VSS: A SECURITY MANAGEMENT SYSTEM OF VEHICLE AND PASSENGERS

BY

MD JAHID HASAN MIAH

ID: 163-15-8529

MST SIRAZAM MANIRA

ID: 163-15-8466

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

Supervised By

Narayan Ranjan Chakraborty

Assistant Professor

Department of CSE

Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

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APPROVAL

This Project/internship titled "VSS: A Security Management System Of Vehicle and Passengers",submitted by Md Jahid Hasan Miah and Mst Sirazam Manira Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 27 Jan, 2021.

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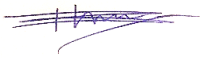

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DECLARATION

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

Supervised by:

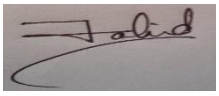
Mr. Narayan Ranjan Chakraborty

Assistant Professor

Department of CSE

Daffodil International University

Submitted by:

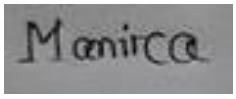


Md Jahid Hasan Miah

ID: 163-15-8529

Department of CSE

Daffodil International University



Mst Sirazam Manira

ID: 163-15-8466

Department of CSE

Daffodil International University

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ABSTRACT

This application is “VSS: A Security Management System of Vehicle and Passengers”. It will produce us a social awareness about the rate of accident occur in our country daily, weekly or yearly. It is also make us aware about our family member daily journey mean by which vehicle he/she is travelling, where they are going, they are safely reach or not .Also it will make aware about if the bus occur any kind of accident or face any problem when we have any family member in that bus in the mean time of his/her journey. And also we will get those place or road of our country where accident rate is so high, by analyzing this data we will able to make changes of structure what will reduce the accident rate.

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CHAPTER 1

Introduction

1.1 Introduction

This application is "VSS: A Security Management System of Vehicle and Passengers". It will create us a social mindfulness about the pace of mishap happen in our nation every day, week after week or yearly. It is likewise make us aware about our family members journey mean by which vehicle he/she is going, where they are going, they are securely reach or not .We can get this All information time to time and very rapidly. Also it will cause mindful about if the transport to happen any sort of mishap or face any issue when we have any relative in that transport meanwhile of his/her journey, so that we can take immediate action to contact them or we can go that place rapidly. On the other hand, Everyday girls in our country are facing lots of problem like sexual harassment, or any kind of trouble. But they cannot call immediately to our legal administration. By using this application they will be able to make call by a single tap. And furthermore Our Government will get those spot or street of our nation where mishap rate is so high, by investigating this information Government can take necessary steps to make changes of structure what will decrease the mishap rate. People all over the country, even all over the world will get a strong service by using this "VSS: A Security Management System of Vehicle and Passengers" application to make themselves aware about their family person journey or accident and they can take action rapidly that will make a strong security for everyone.

Here figure 1.1 shows that 44 killed on roads during ‘Eid holidays [1] .

Fig 1.1: Road Accident

Here figure 1.2 shows that 4 of a family among 12 killed in a road accidents [2]

Fig 1.2: Road Accident

1.2 Motivation

Whenever we go out for going far place from home by any kind of vehicle our family member do not know about our journey that we are safely reached or not is our bus occurred any kind of accident or problem.it they want to know they need to call us again and again that is so boring. That's why we got motivation to implement this social media type application. What will make aware about our journey to our family and aware them that our bus in having trouble or not in the mean time of journey.

1.3 Objectives

Objectives of "VSS: A Security Management System Of Vehicle and Passengers" are mentioning below:

The main objectives of this application is social awareness about accident and family members journey to give them security. So that accident reduce the accident rate over the country.

On other word we want to make aware people digitally through this application for getting extraordinary impact on society and environment.

- Who have account in this social media they will be able to make friends.
- Every user of this system can make post about accident or any kind of violence.

- Every user of this system can share their trip info to their family members.
- All user can set up their profile picture.
- Everybody will be able to see the journey information belong to their friends.
- Everyone will be able to make call to emergency number in a single tap.
- Everyone can see their current location.
- Can see their friend information.
- Can send ,accept or delete friend request.

1.4 Expected Outcomes

First of all, we'll get a mobile application. It will work like a social media. Everyone will be able to create account here. When a passenger start his journey he/she will register his travel details including bus number by scanning qr code, current location will detect automatically by google map [10], and destination place will shown by marker option into google map fragment after search. After register his/her family will be able to see the travel details. If that vehicle occurs or face any kind of accident or occurrences on estimated time then their family will be notify about that.

1.5 Project Management and Finance

Undertaking the board is the preliminary of the structure and Finance is the cost of planning the application. It helps in picking whether it is perceptible to encounter the venture or not. Adventure the heads thinks about the structure and encourages whether to develop the structure or not.

The Management have four in number estimations:

- Innovation

  The system improvement of " VSS: A Security Management System Of Vehicle and Passengers " is purposed with the most un-complex and adequately open advancement. This structure relies upon android like convenient interface guessed

Android Application, which is definitely not hard to use. This system made by Programming language Java, MySQL for Database, and XML for the arrangement.

- Time

  This magnificent estimation checks the structures regard as for the period, which is one of the most vital motivations to be idea of. In this venture, the time factor is significant this structure is fated to be presented in a basic time. This structure isn't tremendous and thusly can be done inside the time span it shellfish approx. Time is a pressing element to be idea of so we can say that this system can be made inside the fundamental time period.

- Resource

  This measurement takes into check the assets needed to build up the framework. For this specific framework the assets required are very ostensible which can be satisfied, the assets needed for this framework are essential equipment, an activity framework which is viable. With the assistance of this whole measurement we can gauge the possibility of the framework and can conclude if to go ahead with the undertaking. By take in check the measurement and their function in this specific framework we can say that this framework is plausible from all these measurement perspective and it is feasible to experience the project.

- Finance

  This measurement quantifies the framework in honour to cash or we can say capital. This measurement checks in the event that it's solid to consume the important amount on the cycle or 6 it will be an abuse. There is no trouble of asset in this program since it is direct straight innovation, which is exceptionally easy to arrangement. This cycle has been shown for a independent PC thus, for this framework equipment need is exceptionally low. For this framework we need to be displayed and introduce We request extremely basic possible innovations.

1.6 Report Layout Report

Layout describes a sort brief of all the section. A sort brief of all chapters is given down: Chapter 1 Describes an instruction of the "VSS: A Security Management System Of Vehicle and Passengers", Motivation, Objectives, Finance, Awaited result and the Report arrangement. Chapter 2, Described the background, the related works, Comparatives Studies, scope of the problem and Challenges of the application "Garbage Management System". Chapter 3, Describes the Business Process model, System requirements, Use Case modelling, Logical data model & design requirement. Chapter 4, Describe the design (Front & Back end), interaction and UX. Implementation requirement. Chapter 5,Implementation of database, Detail the Implementation of Front-end design, Back-end design, testing methodology, Functional testing, Unit test, Compatibility test, result & report. Chapter 6, Described the Impact on society, Impact on society & ethical aspects, sustainability plan. Chapter 7, Conclusion Discussion and scope for future development.

CHAPTER 2

Background

2.1 Preliminaries/Terminologies

The main fact about this application is that there are no website, application, or any kind of digital system in our country for the job what will be done by this.

So our responsibility is to transform the country into a digital city. So the individuals of our country can get distinctive data through our applications. Nonetheless, a few inquiries have been raised for this venture-

- How to explore the concept of "VSS: A Security Management System Of Vehicle and Passengers"?
- How to make it more efficient mostly in our country Bangladesh?
- How to make it efficient running in the low speed bandwidth?
- How the illiterate people of our country will use this system?

2.2 Related Works

There are no similar kind of work all over the world. But many popular application like google map, Facebook are add some feature to this system for tracking or share location with friends but this one is very different from this features.

2.3 Comparative Analysis

In the Long run to digitalize our country besides the developed country it will make a great change in this run. By using this system accident rate of our country will reduce hopefully so that our country will go ahead from other in this modern era.
User will use this because of its eye catching features like make friends and see their post, to know the accident update all over the country.

2.4 Scope of the Problem

Since this is a significant issue, there are a few different ways we need to oversee it. Social mindfulness is main goal at first about this system. It will make aware people about accident and it's the great advantage of this system. Another scope of this system is we will be able to see our family member journey. But the problem is sometime it can be privacy issue about our anonymous journey.

2.5 Challenges

Maybe the most test was to manage multi request in a word we have done it. Another Large issue was everybody don't utilize PDA. So we need to plan the application in another manner for them. Looking through destination was another test yet we have taken care of the work.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

This model has addressed the all-business pattern of the endeavor. It will help the planner to develop the expand and evidently fathom the business cycle.

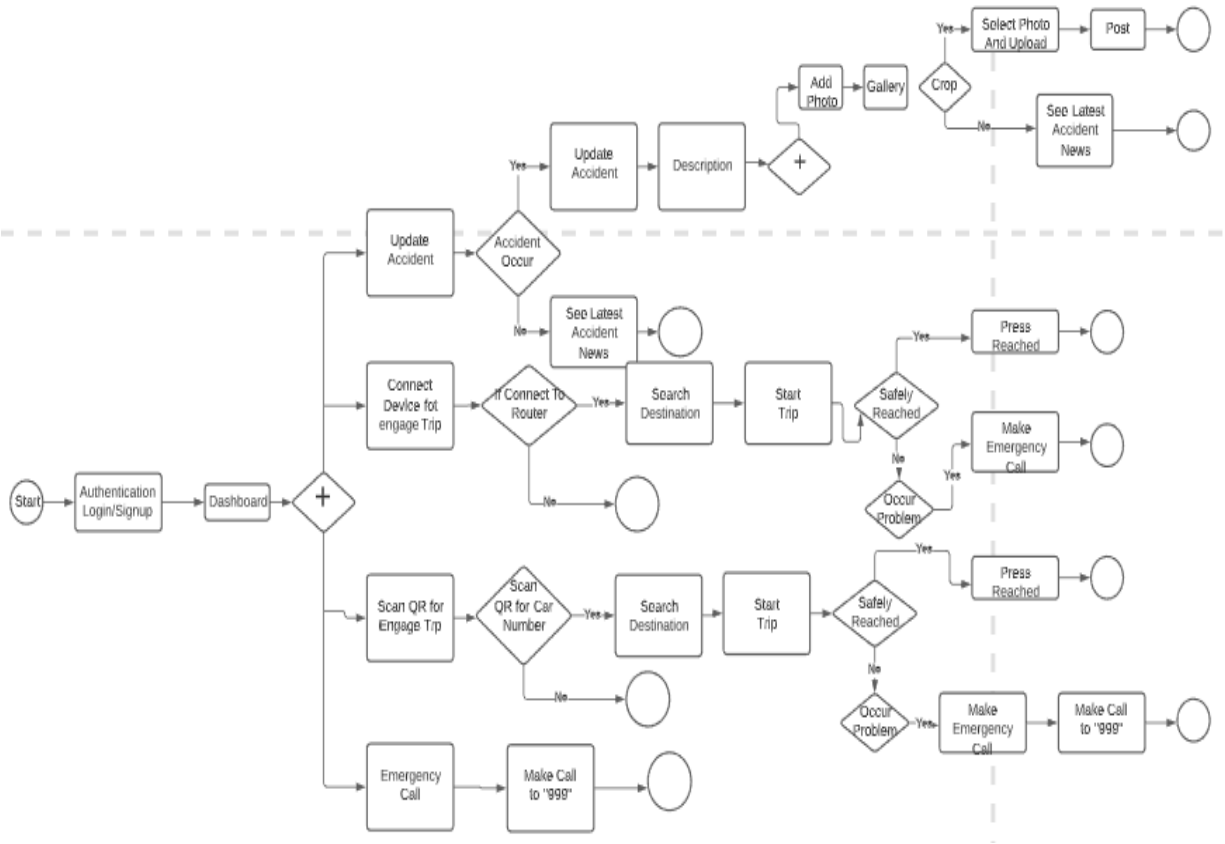

Fig 3.1: Business Processing Model

3.2 Requirement Collection and Analysis

In essential arrangement and examination from the beginning, we accumulate data from each people with a couple of inquiries. After data collection, we inspect the data and

Endeavor to appreciate the customer's necessities. To make it straight forward and simple to utilize we develop the system individual to build up the undertaking.

Data Collection that we gathered from survey are shown in fig 3.2 below:

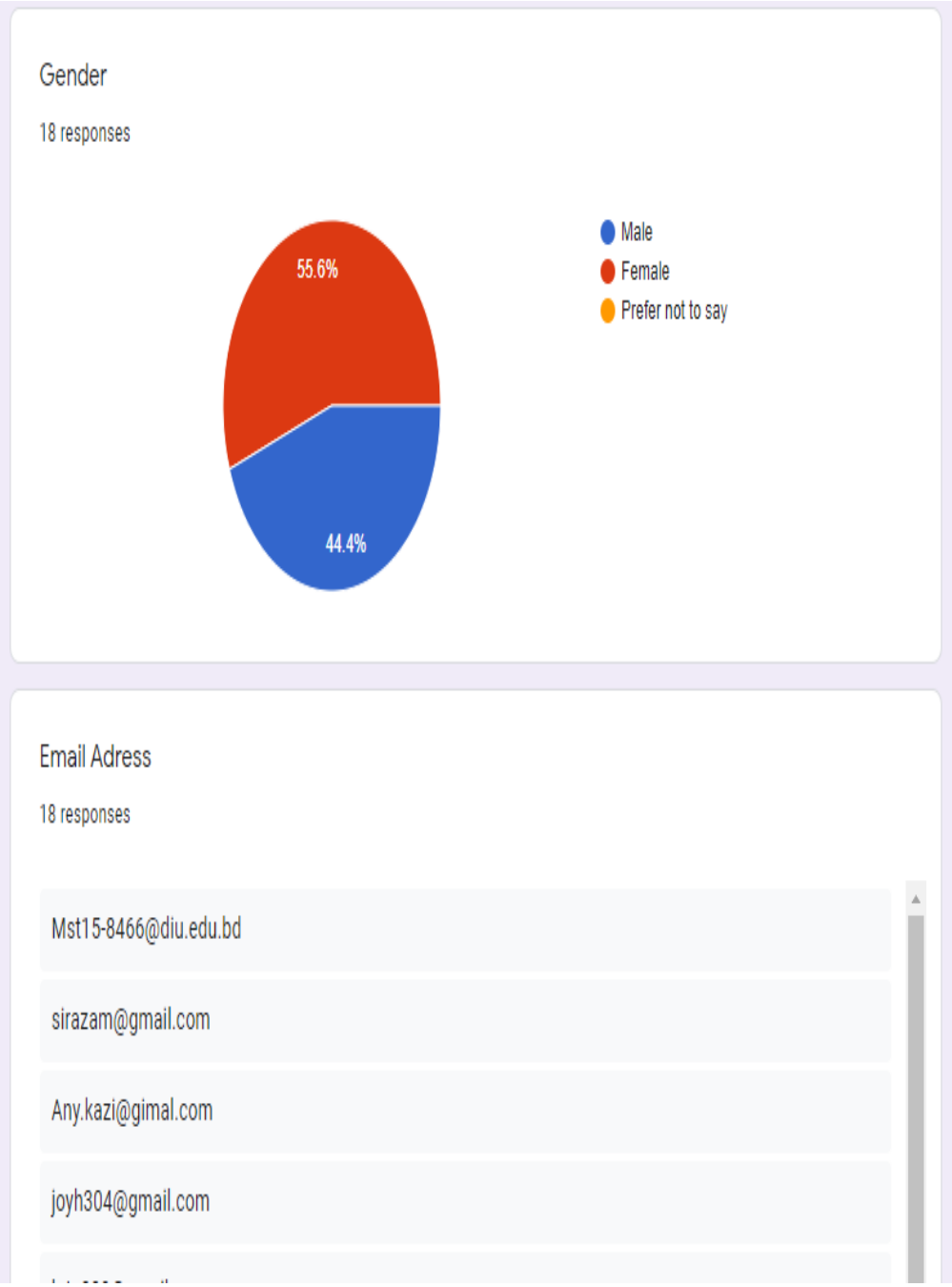

Fig 3.2 : User Requirements-1

Data Collection that we gathered from survey are shown in fig 3.3:

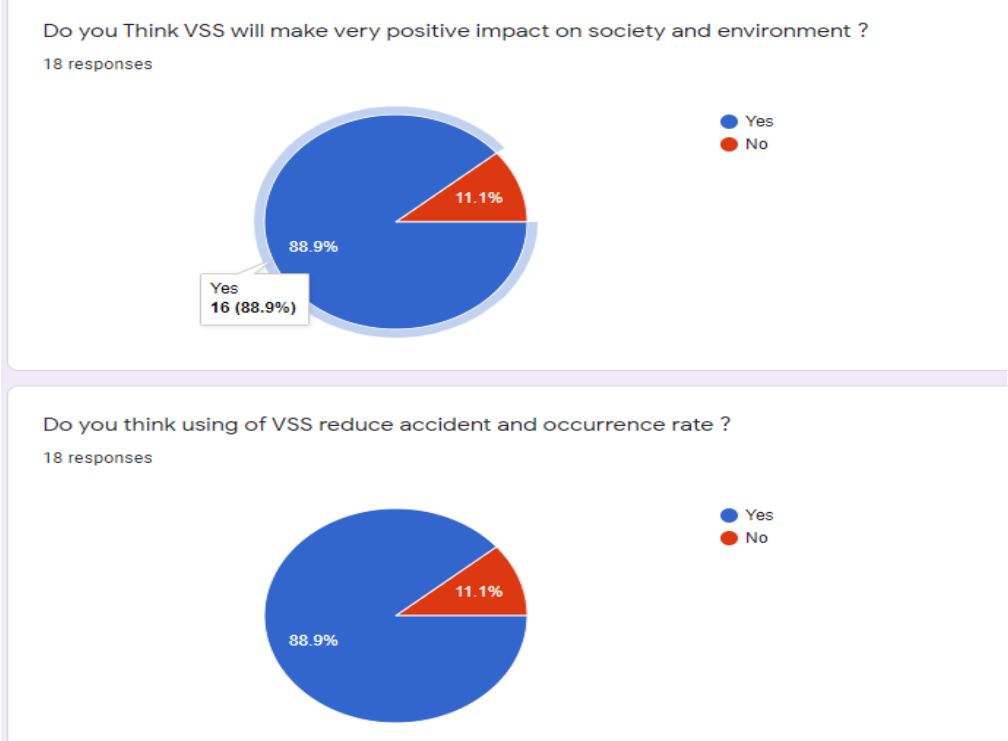

Fig 3.3 : User Requirements-2

Data Collection that we gathered from survey are shown in fig 3.4:

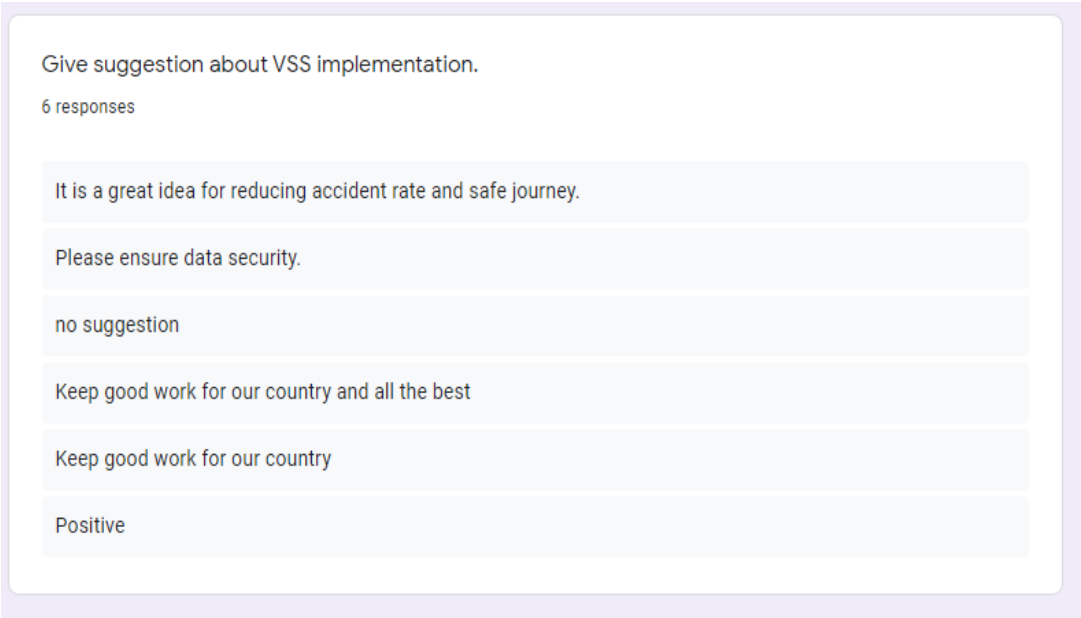

Fig 3.4: User Requirements

3.3 Use Case Modeling and Description

In fig 3.5 our use case model presents the genuine clients action done in application. Client can drop whine, find closest residue Bean, Request for entryway to entryway cleaning administration.

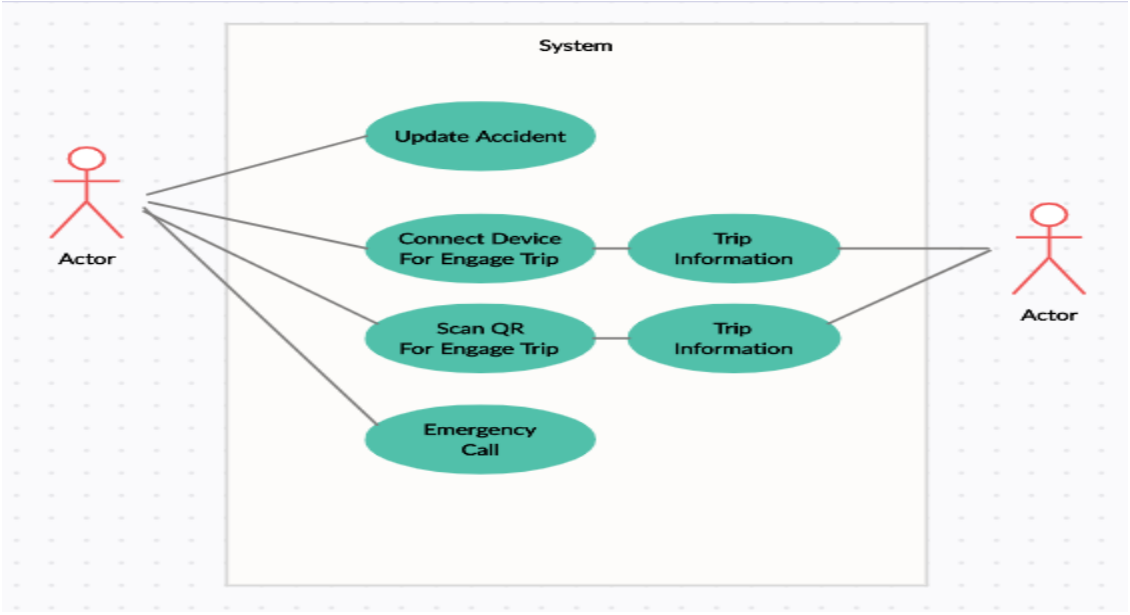

Fig 3.5: Use Case Model For User

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3.4 Logical Data Model

Here in fig 3.6 shows logical model data:

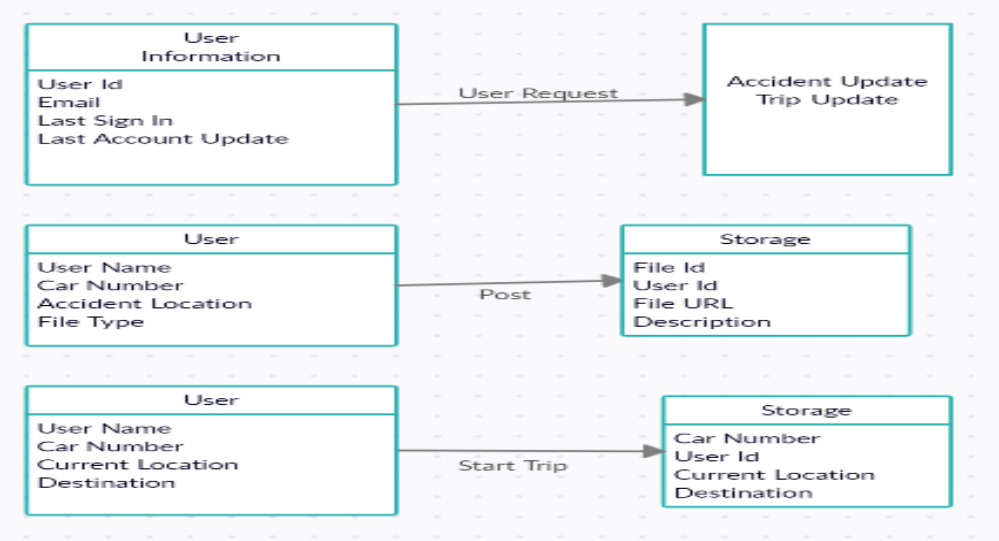

Fig 3.6: Logical Data Model

3.5 Design Requirement

The plan of our system is anything but difficult to utilize, we endeavor to design our application in that way, that customer can without a doubt use this application. Right when the application is open, it will show the login screen. If do not have account then he will press register now and simply Sign Up and create new account. Then user will be able to log in with User email and password. After Logged in they will see dashboard with 4 option which are Update accident, Connect device to engage trip, Scan Qr for engage trip and Emergency call. User will able to create new accident post, will be able to upload profile picture, will able to start journey and share information with family member. User will be able to make friend. And they can make emergency call in a single tap to emergency number 999 if needed [3].

Designing Requirements for User:

- Log In Screen
- Camera
- Location
- Gallery
- Map screen
- Location Provider
- Phone call

CHAPTER 4

Design Specification

4.1 Front-end Design

- Constraint Layout

  Android Constraint Layout is utilized to characterize a design by doling out imperatives for each child comparative with different perspectives present. A Constraint Layout is like a Relative Layout, however with more force. The point of Constraint Layout is to improve the exhibition of the applications by eliminating the settled perspectives with a level and adaptable plan [5].

- Linear Layout

  The Linear Layout is the most essential design, and it orchestrates its components horizontally or vertically, separately. All parts are shown in a straight design in a direct way, for example all the linear layout portions of the kid are shown by their direction. Utilized for format plan on Android [4].

- Relative Layout

  Relative Layout is a gathering of perspectives that show child perspectives in relative positions. Relative format is an extremely incredible utility for making a UI, as it can kill bunch see gatherings and keep your design occasionally level, accordingly improving execution. The general format permits the youngster's perspectives to mirror the guardians' perspective or relative to one another. Utilizing a relative format, you can adjust the two components to the correct edge or on the other hand make them cover, focused on the screen and fixated on the left. Relative plan is the most utilized design after Android's overall format for a similar explanation. This permits you to hold your kid's viewpoint comparative with one another or to the compartment or other compartment.

- Image View

Image View class is utilized to show application picture document on Android. Image viewing is additionally regularly used to colorize the picture and keep up picture scaling. This view takes care of the stacking and streamlining of the picture, liberating you from zeroing in on application-explicit subtleties, for example, format and substance. Because of the diverse screen sizes on Android gadgets, the picture document is anything but difficult to utilize yet hard to dominate on Android. Android has been improved with some incredible UI plan gadgets that help us to make a flawless look and appealing application dependent on UI.

- Circle Image View

  A quick round Image View ideal for profile pictures. This depends on Rounded Image View from Vince Mi which itself depends on strategies suggested by Romain Guy .

  It utilizes a Bitmap Shader and doesn't:

  - make a duplicate of the first bitmap .
  - utilize a clasp Path.
  - use set X fer mode to cut the bitmap.

  As this is only a custom Image View and not a custom Drawable or a mix of both, it very well may be utilized with a wide range of drawables, for example a Picasso Drawable from Picasso or other non-standard drawables.

- Text View

  Text view is the UI component that shows text to the client. To show the content in activity and in the base sheet, we utilize the content point of view. Text view is a full book manager, in spite of the fact that the essential class is designed without altering, however we can alter it. This makes an easy to understand framework that assumes a significant function in the client experience of the application. In the content view, we can utilize a little book symbol.

- Button

A Button contains a book or symbol that communicates the moves they make when the client contacts it. We use button to submit and transfer activities and to do some task in our application.

- Card View

  Android Card View UI part shows data inside cards. This segment is commonly used to show contact data. This part is accessible in another help library. We need to add it for a good looking view to our dashboard and we make it clickable and do some operation.

- Navigation Drawer

  Android Navigation Drawer is a sliding left menu that is utilized to show the significant connections in the application. Navigation drawer makes it simple to explore to and from between those connections. It's not noticeable naturally and it needs to opened either by sliding from left or clicking its symbol in the Action Bar.

- Spinner View

  Android Spinner is a view like the dropdown list which is utilized to choose one alternative from the rundown of choices. It gives a simple method to choose one thing from the rundown of things and it shows a dropdown rundown of all qualities when we click on it.

- Toggle Button

  A toggle button permits the client to change a setting between two states. We add an essential switch catch to our design with the Toggle Button object.

- Recycler View

  Android Recycler View is a further developed, incredible and adaptable rendition of the List View. Android Recycler View is like List View aside from that it compels us to utilize Recycler View. View Holder class to hold the components which isn't an impulse in List View. We use it to display user post from database.

4.2 Back-end Design

❖ Database

We have used firebase database and firebase to store information of our App. Firebase Ongoing Database permits to make extraordinary, synergistic applications by permitting secure admittance to the information base straightforwardly from the customer side code [6]. While information is nearby and disconnected, ongoing occasions are ablaze, giving the end client a responsive encounter. This isn't SQL information so information are kept as a parent kid relationship.

Fig 4.1: Database

4.3 Interaction Design and User Experience (UX)

Dashboard View:

- Update Accident
  - Display all post about accident.
  - Show Create post.
- Connect Device for engage trip
  - Show current location.

        - Search destination.
        - Show scan QR.
    - Scan Qr for engage trip
        - Show current location.
        - Search destination.
        - Show scan QR.

    - Emergency Call
        - Make emergency call to 999

UX

User experience configuration is the activity configuration groups use to assemble items that give smart and significant encounters to clients. This framework configuration is easy to understand for better client experience. To make it easy to understand we utilized client prerequisites investigation and executed UX dependent on it.

4.4 Implementation Requirements

To implement this task, we have utilized Android studio to fabricate our android application what's more, we have additionally expected to utilize Firebase to store our Data. To actualize UX we need XML code. To do intelligent back end configuration like login, photograph transfer and so forth we need java programming language [8]. We additionally need conditions for google information exchange and Facebook information exchange.

Software Requirements for Our Application

- Windows 7/8/10 for Linux(Ubuntu)
- Android studio 3.2 or higher
- Java Runtime Environment 1.5 or higher
- Java development kit 1.5 or higher 27 [7]
- Android operating system minimum SDK version 15 to 28

Hardware Requirements for our application

Windows:

- Microsoft windows (8/8.1/10)
- 8GB RAM recommended, Min: 3GB and 1 GB for the Android Emulator
- 4 GB disk space recommended

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database

Database Implementation is the most critical piece of our task. We didn't utilize My SQL for our information base. We have utilized Firebase ongoing information base and fire base for our venture. This is generally suggested for android application. Also, it is entirely adaptable in light of the fact that it additionally works disconnected effectively. Firebase Real Time Database permits to make incredible, community oriented applications by permitting secure admittance to the information base straightforwardly from the customer side code. This is no SQL information so information keep as a parent child relationship. In figure 5.1 we got user Authentication list with their verified email:

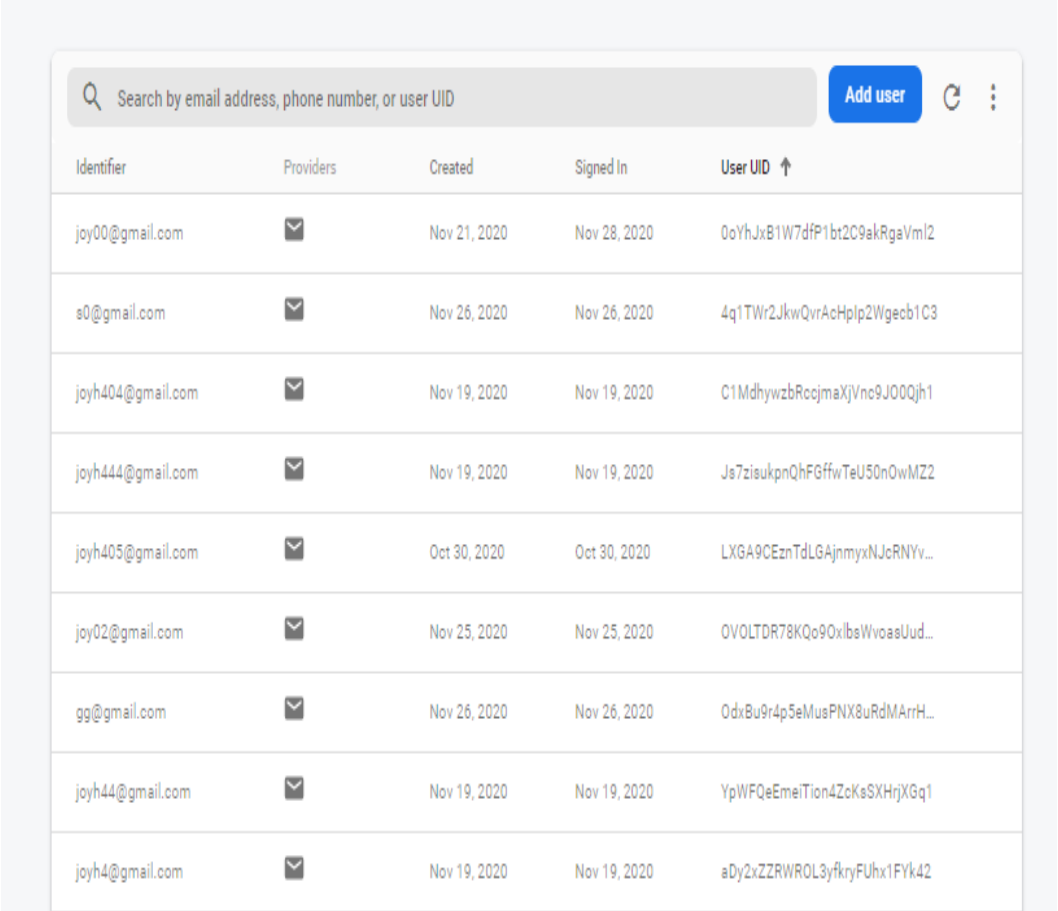

Fig 5.1: User Authentication

Here, in figure 5.2 we got user profile information who already registered:

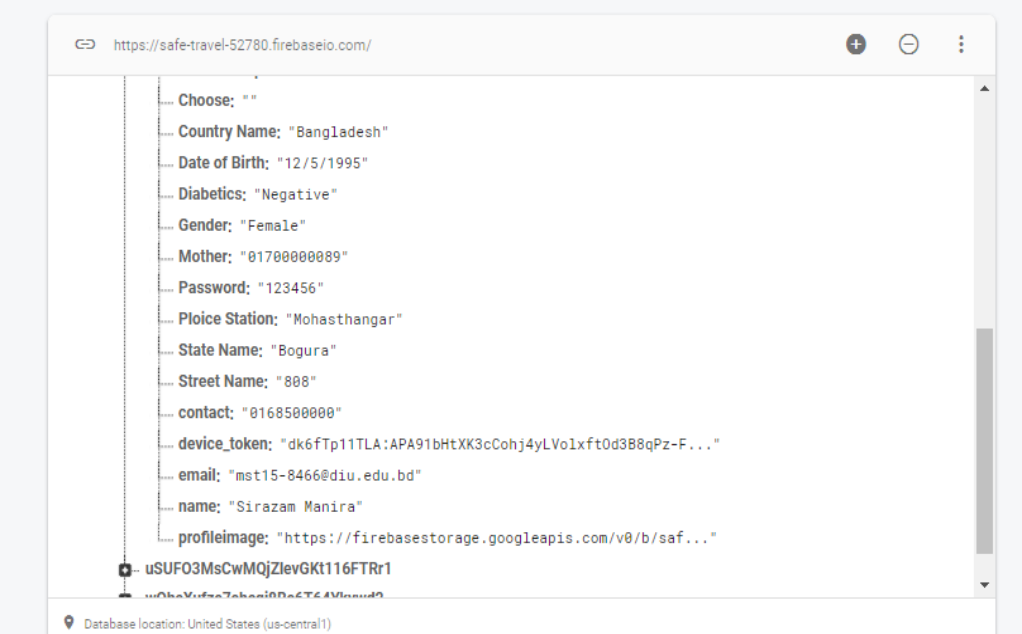

Fig 5.2: User Information

Here in below figure 5.3 show the friend request data structure mean how the data will store when anyone send friend request to another person:

Fig 5.3: Friend Request Structure

Here in below figure 5.4 shows that when any user post anything in this system then how the data store in firebase database:

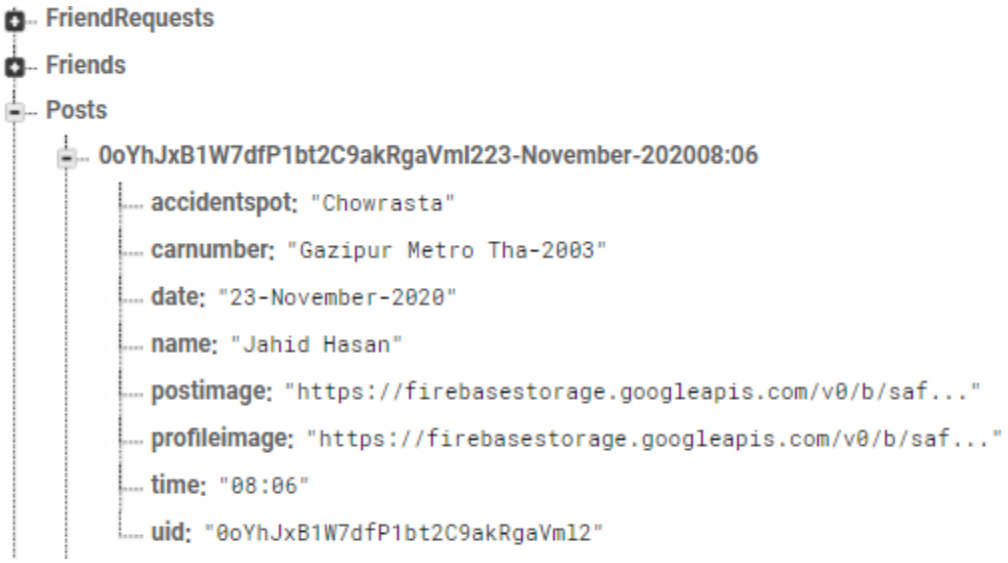

Fig 5.4: Post data

Here in below figure 5.5 shows the trips details, when any user start his journey and update into this system then how the data reserve in database:

Fig 5.5: Trips Data

5.2 Implementation of Front-end Design

At First when the application is open, it will show the login screen fig 5.6 where user will be able to log in with User email and password.

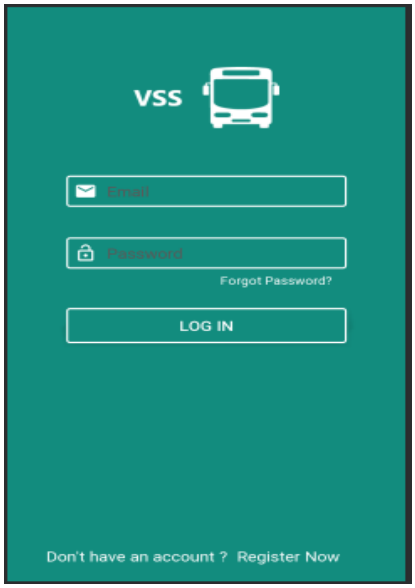

Fig 5.6: Log In Screen

If anyone is not a registered user he will press register now and simply Sign Up and create new account in fig 5.7.

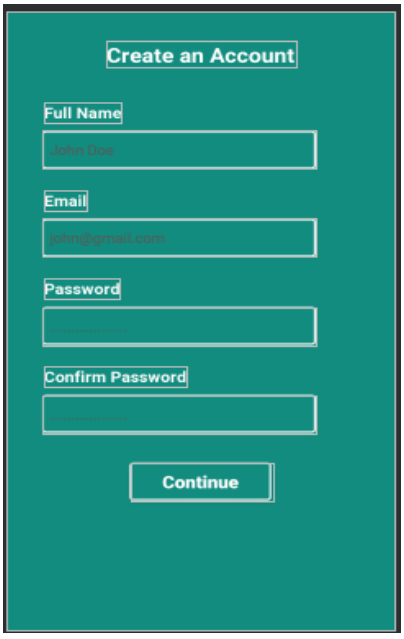

Fig 5.7: Sign Up Screen-1

Here figure 5.8 screen shows what personal data will need to create a new account:

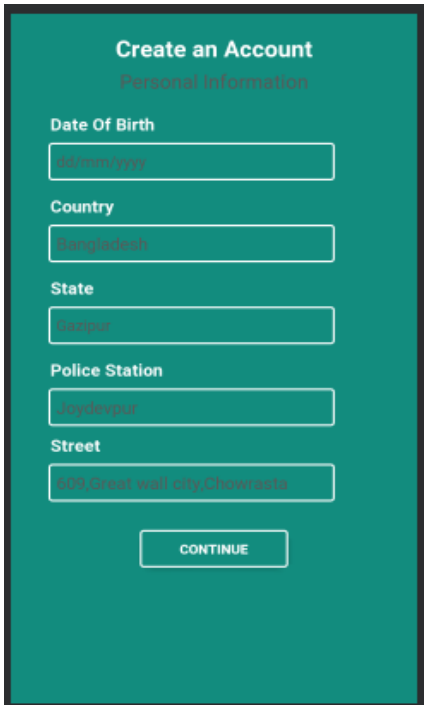

Fig 5.8: Sign Up Screen-2

When create new account the user have to update personal medical information throw the interface shown in figure 5.9:

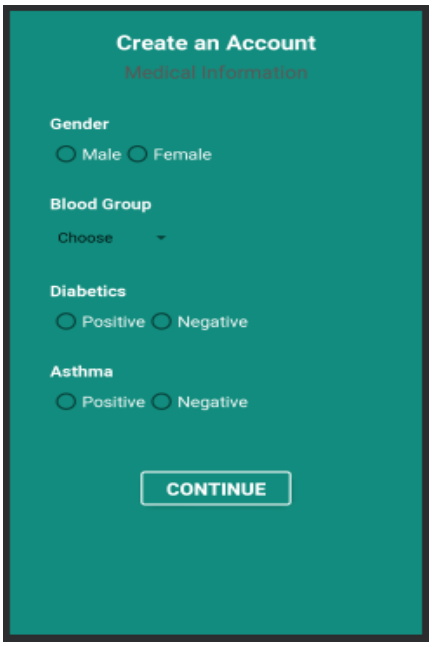

Fig 5.9: Sign Up Screen-3

When create new account the person must need to save emergency contact information like his/her father or mother contact number throw this interface shown in fig 5.10:

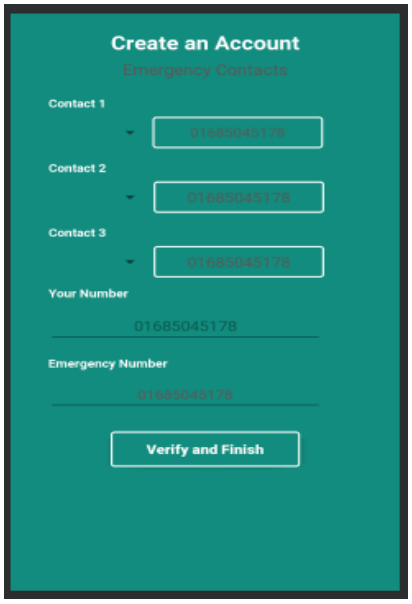

Fig 5.10: Sign Up Screen-4

After Logged in they will see dashboard with 4 option which are Update accident, Connect device to engage trip, Scan Qr code for engage trip and Emergency call shown in fig 5.11:

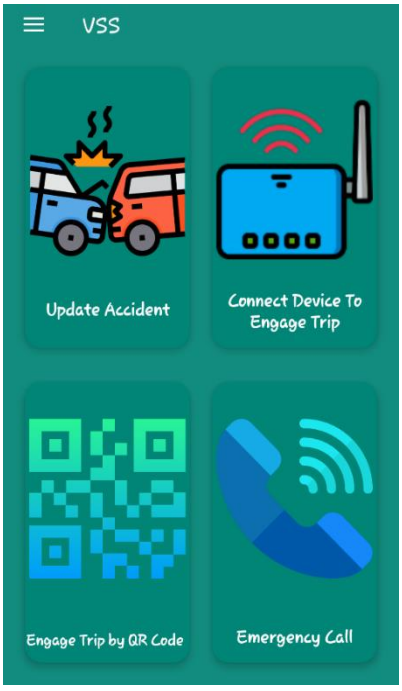

Fig 5.11: Dashboard

Here in figure 5.12 shows the public user post about accident in this system about accident:

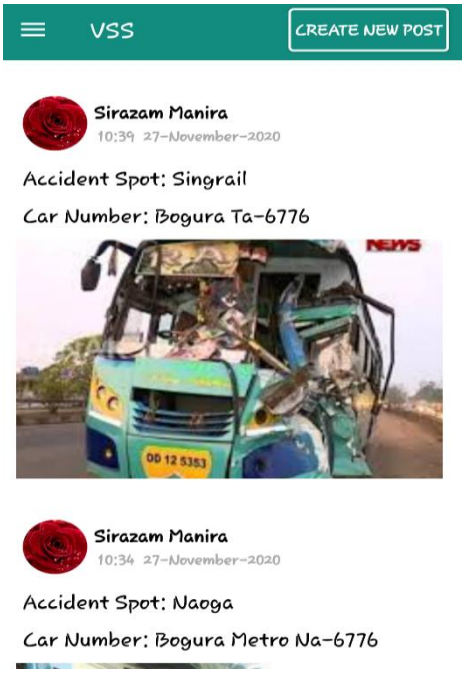

Fig 5.12: Post Page

Here in figure 5.13 shows the public user post creation interface in this system about Accident:

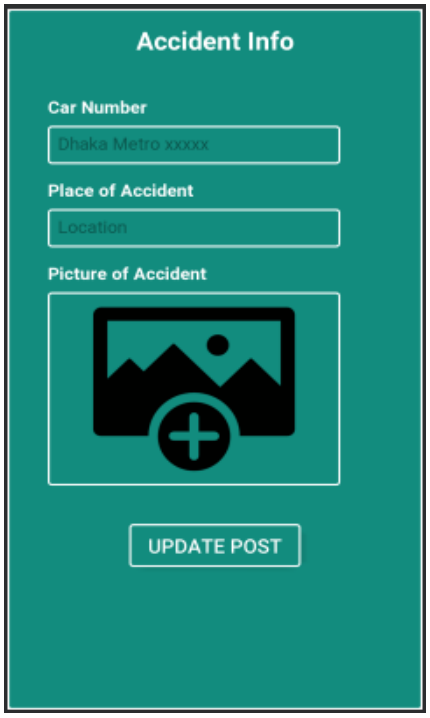

Fig 5.13: Create Post

Here in figure 5.14 shows the own profile published post in this system about accident:

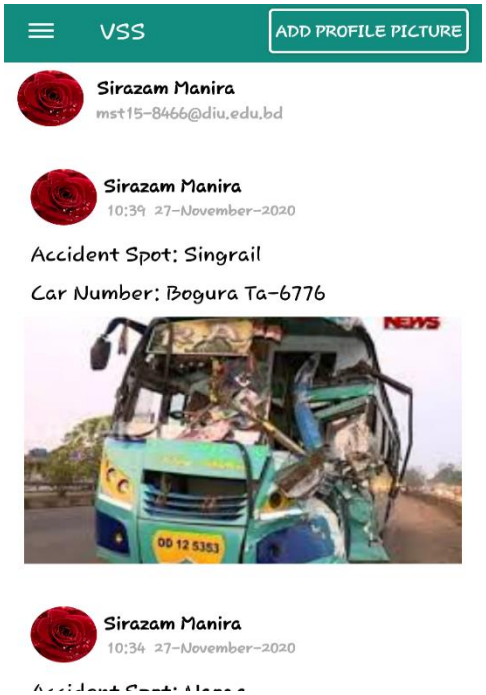

Fig 5.14: Profile Page

In figure 5.15 shows the interface that will be used when any user want to update his profile picture:

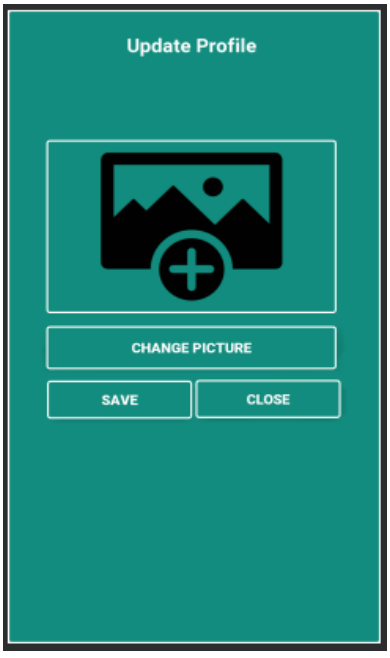

Fig 5.15: Add Profile Picture Page

In figure 5.16 shows the interface that will be used when any user want to update his trip information while start his/her journey [9]:

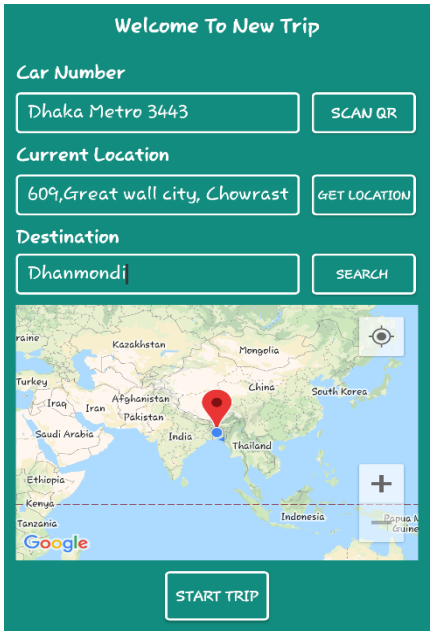

Fig 5.16: New Trip Page

In figure 5.17 shows the interface that will show the journey information after engaging any trip:

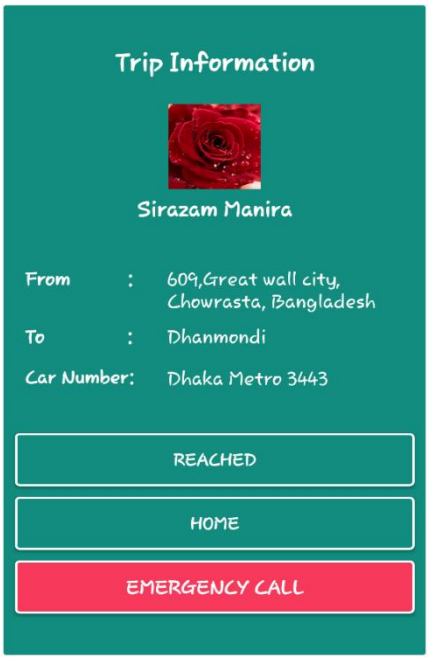

Fig 5.17 :Trip Information

In figure 5.18 shows the find friend interface:

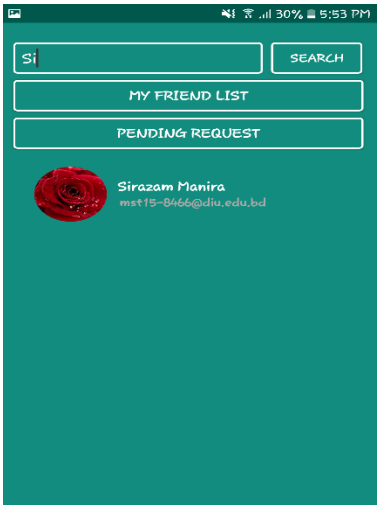

Fig 5.18 :Find Friends

5.3 Testing Implementation

System testing is essential to assemble an ideal, smooth and mistake free system. We fundamentally tried to check mistake or bug and make it more easy to use. We make a few explicit prerequisite with the end goal of this test.

Table 5.1: Testing Objective of our application

01	To check if the program runs or not
02	To check signup works or not
03	To check login works or not
04	To check whether ask for location permission or not
05	To check camera option work or not
06	To check user can upload post or not
07	To check user can request for cleaner or not
08	To check file uploaded to firebase or not
09	To check user location found or not
10	To check search location found or not
11	To check QR scanner work or not
12	To check user can logout or not

In table 5.1 these are the necessities of testing. we took constant client criticism with respect to necessities. In view of that we had our test outcome.

5.4 Test Results and Reports

Table 5.2 shows the test outcomes relying upon the experiments Given in the past segment of this part.

Table 5.2: Result of Test Objectives

01	To check if the program runs or not	Success
02	To check signup works or not	Success
03	To check login works or not	Success
04	To check whether ask for location permission or not	Success
05	To check camera option work or not	Success
06	To check user can upload post or not	Success
07	To check user can request for cleaner or not	Success
08	To check file uploaded to firebase or not	Success
09	To check user location found or not	Success
10	To check search location found or not	Success
11	To check QR scanner work or not	Success
12	To check user can logout or not	Success

CHAPTER 6

Impact On Society, Environment and Sustainability

6.1 Impact on Society

This application named "VSS: A Security Management System of Vehicle and Passengers" will male an great impact to our social life. Nowadays we can't know without phone call about our family member journey condition. Is he/she safe or not and they safely reached or not. But by using this application we will be aware about all of this thing that will give us a great safety.

Nowadays whenever we face any critical condition outside of our house or in a journey we can not make emergency call sometime cause its lengthy procedure now, But by this application we will able to make speedy call in any critical condition. So, we easily can assure that this application will make a positive impact in our society.

6.2 Impact on Environment

Though we know this is a kind of social awareness system about road accident. So we will be more aware about all accident than previous. So that we can be more careful while we will commit any journey. And our government will be able to take necessary steps to reduce accident by analyzing this application data.

So in the result, we will get a low accident rated country. So it's the main impact of this application in our Environment

6.3 Ethical Aspects

- Licensed innovation
- Protection of customer data
- Ownership of Copyright
- License Agreement
- User permission for accessing hardware

6.4 Sustainability Plan

We implement this system with some constant plan those are:

- Make people aware about accident quickly.
- Make aware about family member trip info.
- By denote most accidental place in a country that can help to take step to reduce accident rate.
- By denote accurate accident and occurrence rate accurately.
- By making emergency call to legal administration in any critical condition.

CHAPTER 7

Conclusion and Future Scope

7.1 Discussion and Conclusion

All over our country specially busy road of cities and the highway occurred too much accident yearly. Also nowadays peoples are facing lots of crime like snatching, kidnapping in their journey time. Girls are facing critical situation often, even situation like rape.

So we planned this system for reduce accident rate, make people more aware about accident and occurrence happening in the surrounding so that they can be more careful.

Government also will be able to take this application advance. Government can get huge collection of data about accident, occurrence, accident place and can get the reason behind accident by analyzing data. And can take steps to reduce occurrence.

So this application will make huge change in our country hopefully and will get a low accident rated country.

7.2 Scope for Further Developments

- Multiple language for this application.
- More features for users like newspaper integration, chatting option with friends and family.
- An organization to reserve and analyzing data for government.
- Real time location tracking while in a trip.

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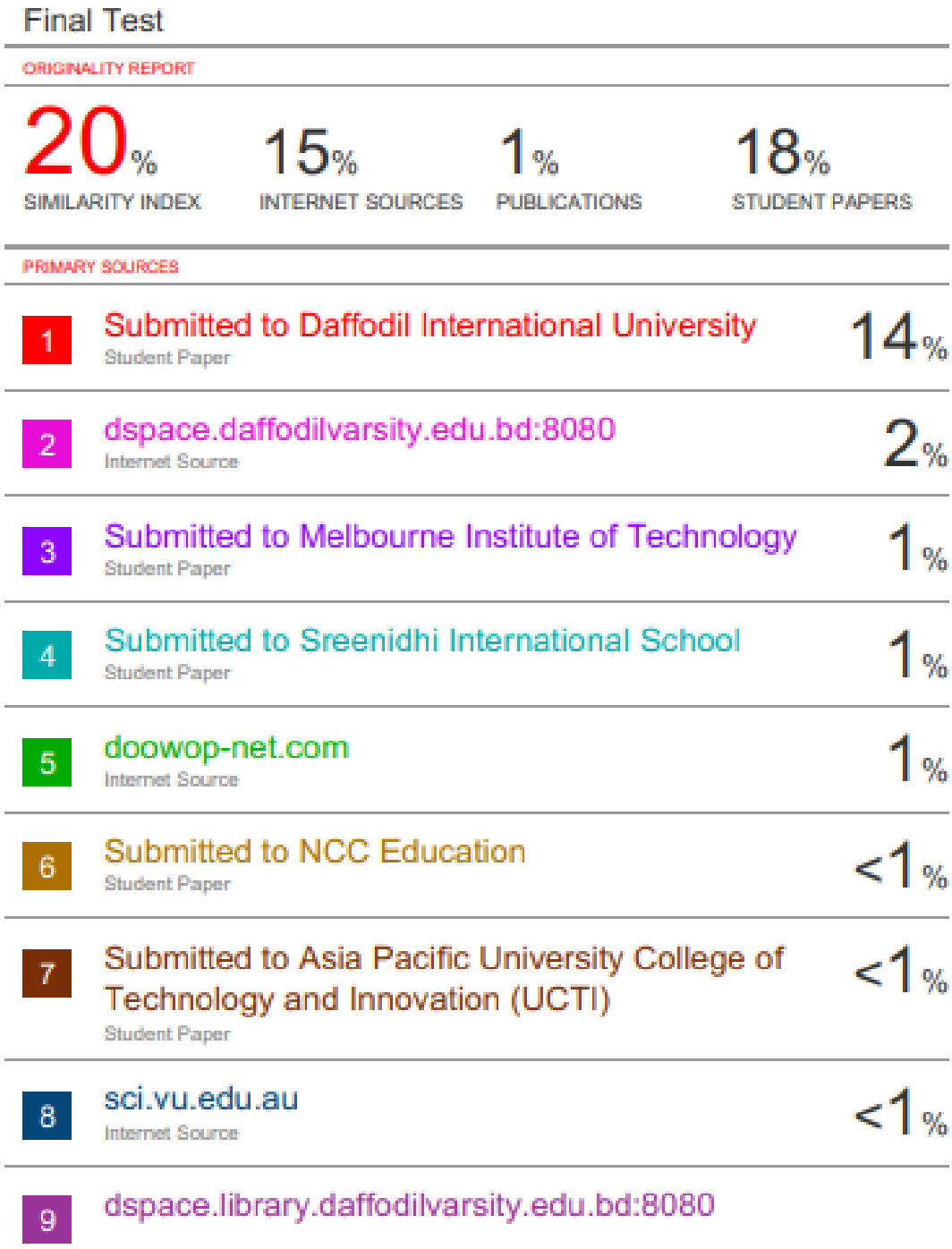
Plagiarism Test Report:



Final Test

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