FNF SAFETY INFORMER

BY

Md. Nasir Uddin Mahamud
ID: 152-15-6226

AND

Md. Mazharul Islam
ID: 152-15-6241

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

Supervised By

Farah Sharmin
Senior Lecturer
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Project titled **"FnF Safety Informer,"** submitted by Md. Nasir Uddin Mahamud, ID: 152-15-6226 and Md. Mazharul Islam, ID: 152-15-6241 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 5th May 2018.

BOARD OF EXAMINERS

_____

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Faculty of Science & Information Technology
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_____

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Daffodil International University

_____

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Assistant Professor
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

_____

Dr. Mohammad Shorif Uddin **External Examiner**
Professor
Department of Computer Science and Engineering
Jahangirnagar University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Farah Sharmin, Senior Lecturer, Department of Computer Science and Engineering**, 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:

_____

Farah Sharmin
Senior Lecturer
Department of Computer Science and Engineering
Daffodil International University

Submitted by:

_____

Md. Nasir Uddin Mahamud
ID: 152-15-6226
Department of Computer Science and Engineering
Daffodil International University

_____

Md. Mazharul Islam
ID: 152-15-6241
Department of Computer Science and Engineering
Daffodil International University

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ABSTRACT

Mobile is highly used in our modern world than any other devices we have. Google's android is most popular mobile platform than others. Every day we are using many android apps to make our life easier. At the present time of information technology, people and process are getting emerged together. As a result, dependency on technology and digital services is becoming more important day by day. Nowadays world is very unsafe to travel alone, especially for women and child. Since lots of unexpected, and shameful incidents are happening around the globe. Problems may come from anywhere and anytime. Everyone is worry about their family When they are out of the house. Especially when it is about women and children. For that reason, we need to understand and solve this problem so they don't feel any fear regarding their safety. This report represents an android application which will serve the purpose to rescue the user from unsafe conditions. As we all know that nowadays every individual carry their own smartphones and the uses of android applications have been increased rapidly so it is better to have such an android application which will provide a safe environment in public transport.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

In recent number of year's instant use of communication tools like mobile devices have 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. [1] Now a day's all over the world people are more interested in various type of mobile application, and dynamical informative apps are one of the top most choice for its very significant matter. This kind of apps helps to learn easily and patiently. Android devices come in all kinds of sizes, with all sorts of features, and all sorts of prices. Each version of Android is named by dessert, and the most recent version of Android is Oreo with Android in control of mobile experience. That's why now a day's android based application development is also one of the top most choice of the developers in many areas. Here we use android to develop an android real time location tracking app to give information and live location maps of user.

1.2 Objectives

The objectives of the study are following:

1.2.1. General Objectives

The study of our project has been conducted with the following general objective:

In this study, the general purpose is to identify the user location through GPS data from map and show user location with direction.

1.2.2. Specific Objectives

The study of our project has been conducted with the following specific objectives:

1. To develop a mobile app in android platform in order to find out the current location of a user using GPS.
2. To parse that location data from mobile apps to database server.
3. Quick response system for emergency situation just by shaking phone.

1.3 Motivation

Now a day, lots of apps are there to track location. There are many locations based services which can track location and give services according to the location but there is no such service which can identify a person and give the direction.

1. Track family member.
2. Take help in emergency situation.
3. To avoid all problem, find a person by direction location.

1.4 Expected Outcome

The expected outcome of this project is to ensure user location on the map through a mobile app and save user locations in the database server for future uses so that in future if anyone wants to know user location, they can be able to check it.

1. Check the location of your connected members on the map in real time.
2. Send messages to all connected members with a single click
3. Also able to send messages in emergency situation by just shake the mobile.
4. Choose members to notify in case of an emergency.

1.5 Report Layout

The report layout is nothing else but gives us the best intellect of the chapters which is hidden in this project and renders us an overview of the task.

1. In Introduction chapter, we have introduced the basic principle and purpose of our project.
2. In Literature Review chapter, it introduces some project related works, the reason behind choosing this project, problems and challenges of this project.

3. In the chapter Requirement Specification, we described the project requirements, use case model with description, Location Data Requirements and implementation of requirements.
4. The chapter Design and Implementation introduces design of proposed system that is implemented by two ways where one is mobile apps implementation in android platform using android Studio, PHP and MySQL.
5. The chapter Testing Proposed System introduces us with the testing approach of mobile apps on the proposed system.
6. The conclusion chapter is the final discussion of the project with the future scope of this project.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

As literature review is an approach of data for gaining knowledge based on specific theme found, so the review is performed to aid our real time location tracking application in this thesis. Existing documentation of this thesis is quite different from our development work although they are well-resourced for guiding us through for the betterment of this application development.

2.2 Related Works

Many applications have been developed to tracking location but our tracking application has its own distinctive attribute to stand out in market place.

1. Architecture for Employee Tracking System using Smartphone by NagashayanaR A theory is established from a related work research, there are many solutions which can be used to find or track an employee.

   This application requires GSM modems or SMS functionalities of a mobile to share location although it is kind of complex in architecture. Also SMS functionality cannot be used when frequent location is needed. Sending location to the server through GPRS is another way out. But there is no better approach so that anyone can continuously track employee without interaction of employee himself but on the other hand, waiting only for GPS coordinates drains our battery charge. So this proposed application solves these problems [2].

2. Al-Mazloum, E. Omer, M. F. A. Abdullah research for tracking children based on GPS and SMS. Their application theme was to keep parents tension free by using their Smartphone to learn children location from house, workplace, and market or from wherever their current presence is. The application internal architecture proposed two Smartphone's children as a client and parents as a server of the

system. If parents want to find location of their children, parents just need to request through SMS, children

Smartphone will always act as an active device to read the specific formatted message and quickly responds back with location details to their parents [3].

3. Almomani, Alkhalil, Ahmad and Jodeh work they track vehicles using GPS, GSM modem, GPRS and it is client-server model, when a user requests a location from web or mobile, a SMS will be sent to the GSM modem, the client then responds using GPRS 5 which will be received by GPRS server and send to GSM modem which in turn sends to server [4].

4. Smart Way to Track the Location in Android Operating System by Muthumurugesan D, Nalini S, Vinodini R. Location Based Service equips information that can be accessed through the network and geographical position of the Smartphone device. This development includes uses of Google Maps, Network provider and GPS to redeem the latitude and longitude value and finally use the Distance calculator to calculate user location where longitude and latitude are parameters. This application use GPS to find user's current position and user can select the new destination of their choice or set predestination where they want to travel. Android operating system used the query process system to retrieve user location [5].

2.3 Problem Statement

Android system offers verities of applications to mobile users. Some are for entertaining but others are used for educational purpose. Our application is design and developed according to meet owner requirement as well. But there are others apps already in market for tracking people and sometimes it is hard to track through GPS as it can give inaccurate parameters value (longitude and latitude). But Reason behind choosing this project as a Mobile App:

1. User can track the location of connect members on the map in real time.
2. User also able to get tracked location direction in real time.
3. Access to most APIs like GPS, Accelerometer, address book, contacts etc.
4. In emergency situation send messages to all connected members with a single click.
5. Or just a simple shake of phone can send the message to emergency contact.

2.4 Using GPS for Location

Global Positioning System (GPS) is one kind of device for android mobile apps by which we can find out user's location. To find out user's location at first we have to turn On GPS from any android mobile devices. To search or find out user's location after turning On GPS within a few seconds it will give us a latitude and longitude value for that position. Latitude and longitude values are different for different places or positions. By calculating this latitude and longitude value Global Positioning System (GPS) identify the user's current location and give us a message that user is stayed here now.

2.5 Using Google API

Google APIs is a set of application programming interfaces (APIs) developed by Google which allow communication with Google Services and their integration to other services. The main theme of Google API is to match Global Positioning System (GPS) data with Google storing data. For searching user's current location, we got a GPS data with latitude and longitude value. After that GPS send this data to Google API for matching. Google API always has some previous storing data. By taking GPS data Google API match this data from its stored data. When both of data are matched then Google API told that this data we took from that area like that Daffodil International University (CSE Building). Google API also show the direction.

2.6 Challenges

One of the main problems is technology constraints in our country. Everyone does not use GPS enabled phone though it is extensive as smartphone is really cheaper now-a-days. And some of people are not aware of uses of technology such as uses of GPS, Google API and

even some app. Our app user interface itself is really simple so anyone wouldn't have problem navigate our app. Taking longitude and latitude by GPS was real challenge as infrastructure constraints. Even in metro city like Dhaka we face problem of detecting location and network congestion is also a trouble. But we used many software and google map itself to outdo this problem.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 System Requirements

Requirement is the demand of user that must be met by the system or a process which expresses the user needs. In our proposed system we are using functional and non-functional requirements. Requirement specification:

Requirements specification is a description of system to be developed.

1. Users send Global Positioning System (GPS) location to web server using by a mobile app.
2. Last location data and current location data will save in web server database.
3. User can send receive friend request and also user are able to allow to block anyone.

1.2.1. Functional Requirement

Functional requirements describe what the system should do.

Functional Requirements:

1. Send location through mobile application.
2. Check location through mobile application.
3. Manage users through mobile application.
4. View user list through mobile application.
5. View user profile.
6. Block user to tracking.

1.2.2. Non Functional Requirement

A non-functional requirement specifies how the system should behave.

Non-Functional Requirements:

1. Efficiency.
2. Functionality.
3. Security.

4. Reliability.

3.2 Use Case Model

Use case diagram is used to capture the dynamic nature of a system. It consists of use cases, actors and their relationships. Use case diagram is used at a high level design to capture the requirements of a system. So it represents the system functionalities and their flow. Although the use case diagrams are not a good candidate for forward and reverse engineering but still they are used in a slightly differently way to model it [6]. 'Use cases' is one kind of action or event which has relationship with 'actors' in a system. An actor is a person or organization that interacts with the system requirement to achieve the goal.

In our proposed system, we are using two actors. And they are:

1. User
2. System.

The following figure 3.1 represents the use case model of whole system.

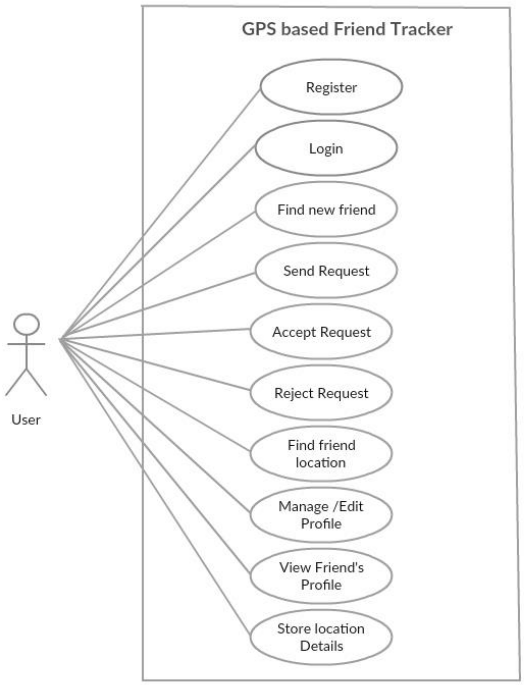

Figure 3.1: Use Case Diagram of Proposed System

Brief Description:

In the figure 3.1 use case contains all the activities that user of the application can carry out while using the application.

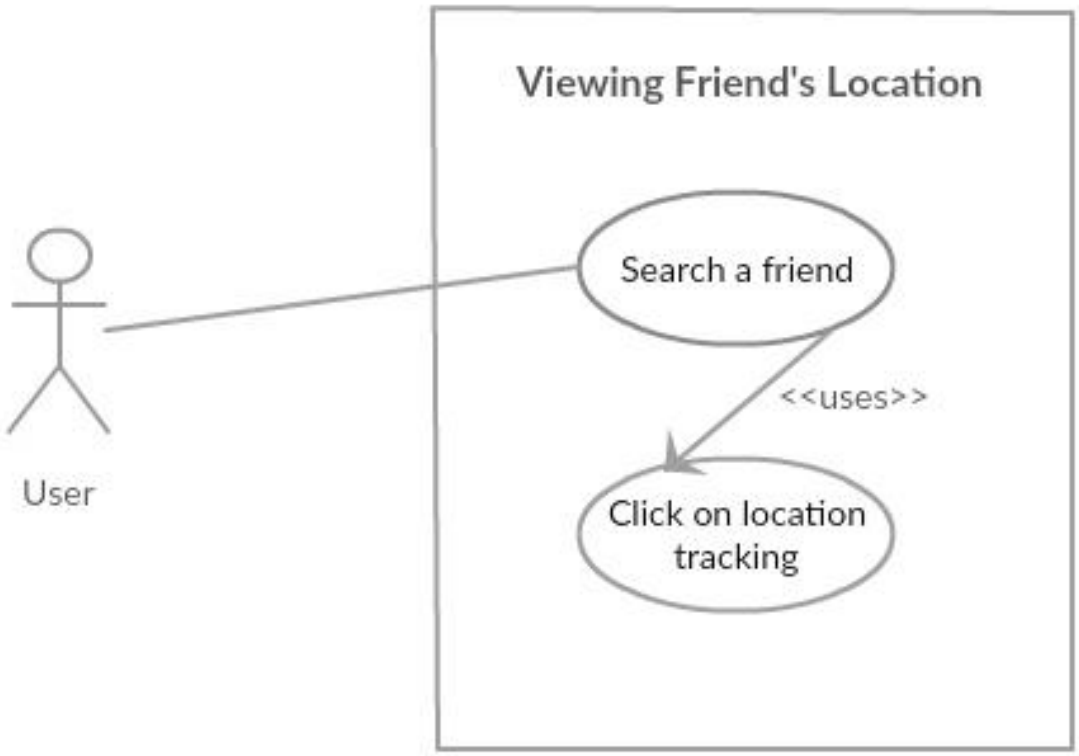

Figure 3.2: Use Case Diagram of View Friend's Location

Brief Description:

In the figure 3.2 the application user selects the friend and tracks its current location.

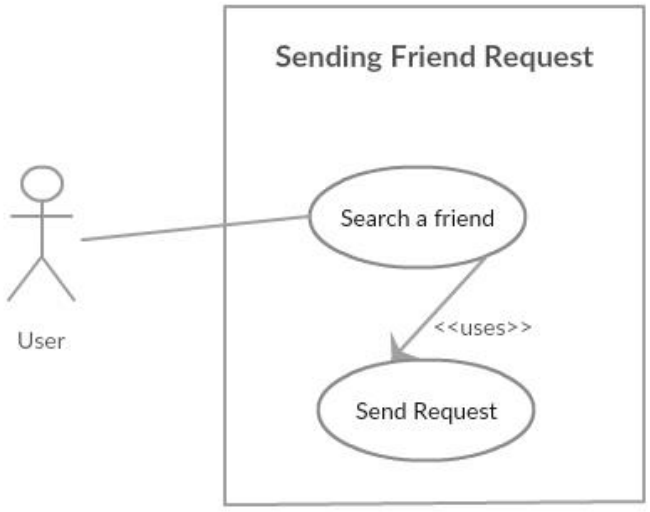

Figure 3.3: Use Case Diagram of Sending Friend Request.

Brief Description:

User has to search a friend among the users of the application before sending friend request.

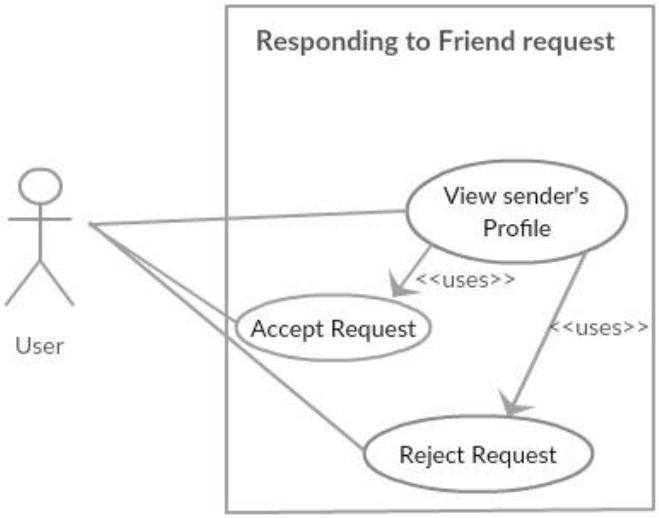

Figure 3.4: Use Case Diagram of Responding to friend request

Brief Description:

Application user can view his personal details before accept friend request.

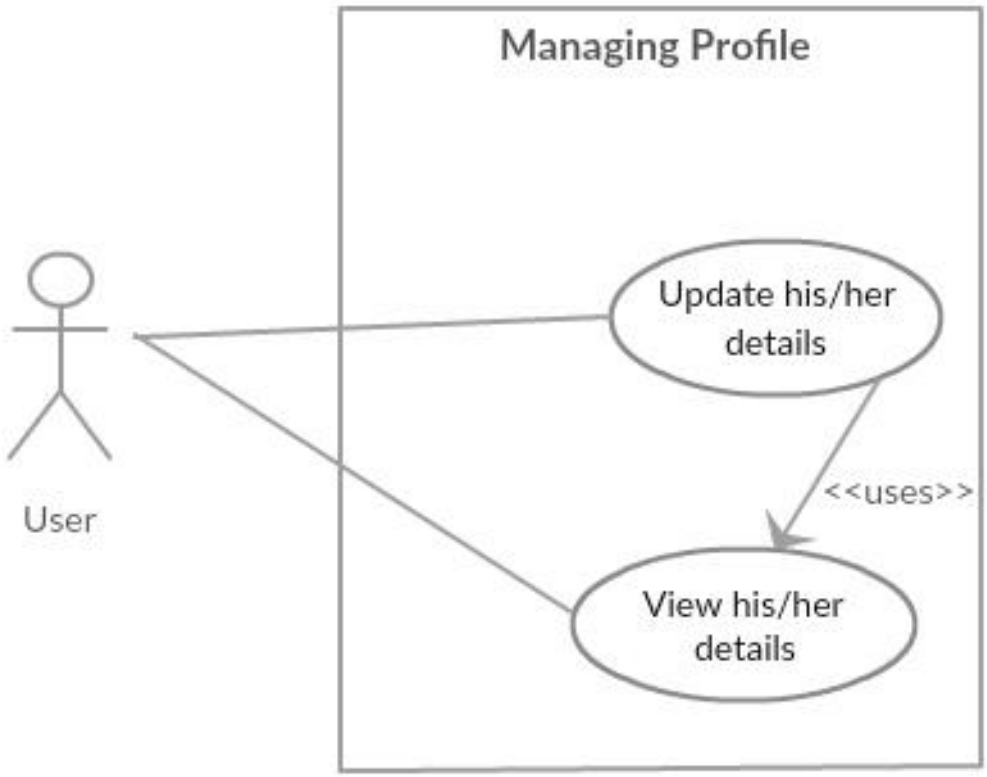

Figure 3.5: Use Case Diagram of Managing Profile

Brief Description:

Application user can view his personal details before editing/updating those details.

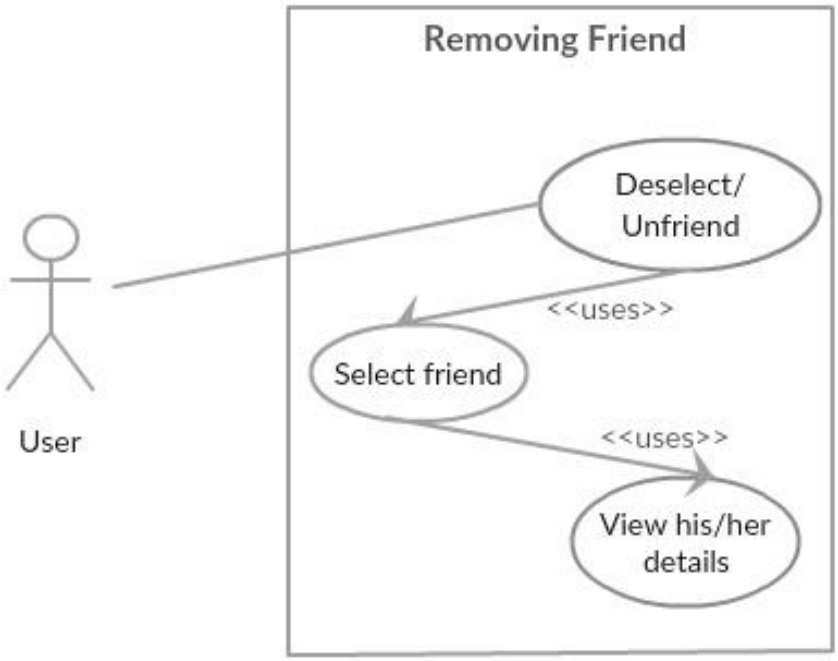

Figure 3.6: Use Case Diagram of Removing from friend list

Brief Description:

While removing a person from his friend list, application user has to select him from that list. User can also view her personal details before removing that person from his friend list.

3.3 System Sequence Diagram

Sequence diagram represents the sequence of a system.

The following figure 3.7 represents the sequence diagram of proposed system.

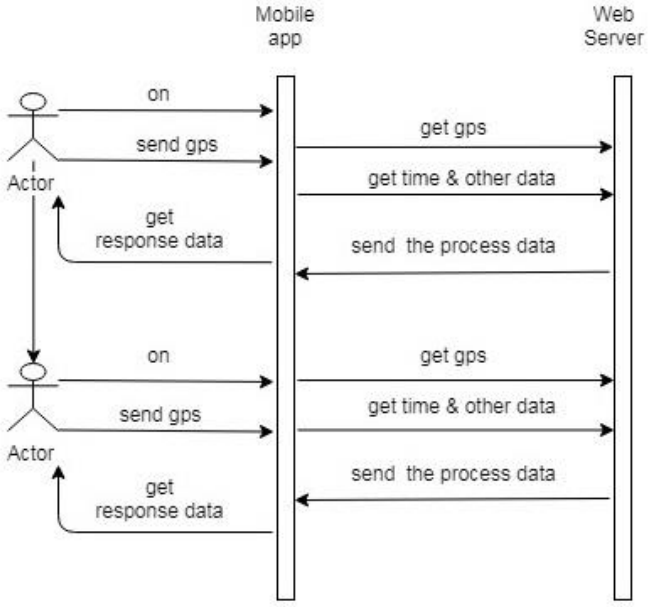

Figure 3.7: Sequence Diagram of Proposed System

3.4 Implementation Requirement

3.4.1 Implementation

Implementation is the carrying out, execution, or practice of a plan, a method, or any design, idea, model, specification, standard or policy for doing something. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happen [8].

After collecting and analyzing requirements, we have implemented the system according to the requirements.

3.4.2 Implementation Results

The application has been implemented as required. The data is accessing and send to the web server upon the availability of GPS and Internet. This application location tracking system works when the GPS setting is on. These are happening on background without interrupting the user.

CHAPTER 4

DESIGN & IMPLEMENTATION

4.1 Design of Mobile Apps

The system is designed such a way that it needs a mobile app for tracking and sending user location and check their location.

When the mobile app is started for the first time after installation, the following activity is appeared (see figure 4.1) where user give the access permission for first time only.

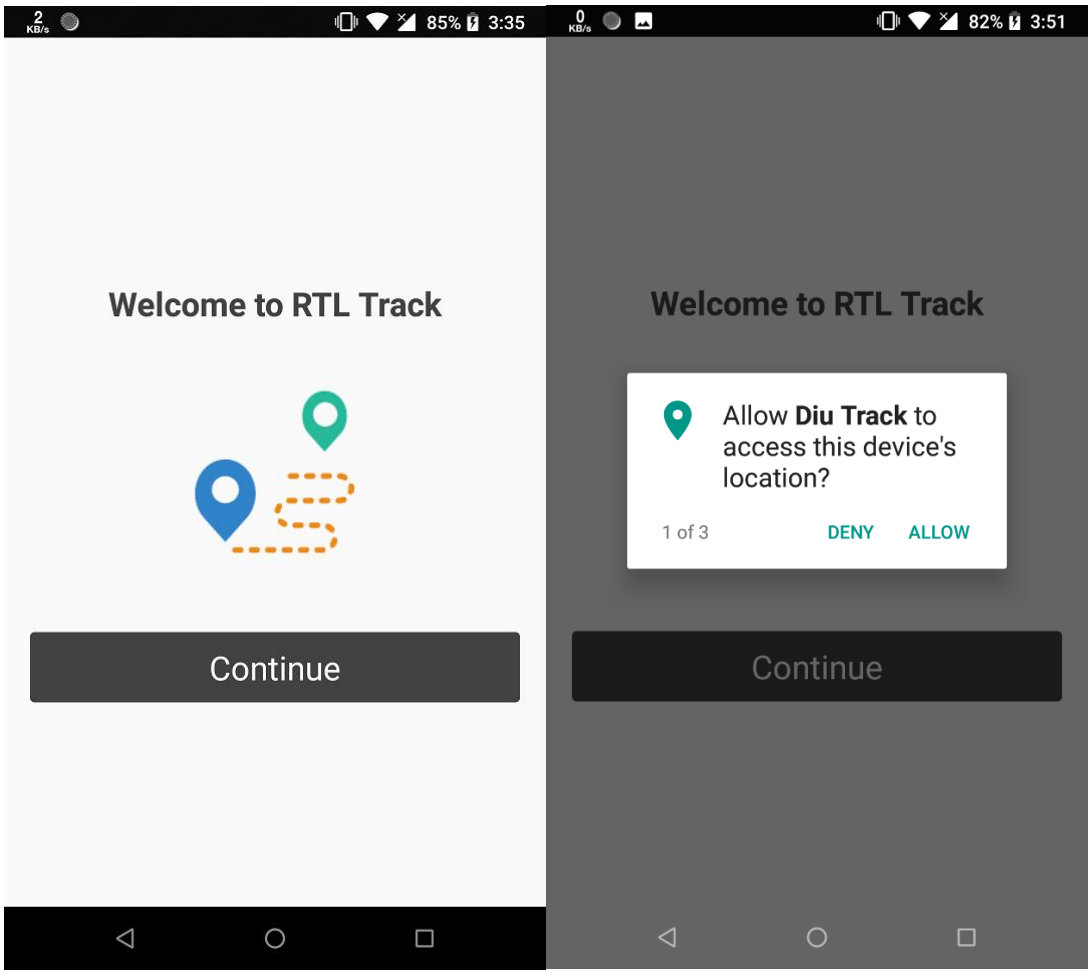

Figure 4.1: First page of mobile app UI

After giving access permission, the following activity is appeared (see figure 4.2) where user has to put his/her Name, Phone Number, and Emergency Contact Number.

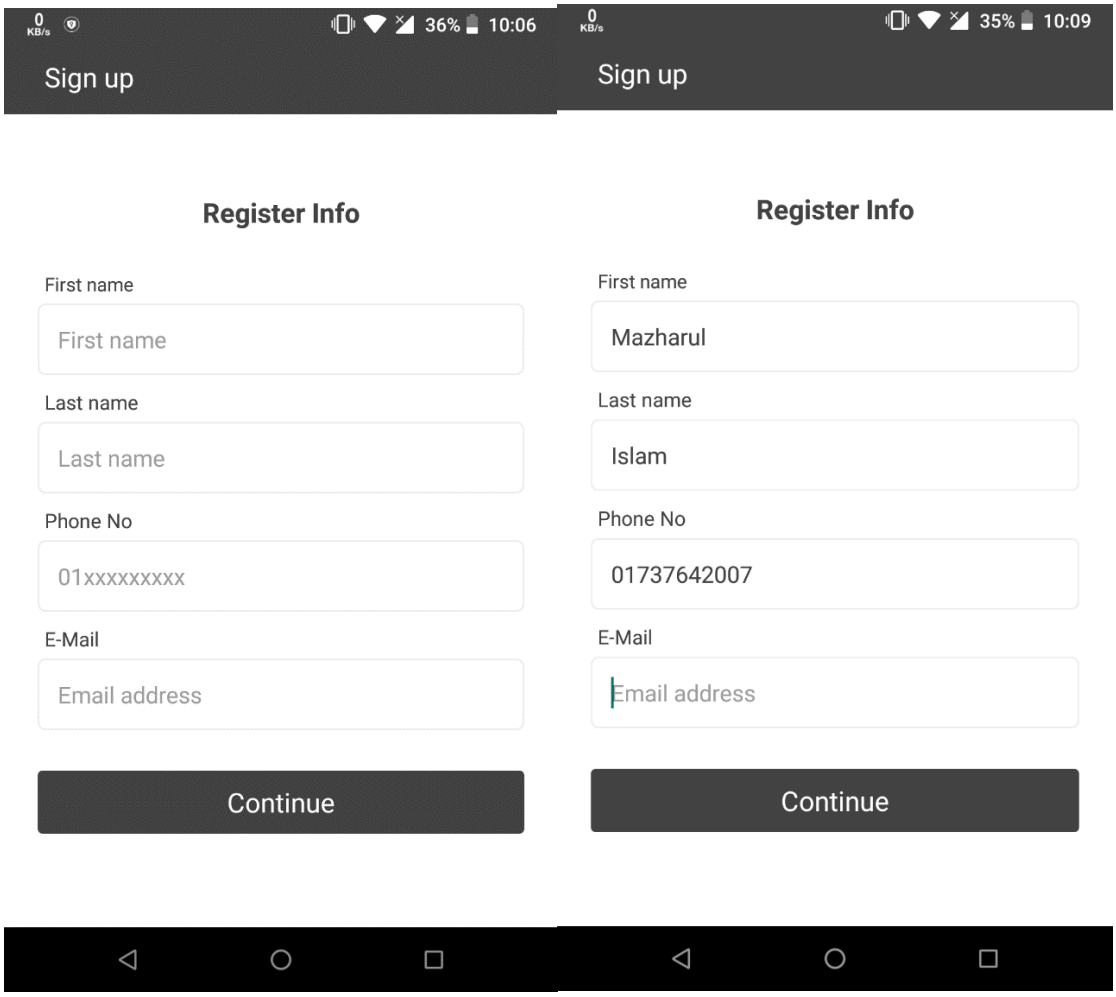

Figure 4.2: User Registration of mobile app UI

After Complete Registration, the following activity is appeared (see figure 4.3) where user can see own current location and other connect member location.

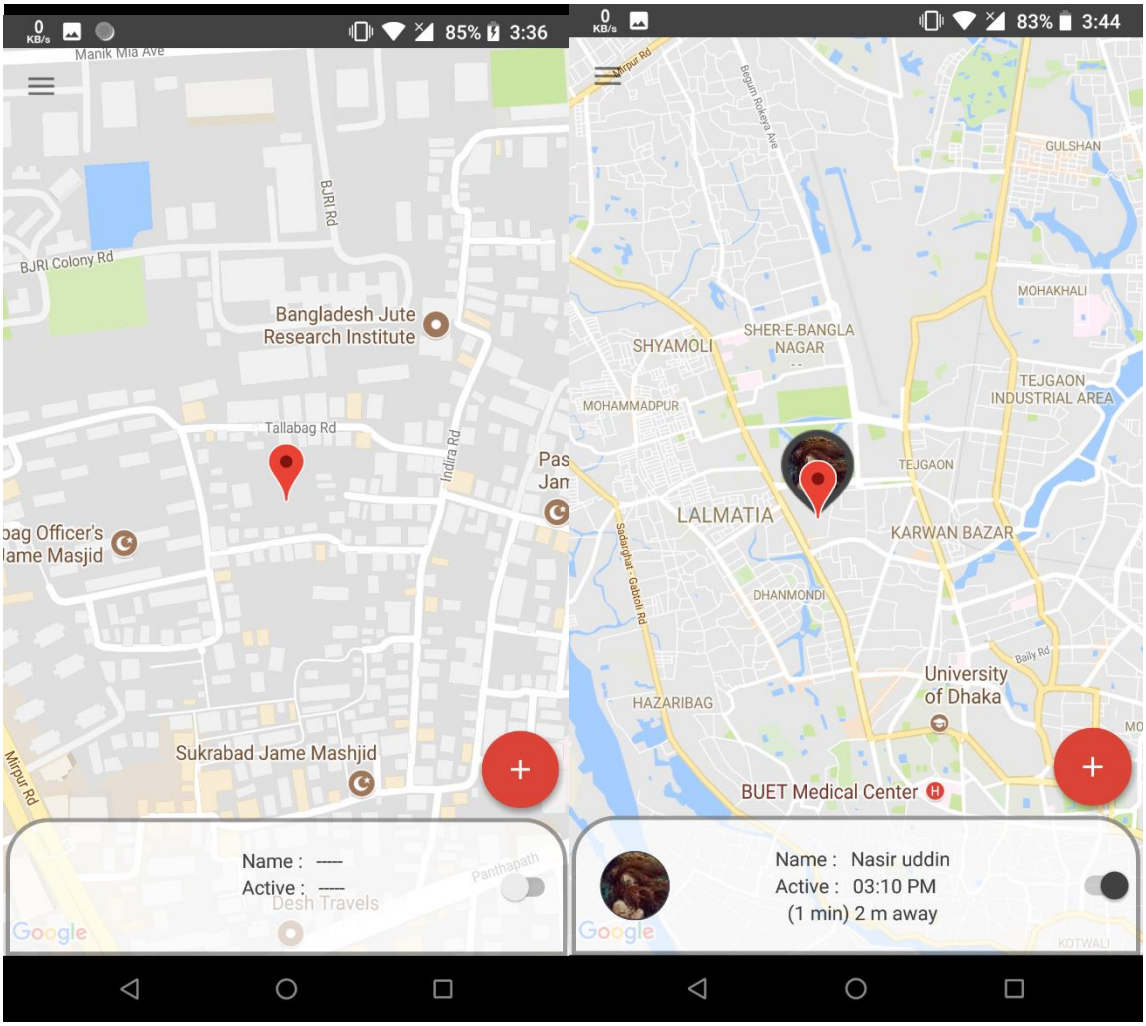

Figure 4.3: Main page of mobile app UI

After pressing the navigation icon or swipe right this activity is appeared (see figure 4.4) where user can see the navigation drawer.

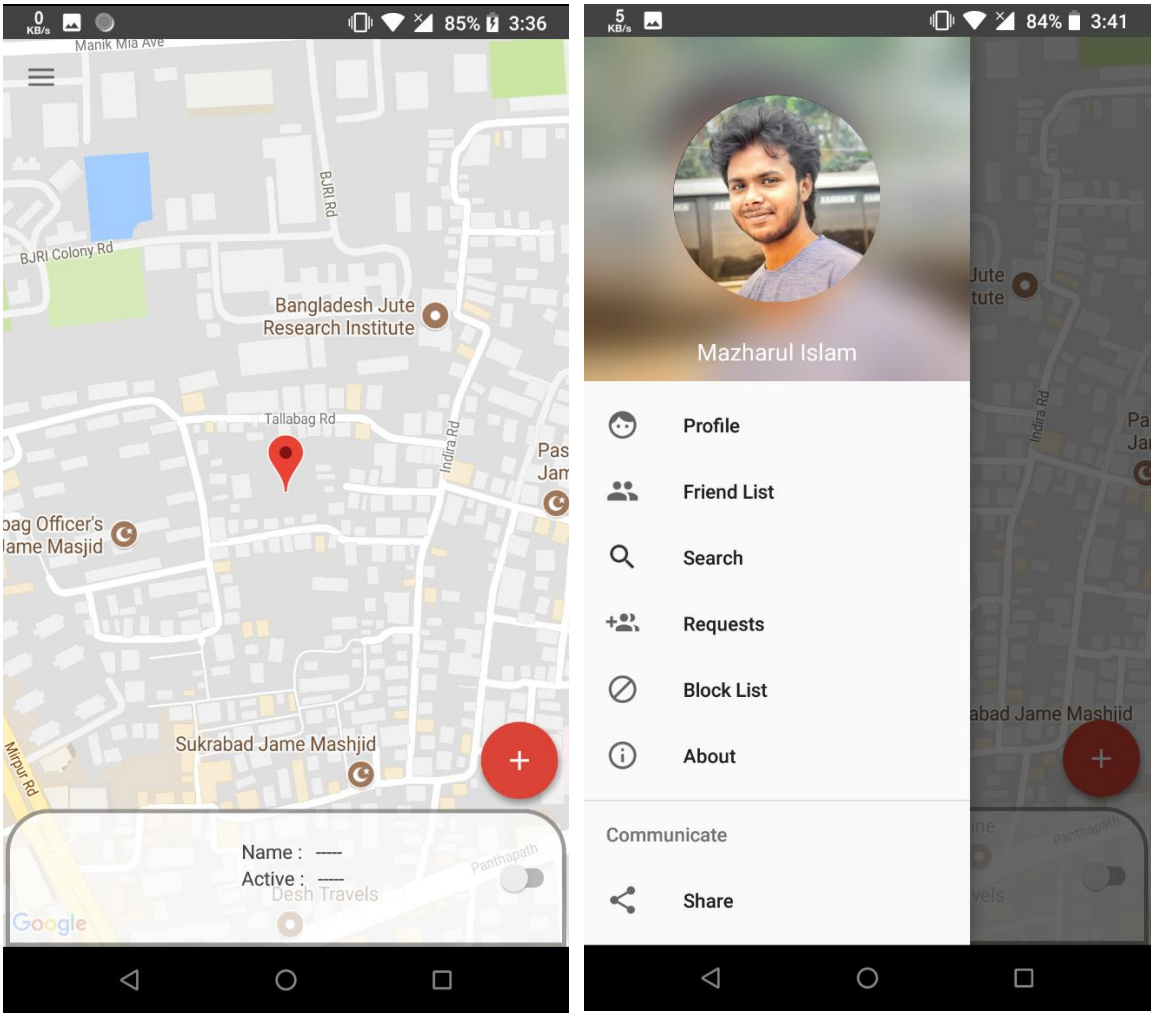

Figure 4.4: Navigation drawer of mobile app UI

From navigation drawer user can search other member, friend list, pending request and Block list by choosing menu related activity is appeared (see figure 4.5) where user can see this view.

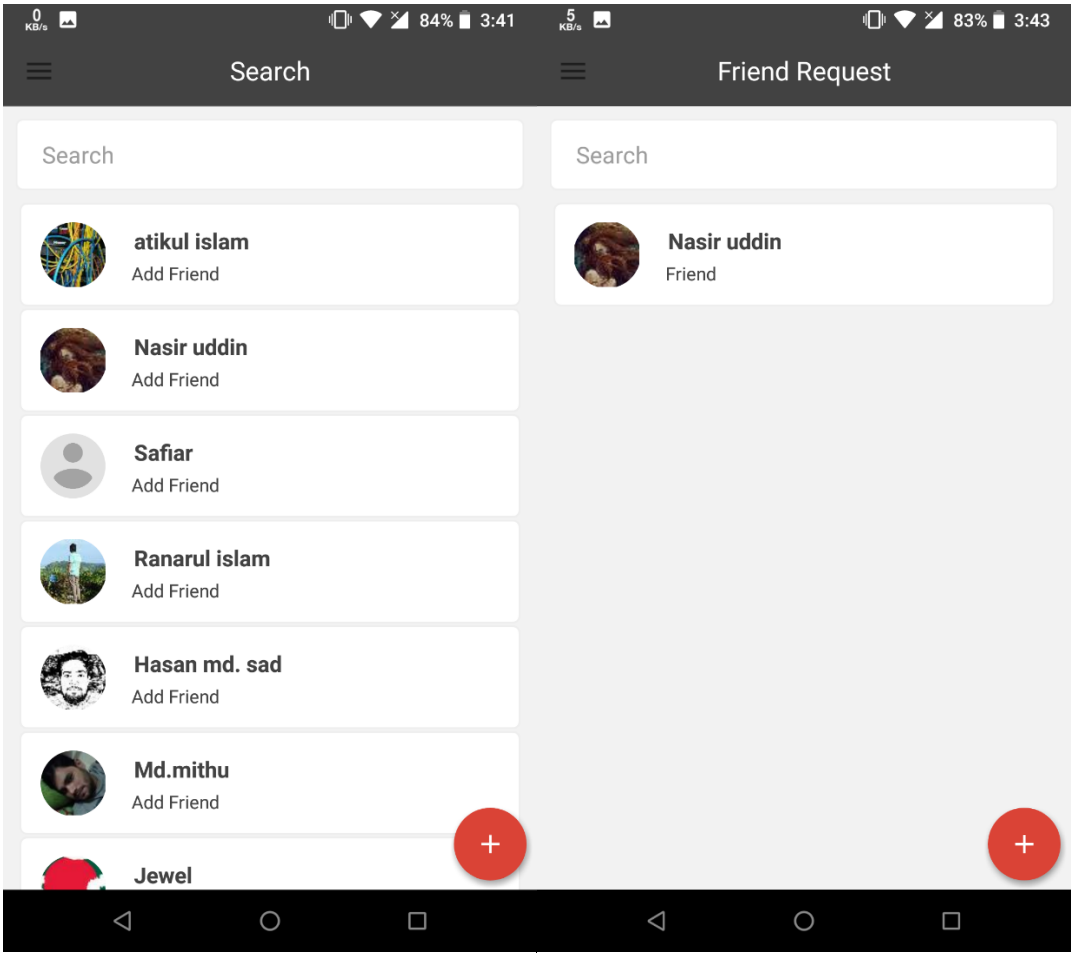

Figure 4.5: Member List of mobile app UI

After search User can select member to view profile and send friend request for this activity is appeared (see figure 4.6) where user can see this view.

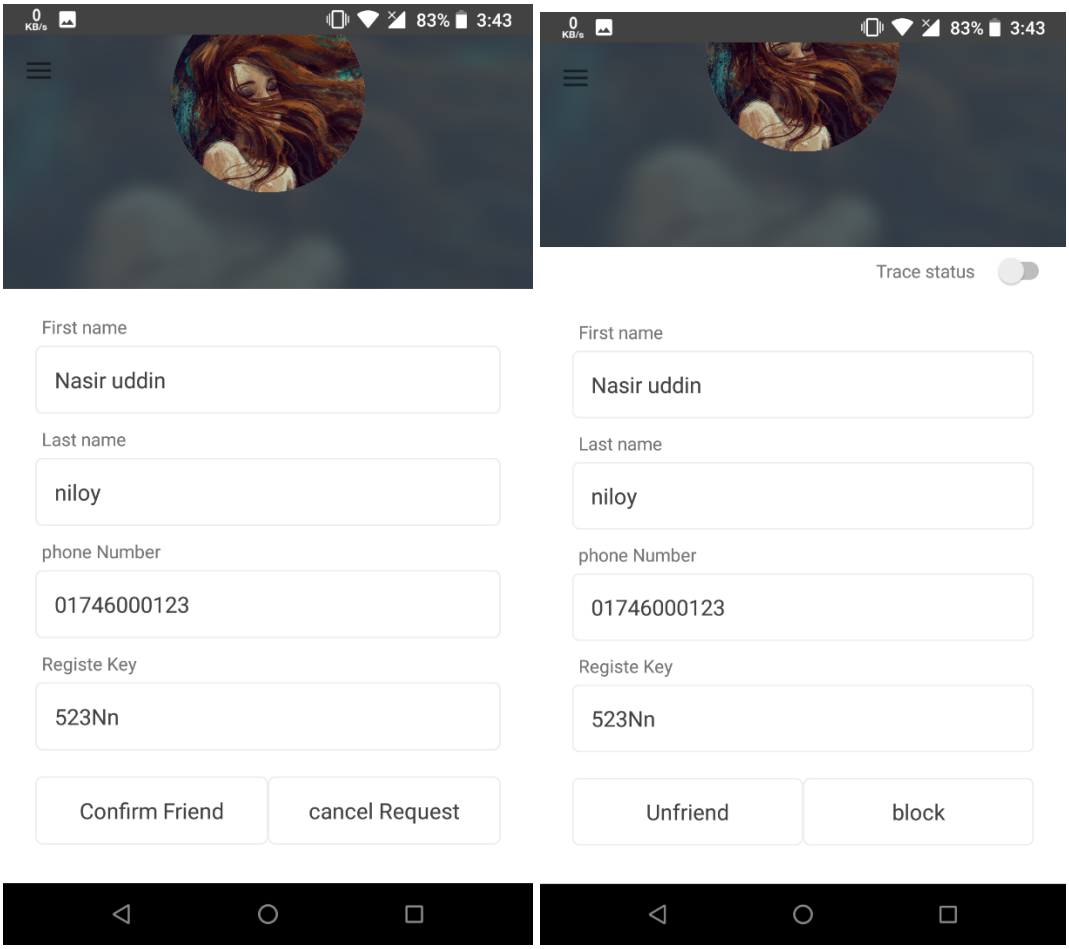

Figure 4.6: Friend Request page of mobile app UI

User can edit profile and update profile picture and emergency contact for this activity is appeared (see figure 4.7) where user can see this view.

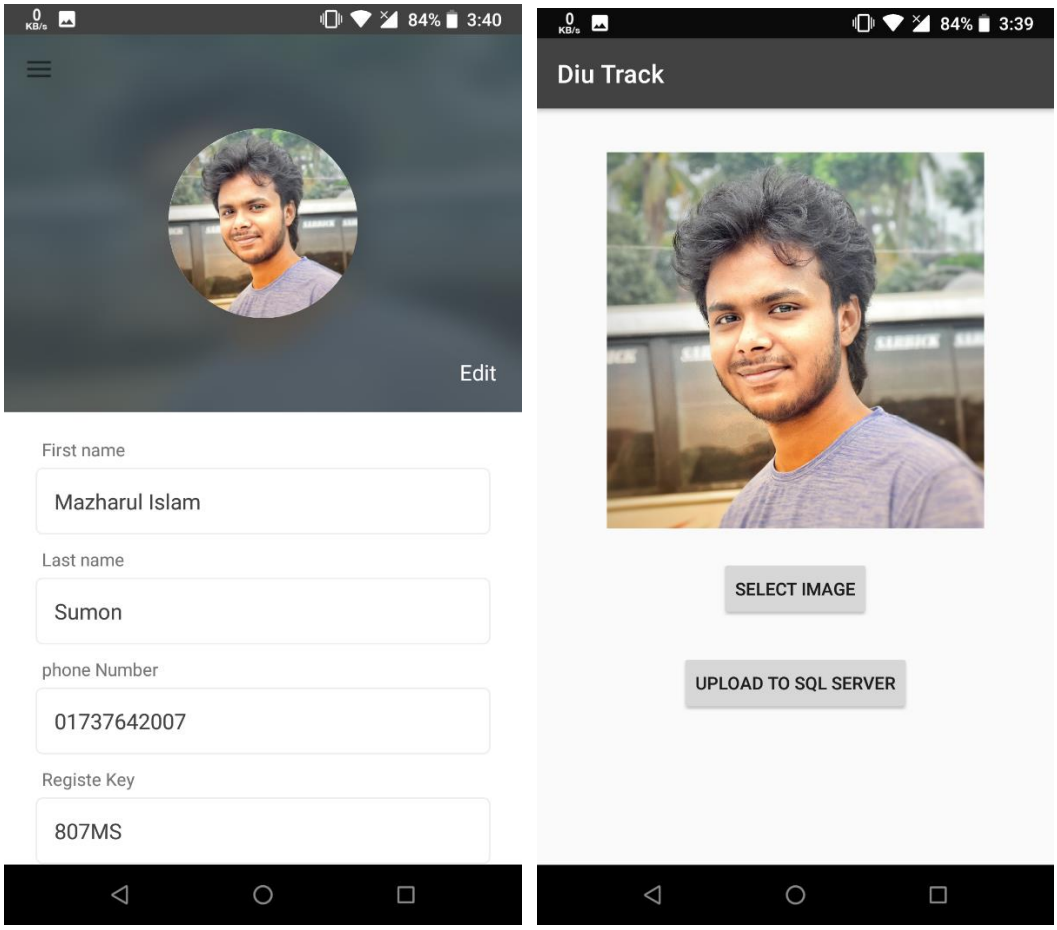

Figure 4.7: Manage profile page of mobile app UI

User also able to edit emergency contact number and sensitivity of shacking for this activity is appeared (see figure 4.8) where user can see this view.

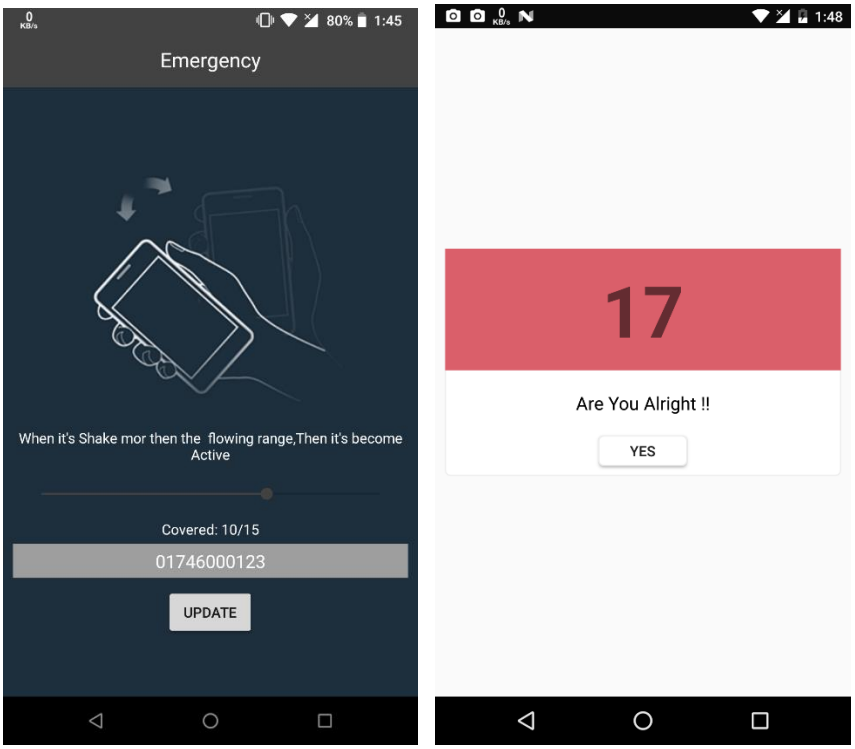

Figure 4.8: Emergency alert page of mobile app UI

4.2 Database Schema

The following tables represent the database schema of this System.

Personal _info table stores the information of user such as name, phone, emergency number etc. In Personal _info table, Register number is the primary key.

id	Registe	lat	lon	statu	time	date	emer_r	imagepath	thumbima	phone_	fist_nam	last_nan	passwor	people	request	send_re	block_sta
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55	604Mm	23.	90.	1	03:39 AM	5 April, 2018		upload/imag /604Mm.jpe	upload/thu /604Mm.jp	017154	Md.mithu	mia	86093303	523Nn	520mg		
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Figure 4.9: Database table

4.3 Interaction Model

In this system, user can check their current location and send that location to the database server using the mobile apps.

The same mobile app is also use to retrieve data from database and check other member location. The following figure 4.11 shows the interaction process of the system.

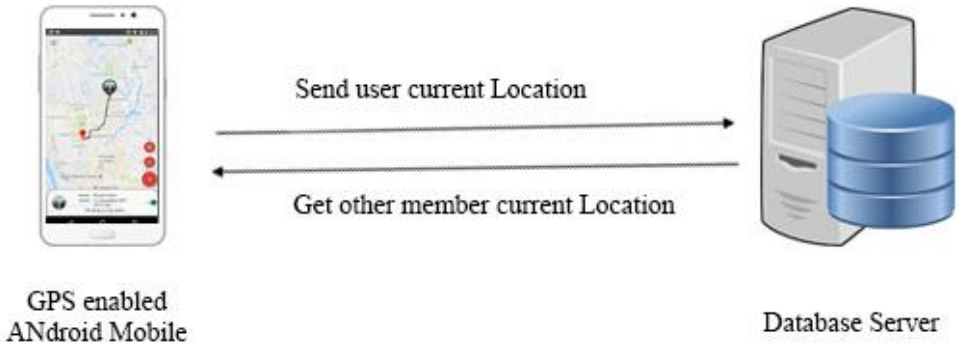

Figure 4.10: Interaction Model of the System

4.4 Implementation of Proposed System

The mobile app is implemented in android platform using Android Studio. Using mobile phone's GPS, the app can locate current campus and send this location to database using JSON.

CHAPTER 5
TESTING PROPOSE SYSTEM

5.1 Testing GPS Location

Testing Global Positioning System (GPS) for location is very important. We tried our best to test global positioning system (GPS) for location very carefully. At first we download global positioning system tester apps. We test location from different place. We receive some locations data. Latitude and longitude may vary in different times at the same place. Then we try by other apps. We took another apps and again staring to test location. We have seen that testing output is coming different from different types of apps. We check by more apps, after that measure our previous data with our new downloaded apps. Which apps give the same or near at same value then we understand this app gives us the actual value. We also test our location by Google maps. Google maps give us the current position accuracy besides latitude and longitude. We took accuracy for the first time in Google maps. After that we are able to measure and understand the difference of accuracy from different position. For testing global positioning system Google maps is the best apps because it provides the correct latitude and longitude with current positioning accuracy.

5.2 Testing Mobile Apps

Mobile app testing is a process by which application software developed for hand held mobile devices is tested for its functionality, usability and consistency. Mobile app testing can be automated or manual type of testing. We have tested our mobile app manually.

5.2.1 Unit testing:

We tested each individual software component to ensure the design is correctly implemented. It contains details knowledge of the system design as per requirements.

5.2.2 System testing:

Full system was tested so that it meets specified requirements.

5.2.3 Usability testing

Usability testing was tested by users. New users understand the application easily, and they spend very short time to understand the procedure. This application is user friendly and all users enjoy the application.

5.2.4 Install/uninstall testing

We tested install/uninstall process on different devices and it was installed/uninstalled smoothly on different devices under different hardware environment.

5.2.5 Black Box testing

In Black Box testing we test our mobile application. Testing completed by given input to the system and observes output. Here, we don't focus on internal on program or code in the system, only concentrate on output. In mobile app testing we follow Black Box testing but face some problem so in that time we solve those problems by testing program and the system is working perfectly.

5.3 Discussion

We get some outcome from our project. Outcomes can be considered as mid-term results. We are seen outcome after the end of the project activity. Some outcomes are given below:

1. Tracking location.
2. Know users position.
3. Get the direction.
4. Sent emergency alert.

From given outcome we could track user's current location and their position by our "**FnF SAFETY INFORMER**" apps. From this project is possible to make a good interaction with user and other member. We can also know the user's location in different time from different places and for that user could find out other member daily activities.

CHAPTER 6
CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

Subsequently all the discussion, we can arrive at the determination that the "FnF Safety Informer" App is a system that can track the user, at a time it's able to show the direction. In this project, we experimented with GPS services across different location and gathered location data for the respective place. Based on the research on the location information, careful location mapping was done to distinguish between the locations of different place. This is a large project area which serves to identify different location. In material life, it saves time, have cost efficiency and improve our communicating system. It is an efficient process for the user to find other user location, within a certain time. Hope, near future of our land, Bangladesh all educational organizations are adopting these types of system and improve the value of the overall communication system.

6.2 Future Scopes

There is a huge room for betterment in our app so that we can deliver this project in a huge arena. Then through this project we can able to identify user location with direction. We can improve our app feature so that it not only tracks real-time location of a student, but also store their daily movement history. Then we will able to establish a user to user good communication eventually. From this project, it has many scopes for our fellow students to build another project or get an idea to build a unique one.

In closing, we can say our android application "FnF Safety Informer" is user- friendly and it can meet the ultimate expectation of an end user as we will make further advance.

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PLAGIARISM

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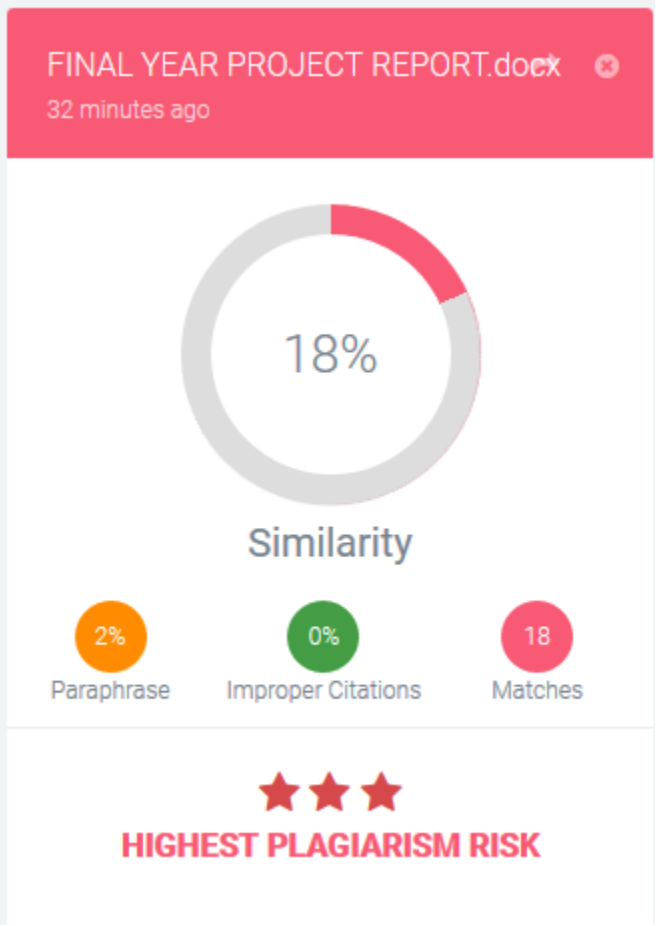

Fig: Plagiarism Report