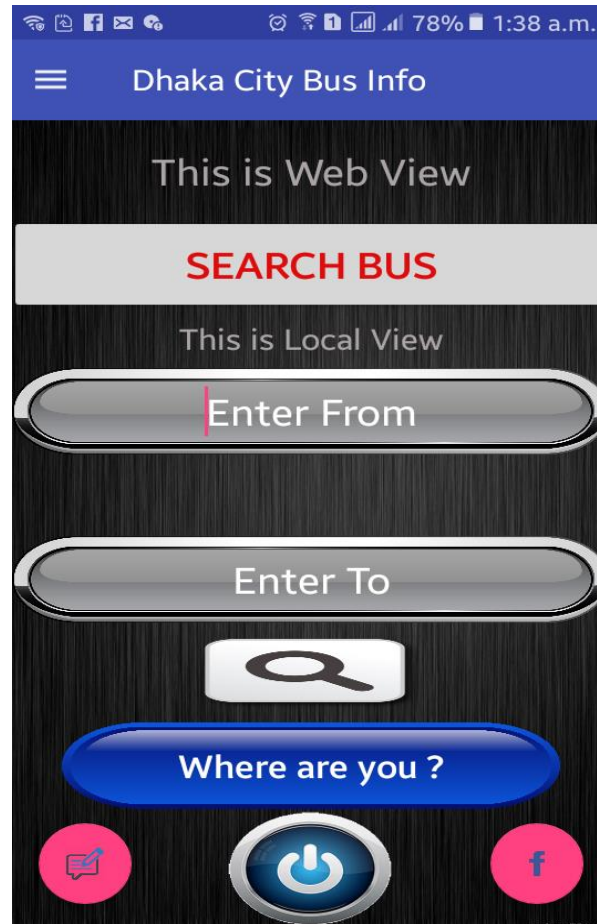


Figure 7.3: Home Page

In Home page, there are two types of bus searching system by Entering Source and destination location. One's viewed with Web view and another one viewed with offline local view. By Entering from and destination user can show the buses list between these places. If you press the button "Where are you?" It shows the current location of users. The bottom left button is for feedback us. With this feature user can email us if any location or bus should need be listed or any review of our application. The bottom right button is for our Facebook group named as "Dhaka City Bus Guideline" where users or people discuss about users experience or query. We also add a exit option for this application.

7.2.4 Navigation Drawer

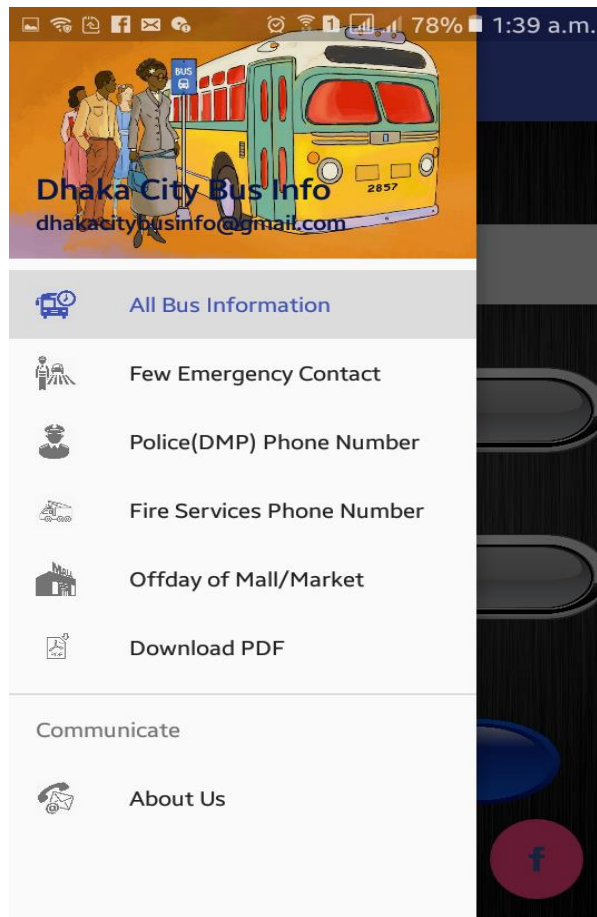


Figure 7.4: Navigation Drawer

Here we can see a navigation drawer. Among them, the navigation drawer is a UI panel that shows the app's main menu. The drawer is hidden when not in use but shows when the user swipes a finger from the left edge of the screen.

In the navigation drawer, it contains six buttons and one communicate button. These six buttons are: "All bus information" button (it contains all bus information), "Few Emergency Contact" button (it contains few emergency numbers, Hospital Number), "Police (DMP) Phone Number" (contains some important police numbers of Dhaka city), "Fire Services Number" button (contains fire services numbers of Dhaka city), "Off day of Mall/Market" (it shows the off day of popular shopping mall or market or place).

“Download PDF” (there we include a pdf file which contain all the summarize of project, Buses list with type etc.).

The Communicate option contain with “About Us” button which includes information about the developers of the Application.

7.3 Features

The application interface includes a search bar and a list of bus names. The search results table is as follows:

NAME	TYPE	ROUTE
D Link	Local	
Grameen Subecha	Sitting	Fulbaria, Chanka
Savar Paribahan	Local	Sadargh
Shubecha	Sitting	
Thikana	Sitting	

The 'Bus List' screen displays the following data:

NAME	TYPE	ROUTE
D Link	Local	Fulbaria, Chankar Pul, Bakshi Bazar, Azimpur, Nilkhet, New Market, City College, Kalabagan, Dhanmondi 32, Dhanmondi 27, Asad Gate, College Gate, Shishu Mela, Shyamoli, Kallyanpur, Technical, Gabtoli, Aminbazar, Hemayetpur, Savar, Dhamrai
Grameen Subecha	Sitting	Fulbaria, Chankar Pul, Bakshi Bazar, Azimpur, Nilkhet, New Market, City College, Kalabagan, Dhanmondi 32, Dhanmondi 27, Asad Gate, College Gate, Shishu Mela,

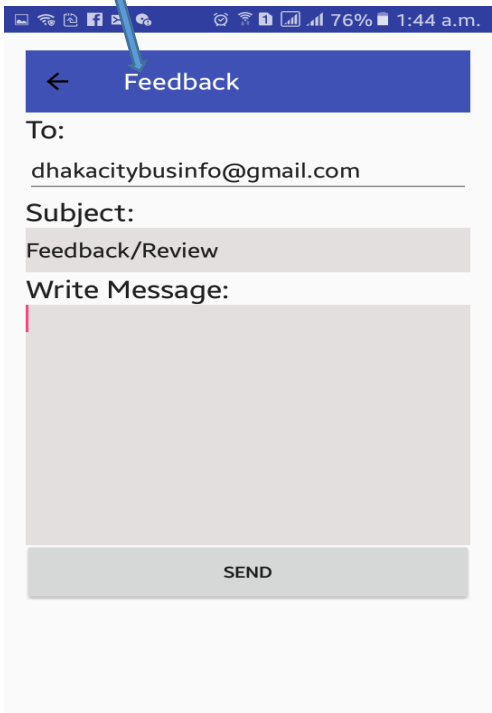
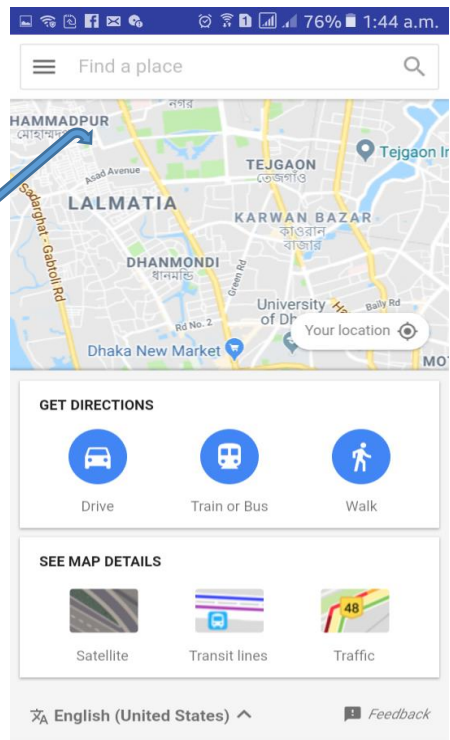
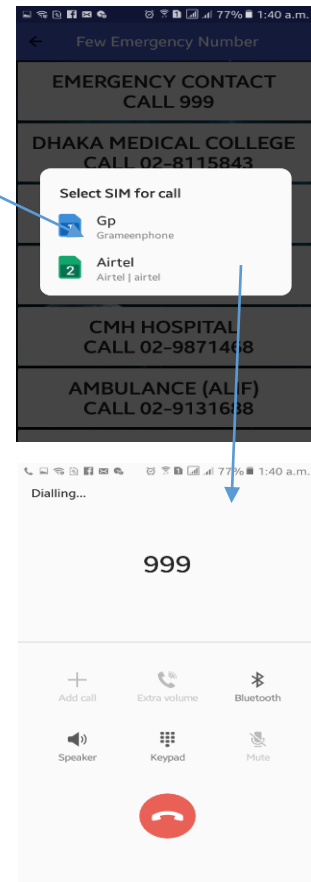
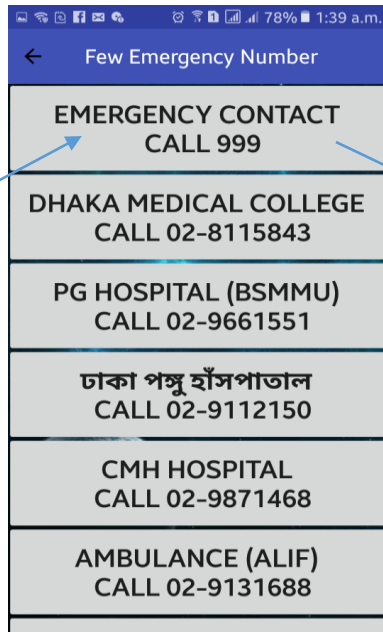
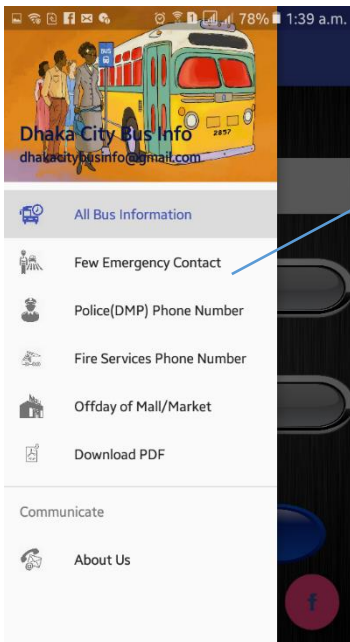
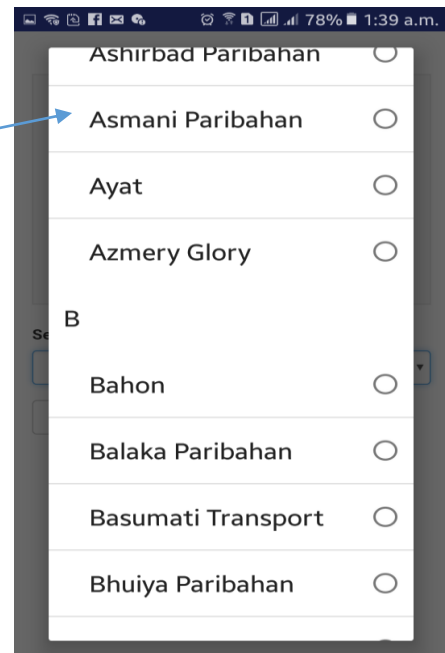
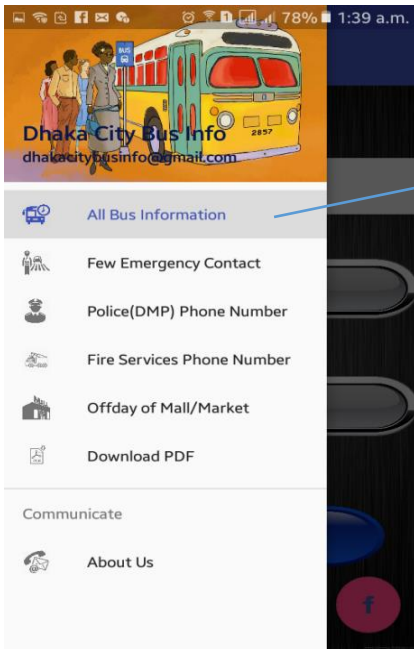
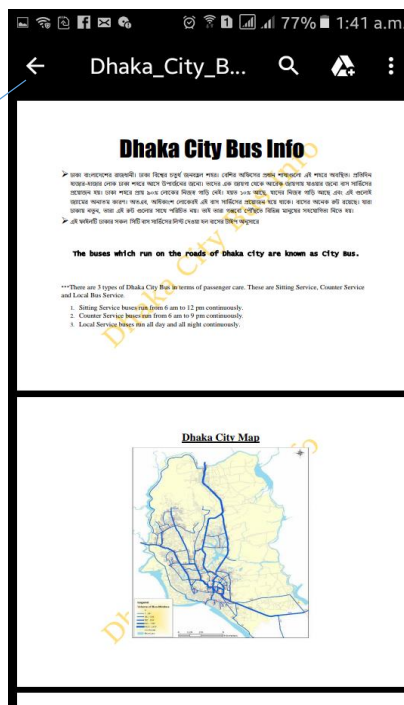
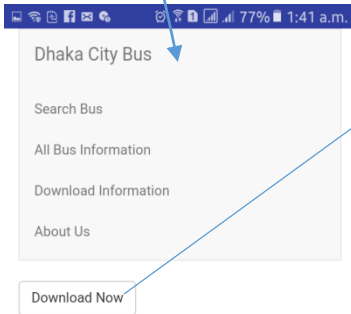
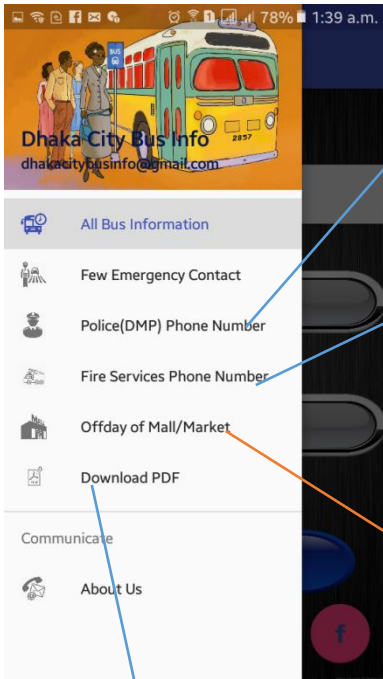


Figure 7.5: Feature of Home Page





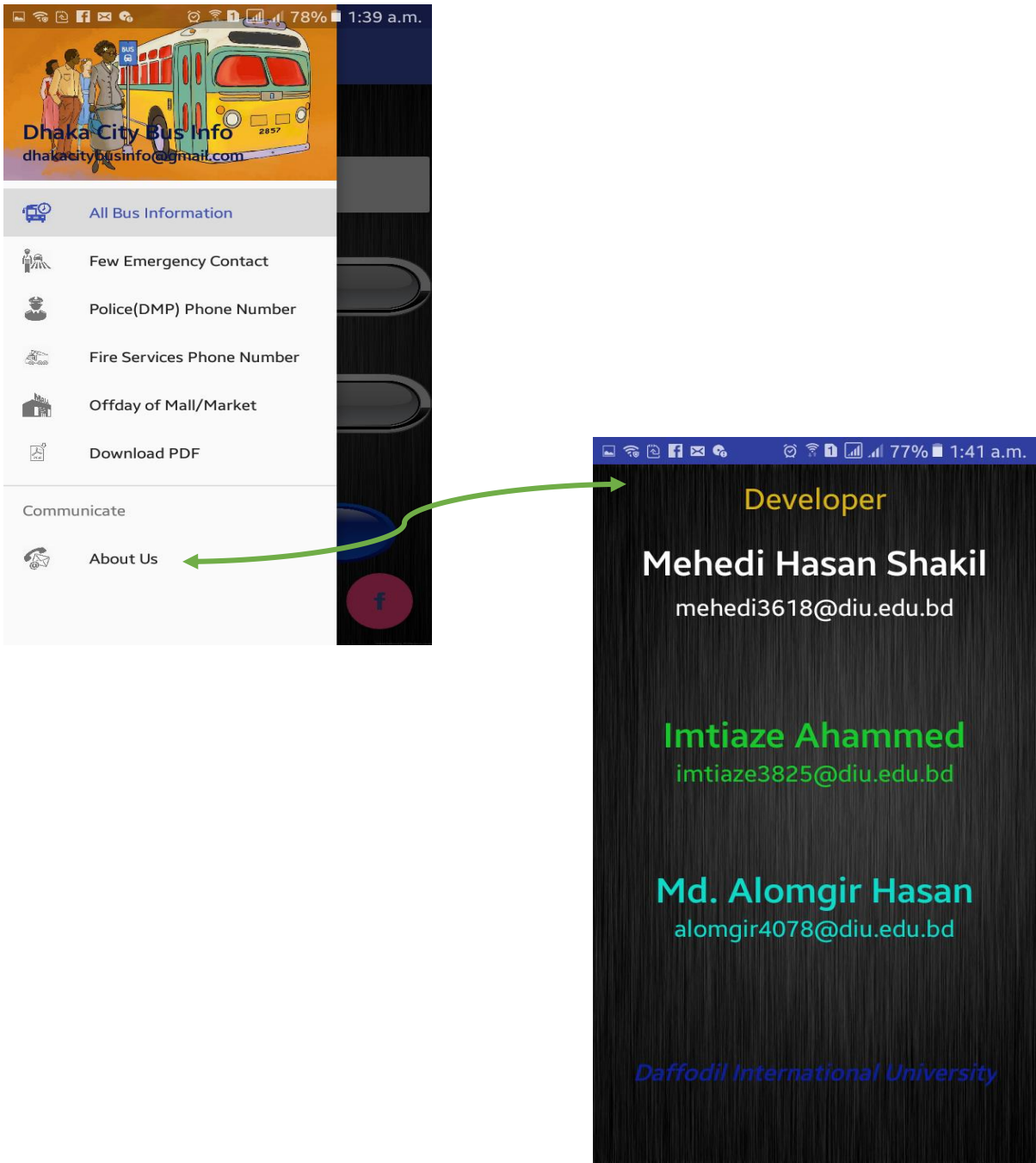


Figure 7.6: Feature of Navigation Drawer

7.4 Testing the Application

Testing is an important matter of any project. Without performing proper test methods, it is impossible to implement any project. Testing is the process that is carried out to ensure that the system conforms to the specification and meets the requirements of the users.

Table 7.1: Testing Table

Device Name	Screen Size	Test	Result
Samsung Galaxy J2 Prime	5" (720p)	Yes	OK
Walton Primo H6	5" (480p)	Yes	OK
Samsung Grand Prime	5" (480p)	Yes	OK
Symphony V100	5" (480p)	Yes	OK
BLU Tab	6" (480p)	Yes	OK

CHAPTER 8

CONCLUSION & FUTURE WORK

8.1 Summary

The main purpose of this document is to serve as a descriptive study performed to highlight the present status, future prospects and ways to improve the system we named as "Dhaka City Bus Info". With proper supervision from our supervisor, and consistent effort from the group members, we could successfully complete the project that is usable and serve its purpose.

Increased number of smart phone users will be most benefited using this application. As, this application will require no additional infrastructure from users end, and they can just download and start using right away with a broadband or even a slow speed Internet connection. As, this application can provide users with location-based information, which can be browsed or queried through a mobile phone, it will be a great advantage and travel companion for users who are new in the city and want or have to travel on their own.

From the study of the existing related applications and feedbacks available from the Google Play Store from the users, we believe this application will serve a wider range of audiences, providing much better and accurate services.

The application is ready to use and will serve most of the location in the city. But, still there a room for improvements.

8.2 Outcome

- Learned in depth how the architecture to develop Android Application works
- Learned in depth how the architecture to develop Java Web Application works
- Learned how to set up database server that 500 users can access simultaneously
- Learned a lot more about technologies and API's used to implement the project
- Learned how to collaborate effectively with group members to complete a project

8.3 Limitations

- Very limited navigational map
- Does not provide real-time feedback to the user
- Does not make use of Voice to Text option
- Users can not contribute towards the development

8.4 Future Work

We try to add more feature in future.

8.4.1 More Feature

Dhaka City Bus Guide with the help of existing technology is an application that will help traveler and tourists to get the guidance they need, anytime, anywhere through their Android phone. Users will get detailed information, picture and map along with fare. While we tried to put in as much effort possible from our end, there are still some room for improvement that we group members are planning to incorporate in the near future.

Among those, we included most important features we planned to implement:

- **Making better use of Google Maps API**
Our current application can only show maps between two location that user chooses. Also, current map only guides using the default route provided by the Google Maps API, which might be in some cases not the accurate route. We would like to update the API and replace with Google Maps Directions API, using which it is possible to create a custom route with up to 23 locations that we can advise to our application users. What we would like to do with that 23 location, is we will advise 7 previous locations and 12 subsequent location from the current location of user, and guide through to the target destination with the rest. It will be updated after crossing next subsequent stop location.
Also, if the customer wants, we would like to collection users route while on bus, so we can suggest that route to next users.

- **Provide Real-time Feedbacks**

We would like to take to next level where, the user will not only be able to get the map, but real time feedback where they are, how long it may take to reach destination (in minutes), which bus stop they should take off. Also, they will be notified 3 - 4 minutes before they are about to reach their target location. That way they can be assured that there is somebody to guide them as needed.

- **Voice to Text Input (Location Name & Bus Name)**

We would like to offer options so users can just name their location and the Google Speech API engine can render that and can provide proper suggestions like when the user type in the location or bus name.

- **Getting User's Contribution to Enrich the Application**

We welcome the contribution of our users, who would like to help each other using this platform. That's why we will introduce feature where a user can submit location data, images of buses or bus terminal, or fare information to keep the databases up to date without needing intervention from the admins. There will be review option before those contribution gets live, but it is available so, user's contribution to develop the available information will always be welcome.

8.4.2 An iOS Compatible Application offering the Same Functionality

In this project we are targeting only Android phone users, but we have a strong desire to offer the same service to Apple iPhone users.



















8.4.3 A Companion Website hosting a Web-App with Similar Functionality



















We understand, it might be helpful for some users to have web based version that users can browse from their computer or tablet computers using a web browser. It will might not be as dynamic as a mobile phone application due to limitation of computer hardware, still it will give the users idea about a route they would like to visit.

APPENDIX

Source Code:

Code list:

 activity_about_us.xml	4/8/2018 9:52 PM	XML Document	5 KB
 activity_all_bus_info.xml	4/8/2018 4:06 PM	XML Document	1 KB
 activity_download.xml	4/8/2018 11:45 PM	XML Document	1 KB
 activity_fb.xml	4/7/2018 4:41 AM	XML Document	1 KB
 activity_feedback.xml	4/7/2018 4:41 AM	XML Document	3 KB
 activity_fire_service.xml	4/8/2018 2:18 PM	XML Document	5 KB
 activity_home.xml	4/2/2018 1:49 AM	XML Document	2 KB
 activity_main.xml	3/28/2018 5:15 PM	XML Document	1 KB
 activity_offday.xml	4/8/2018 10:24 PM	XML Document	1 KB
 activity_search_bus.xml	4/8/2018 11:45 PM	XML Document	1 KB
 app_bar_home.xml	3/28/2018 9:59 PM	XML Document	2 KB
 bus_list.xml	3/30/2018 8:05 PM	XML Document	1 KB
 content_home.xml	4/9/2018 1:16 AM	XML Document	5 KB
 emergency.xml	4/8/2018 2:13 PM	XML Document	4 KB
 location.xml	4/8/2018 2:00 AM	XML Document	1 KB
 model.xml	3/30/2018 7:24 PM	XML Document	2 KB
 nav_header_home.xml	4/8/2018 10:28 PM	XML Document	2 KB
 police.xml	4/8/2018 9:01 PM	XML Document	9 KB

 activity_about_us.xml	4/8/2018 9:52 PM	XML Document	5 KB
 activity_all_bus_info.xml	4/8/2018 4:06 PM	XML Document	1 KB
 activity_download.xml	4/8/2018 11:45 PM	XML Document	1 KB
 activity_fb.xml	4/7/2018 4:41 AM	XML Document	1 KB
 activity_feedback.xml	4/7/2018 4:41 AM	XML Document	3 KB
 activity_fire_service.xml	4/8/2018 2:18 PM	XML Document	5 KB
 activity_home.xml	4/2/2018 1:49 AM	XML Document	2 KB
 activity_main.xml	3/28/2018 5:15 PM	XML Document	1 KB
 activity_offday.xml	4/8/2018 10:24 PM	XML Document	1 KB
 activity_search_bus.xml	4/8/2018 11:45 PM	XML Document	1 KB
 app_bar_home.xml	3/28/2018 9:59 PM	XML Document	2 KB
 bus_list.xml	3/30/2018 8:05 PM	XML Document	1 KB
 content_home.xml	4/9/2018 1:16 AM	XML Document	5 KB
 emergency.xml	4/8/2018 2:13 PM	XML Document	4 KB
 location.xml	4/8/2018 2:00 AM	XML Document	1 KB
 model.xml	3/30/2018 7:24 PM	XML Document	2 KB
 nav_header_home.xml	4/8/2018 10:28 PM	XML Document	2 KB
 police.xml	4/8/2018 9:01 PM	XML Document	9 KB

Main Activity(Code): (We only showing Main Activity of our project)

```
package com.dhakacitybusinfo.gmail.dhakacitybusinfo;

import android.content.DialogInterface;
import android.content.Intent;
import android.os.Handler;
import android.support.v7.app.AlertDialog;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {
    private static int SPLASH_TIME_OUT = 500;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        new Handler().postDelayed(new Runnable() {
            @Override
            public void run() {
                Intent homeIntent = new Intent(MainActivity.this, HomeActivity.class);
                startActivity(homeIntent);
                finish();
            }
        },SPLASH_TIME_OUT);
    }

    builder.setNegativeButton("CANCEL", new DialogInterface.OnClickListener() {
        @Override
        public void onClick(DialogInterface dialog, int i) {
            finish();
        }
    });
    AlertDialog dialog = builder.show();
}
}
```

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