WOMEN SECURITY WITH TECHNOLOGY

BY

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This report submitted in partial fulfilment of the requirements of the degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project/internship titled **"Women Security with Technology"**, submitted by Syeda Jannatul Boshra, ID No: 172-15-10032, 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 3rd June,2021.

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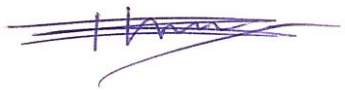

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DECLARATION

We hereby declare that the project work entitled **"Women Safety with Technology**" submitted to the Daffodil International University done by us under the guidance of Shah Md. Tanvir Siddiquee, Assistant Professor of CSE department. We also declare that this project is the outcome of our own effort, that it's not been submitted to the other University for the Award of any degree of diploma.

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ABSTRACT

Safety of Women has become a big concern in the current world. Few reports are filled in police stations regarding rape, violence and harassment. Most of the cases remain silent and victims are also not punished accordingly. Apart from this critical scenario, this proposed project can be a good weapon for women for instant action against the criminal. This project is designed and developed to ensure safety of women by using a normal smartphone and alert authorities while in danger. Safety is the basic right of every citizen. This application allows user to register in the beginning to avoid fraud complains. User can send her update through various services Besides, Government isn't taking effective steps to overcome this issue. So, women safety has become a personal concern.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Women are oppressed by diverse group of heinous people. They face difficulties while travelling alone. Whether it can be rape or any type of physical harassment. The scenario of Bangladesh's society regarding this issue is dangerous. According to a recent research by Ain o Salish Kendra, around 1000 women rape case have been reported within a distance of eight months back to 2020. [2] This rate is increasing in a miserable way. And not every girl who suffers report any file against the victim because of the society admonishment. Even in the sub-continent of Asia is in a critical situation and every woman's life is at stake all over the world. Women are less husky compared to men. So, it's natural for women to being defeated by men. Consequently, they require much support. Following this issue, this android based application conveys some important features which can be helpful for both women and any people facing complications on their way. It cannot terminate the problem but diminish the rate of rape, sexual harassment, assault, theft and robbery. In a dreadful situation, one can call out for help though this application. If anyone travels alone or feels unsafe in a crowded place, they can get all possible help pathways inside this app. The app allows to seek help from victim's known contact by sending location details via message. People can't understand what they should do during any awful or unpleasant situation. The app is a package of all the necessary help resources. This app provides an alternative approach as safeguard rather than traditional ways. Hopefully this application will diminish the risks and can be a great tool for safety purpose.

1.2 Motivation

The cases of rape and sexual assault are increasing in a worst way day by day. In Bangladesh's perspective, this problem has turn into a traumatic issue. A girl is never safe on the road, work place not even at their home! Sometimes they are unsafe in their comfort zone too. Even being stalked by a stranger feels uncomfortable. Being a girl, I also faced those problems. Therefore, I came out with an idea to make each girl safe whenever they are in unpleasant situation. I've chosen Android platform to implement the theme because usage of android phone is increasing in surprising rate. Generally, a victim lost their mind and cannot come up with the situation while in danger. This android application has some simple but powerful features which could be a precautionary step to make girls safe and aware. It is obviously user friendly and can be accessed by any normal android mobile. This app can be a good tool while in danger with minimal efforts and it's portable and reliable. Most of victims are teenagers, students and working women. I prefer the educational institutions and offices should encourage women safety as well as suggest this application to be installed on their android phone.

1.3 Rationale of the Study

When a girl face difficulty regarding safety issue, they suffer twice. First from the accused and secondly from the society. People criticize victim rather than helping her. To get rid of this, many girls don't even share their problem or report any file against the convict. That doesn't minimize the rate of sexual assault at all. The newspaper and television don't even broadcast 50% of the cases. Other cases left in the dark side. [2] So why not taking precautionary steps before facing that dreadful situation? This situation should come to an end as prevention is definitely better than cure. Here I've taken a little initiative through developing an android application which can be a helpful tool for users and enhance their safety while in danger.

1.4 Objectives

- Developing an Android App which is free of cost
- Creating awareness and possible helpline system
- Online and offline support

- Bring changes to related existing Android applications
- Creating a user friendly fast possible support

1.5 Expected Outcome

- Hopefully it will reduce the rate of rape and sexual harassment
- Implementation of the project
- This app can be accessed with any simple android mobile
- App won't crash
- Ad free app
- This application itself can be a safeguard
- Victim can ask for help from nearby any possible ways
- Definitely a user-friendly application
- This app provides offline support except the location service

1.6 Report layout

Chapter 2: Here in this section, I've discussed about the project background and also provided some information about affiliated works in the respected field.

Chapter 3: The necessary design requirements, workflow and diagrams have been discussed in this section.

Chapter 4: The front-end and back-end designs have been lay bare here. It gives the present scenario of the project.

Chapter 5: The implementation process has been discussed here.

Chapter 6: In this chapter, I've revealed the limitations and future scopes of the project and discussed about conclusion

CHAPTER 2

BACKGROUND

2.1 Introduction

Technologies has become a blessing of mankind. Following the trend, the usage of smartphones is increasing rapidly. From a rickshaw-puller to a billionaire almost every person has a smartphone. That's why I've chosen Android as a platform to develop my women safety project. So that it could be handy to maximum people. In this chapter, I'll discuss briefly about the theme of my android project.

2.2 Related Works

- Sending location to known contact
- Adding contacts from phone contact
- Tips for women safety
- Videos for self defense
- User friendly UI

Raksha (Women Safety App):

Figure 2.2.1: Raksha (Women Safety App)

- Personal safety for women [4]
- Emergency helpline numbers
- Calling police
- Message family members
- Finding nearby police stations
- Chatbot support
- Self-defense tips
- Laws regarding women

Women Safety App:

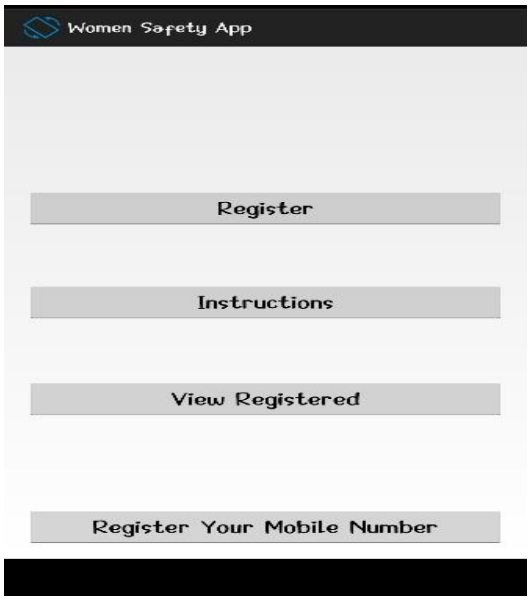

Figure 2.2.2: Women Safety App

- Register known contacts [9]
- Shaking service
- Send emergency message by shaking phone

- **bSafe**

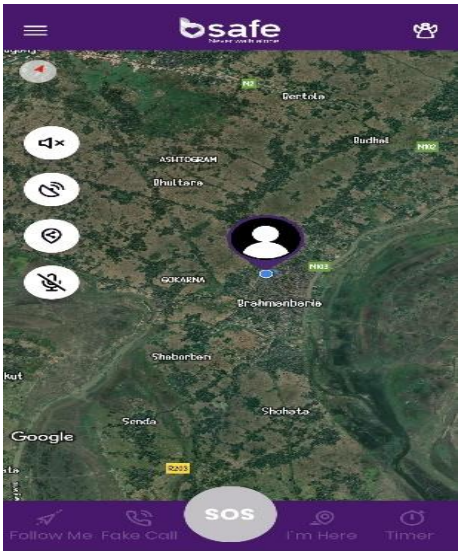

Figure 2.2.3: bSafe

- Socially connected safety network [5]
- Location sharing
- Fake call trigger
- Guardian alert button

Family Locator

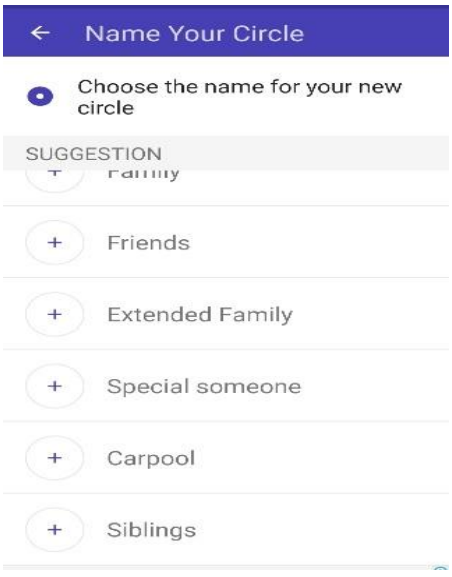

Figure 2.2.4: Family Locator

- Create circles with different names [7]
- Receives real time alarms from circles

SOS alerts

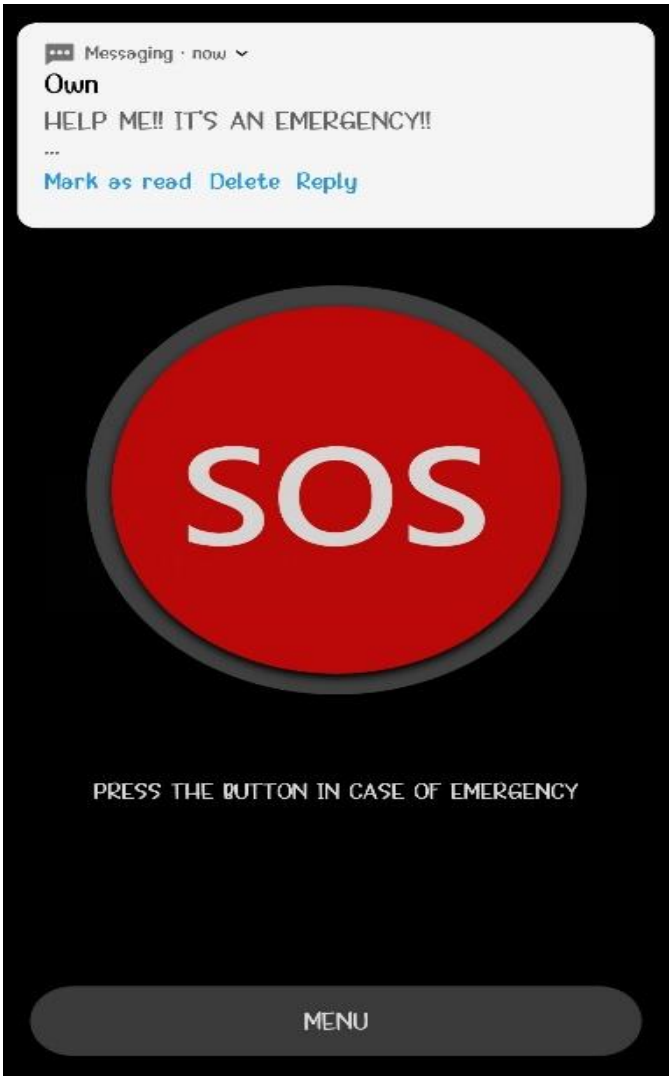

Figure 2.2.5: SOS Alerts

- Register known contacts [6]
- GPS location data
- Send location via text

Women Safety

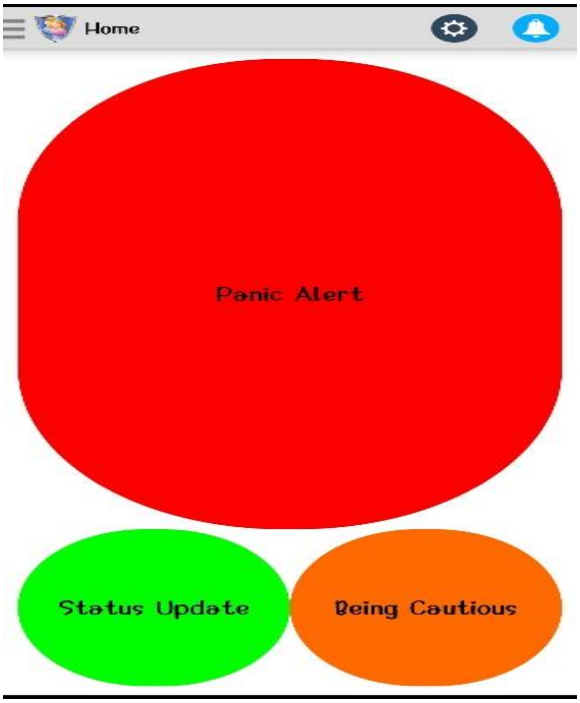

Figure 2.2.6: Women Safety

- Have three SOS buttons, Panic alert, Status update and Being cautious [10]
- Sharing real time location
- Capturing and e-mail pictures
- Play siren
- Taking video clip

2.3 Research Summary

To reduce harassment issues, many people have worked before in this field. Choosing Android platform as a safety purpose is very helpful because now-a-days everyone has smartphone. The above-mentioned projects focus on the maximum safety of women. Most of them allows location service. Those projects have user friendly UIs. They are all available in Google Play Store. Those projects can be helpful for women who needs effortless help in a dangerous situation.

2.4 Scope of the problem

- Some app shows unnecessary adds
- Some apps are paid (Safety app shouldn't cost)
- Some app crashes in the middle
- Some of them don't work accordingly whatever they've claimed
- Some app has complex UI
- Some apps have lengthy process and take long time to load location

2.5 Challenges

The challenges according to users must meet while developing any project. Keeping the challenges in mind, I tried my best to design the application as much user friendly as I could. I've faced some difficulties while making the project. The challenges have been discussed below:

- Keeping the User Interface simple and precise
- Free version of app for all
- No unnecessary advertisements
- Fetching accurate location and sending it over text.
- Storing user data in database
- Supporting almost every version of Android phone

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Requirement Collection and Analysis

Requirement collection is a core part of building any application. It puts the problem, possible solutions and expected outcome on same line. This Android based application service is available only in Android phones. The required hardware and software configuration is given below:

Hardware configuration requirement:

- Mobile Phone
- 1GB Ram(min)
- 30MB memory space
- Operating System: Android

Software configuration requirement:

- Android Marshmallow
- Server: Firebase
- Database: Firebase
- Tool: android-studio-ide
- Android SDK, API 21: Android 5.0 (Lollipop) and above
- Java runtime support

3.2 Features

- Registration and login procedure
- Audio screaming sound
- Recording video

- Calling police
- Searching nearby police stations
- Fetching current location
- Sending current location to known contact through text
- Tips regarding women safety
- Self-defense photos
- Laws regarding women safety

3.3 Use Case Modeling and Description

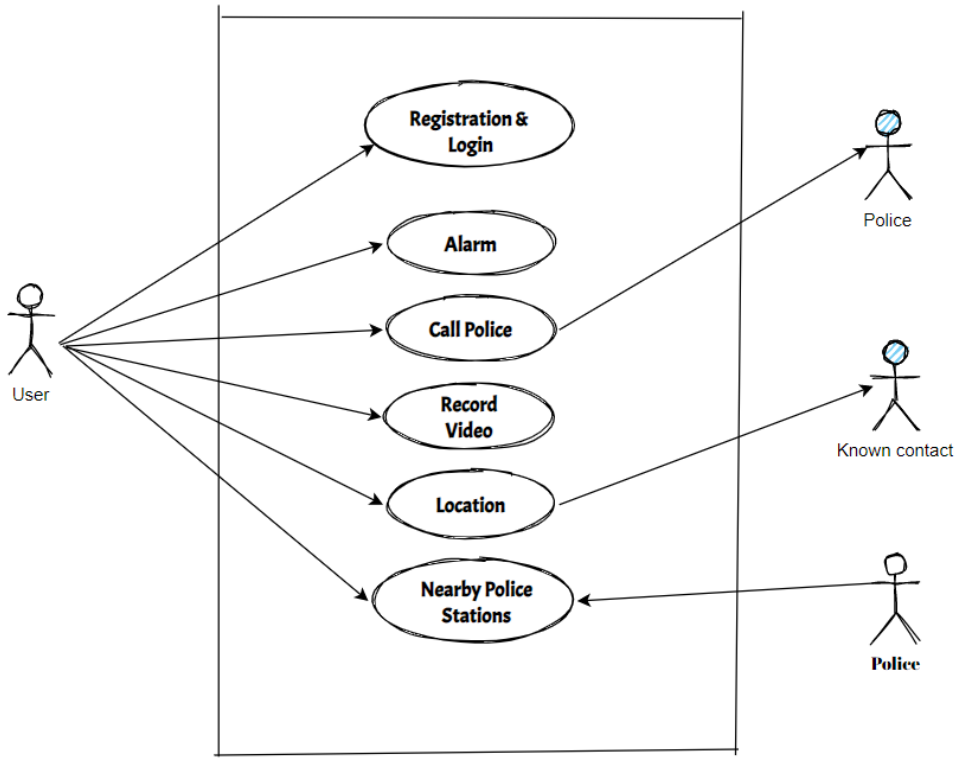

Figure 3.3.1: Use-Case Diagram

Description:

The app in mainly designed for personal safety. So, there is one user only. User firstly registers and login to the app. Then the main menu appears where there are some services. User can click on alarm which means screaming sound button. User can call police. And here is police interaction. User can record instant video. User can send her current location details to a known contact. User can search for nearby police station with a click. [12]

3.4 Logical Data Model [12]

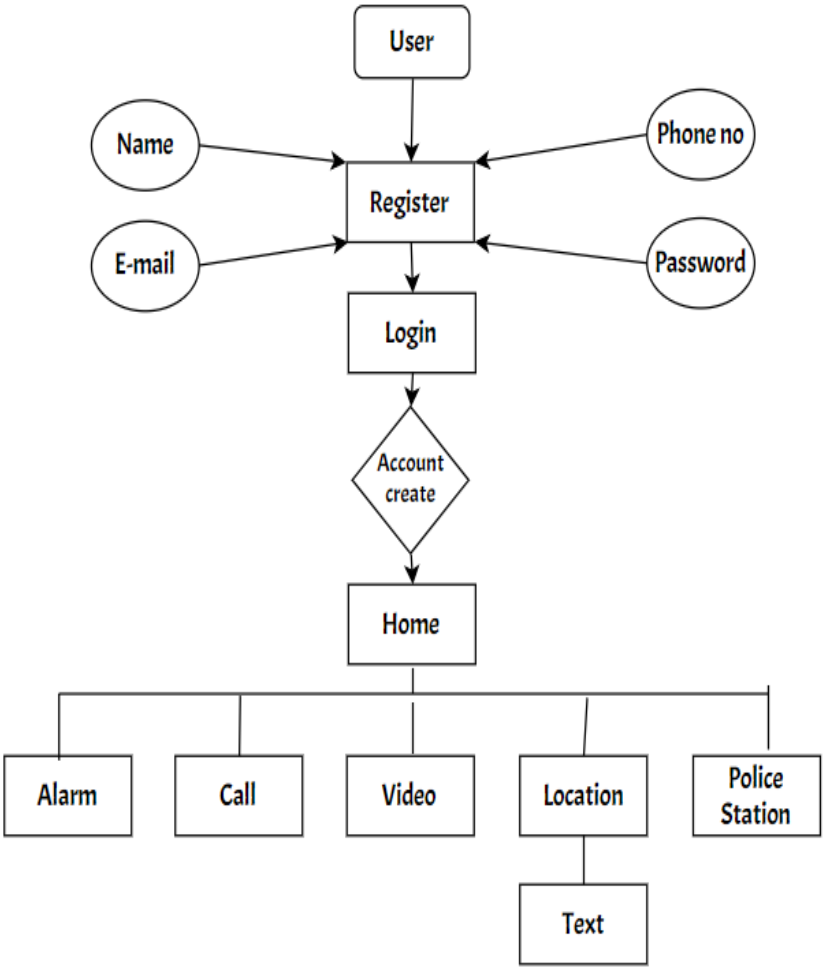

Figure 3.4.1: Logical Data Model

3.5 Data Flow Diagram [12]

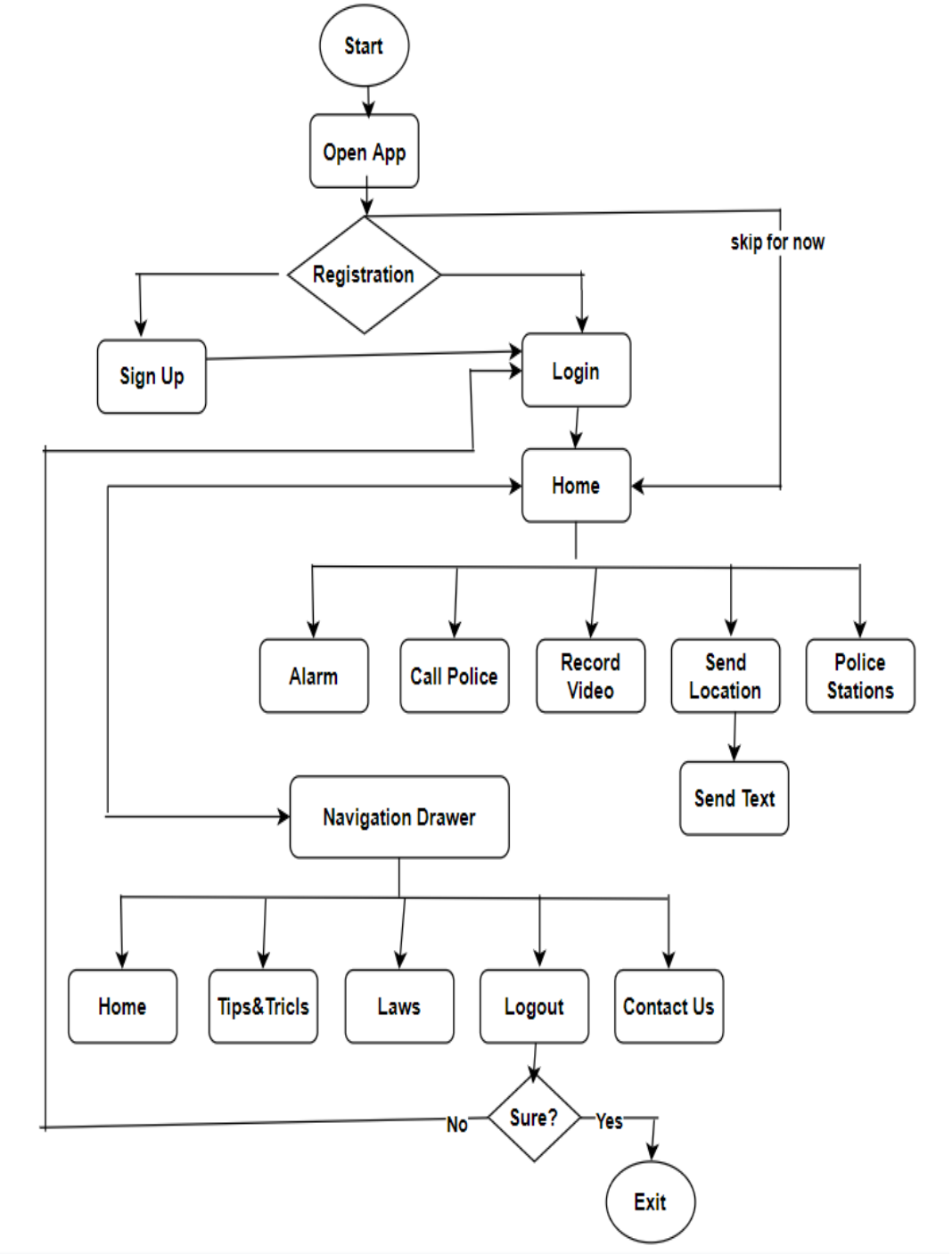

Figure 3.5.1: Data Flow Diagram

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-End Design

The application has been planned considering the user's convenience. The user interface is straightforward, simple and precise to because it'll be an emergency support weapon. The viability, visibility and quality has been checked. The application has been raw coded. No framework has been used. As this application has been designed for emergency usage, there's no exaggeration in front-end design methodology.

4.2 Back-End Design

Back-end design is the crucial part of the application. I've used Android Studio to design and implement the back-end. Java is as language for both back-end and front-end code. 100% Java is used in the project. User given information in the registration process has been stored in firebase database.

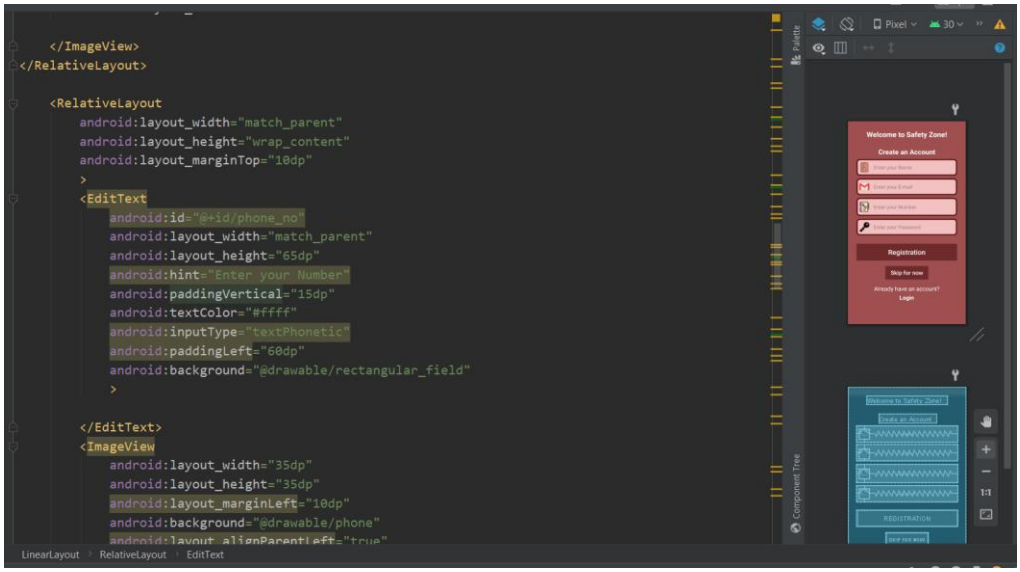

Figure 4.2.1: Back-end design

Firebase Database

User provides some sensitive data in this section as phone number, e-mail address. For that reason, user's information has been stored to database. This part is necessary to avoid fraud complains. As it contains registered user's information. "Firebase Database" of Google has been used to store the data on background. [3]

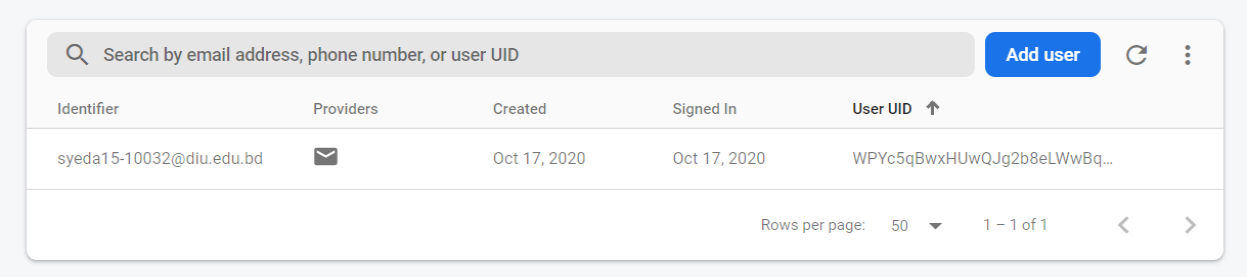

Figure 4.2.2: Firebase database

Interaction Design and UX

User interface refers to the design of the application. It allows the developers to know how users react to the interface and how much comfortable is it. UX gives the feedback of users. Mainly it's a collaboration with the client. So it is an essential part of designing an application. Client's fulfillment has been taken to consideration while designing the application.

4.3 Implementation Requirements

Android SDK:

Android SDK expounds Software Development Kits. This allows a developer a wide range of advancements. The built in and required libraries and necessary API's have been used to demonstrate.

Java:

Java is used as language for the entire application and for logical operation as it's an open source language.

XML:

Android Studio's XML version has been used for designing the application

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

The user data are stored safely in Firebase Database. I've used firebase because there's no use of exaggerating SQL. Because database has minimal usage in the application. Here firebase stores only the registered user's information. [3]

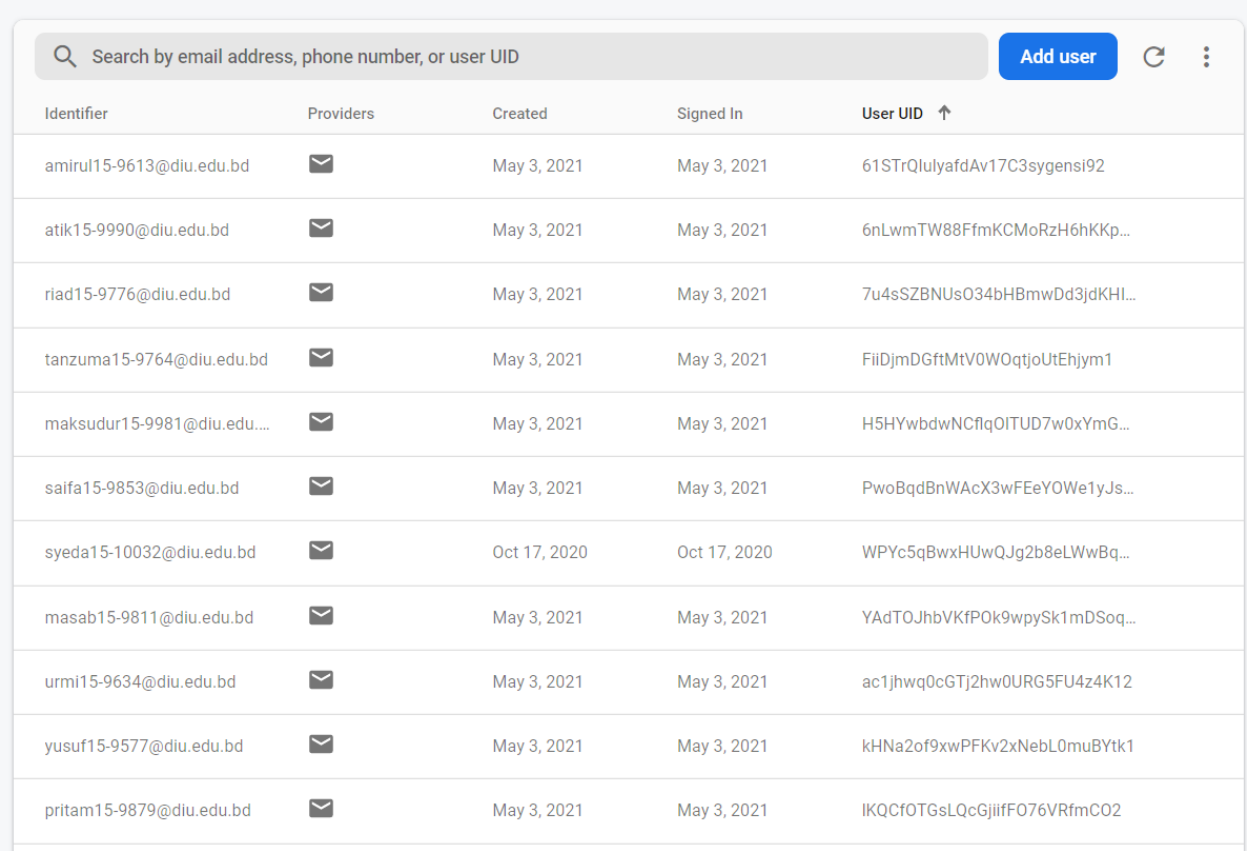

Figure 5.1.1: Implementation of database

Data from Android Studio platform:

Lots of image files and audio file has been added to the project. For proper management, those files have been stored to resource folder in draw able section.

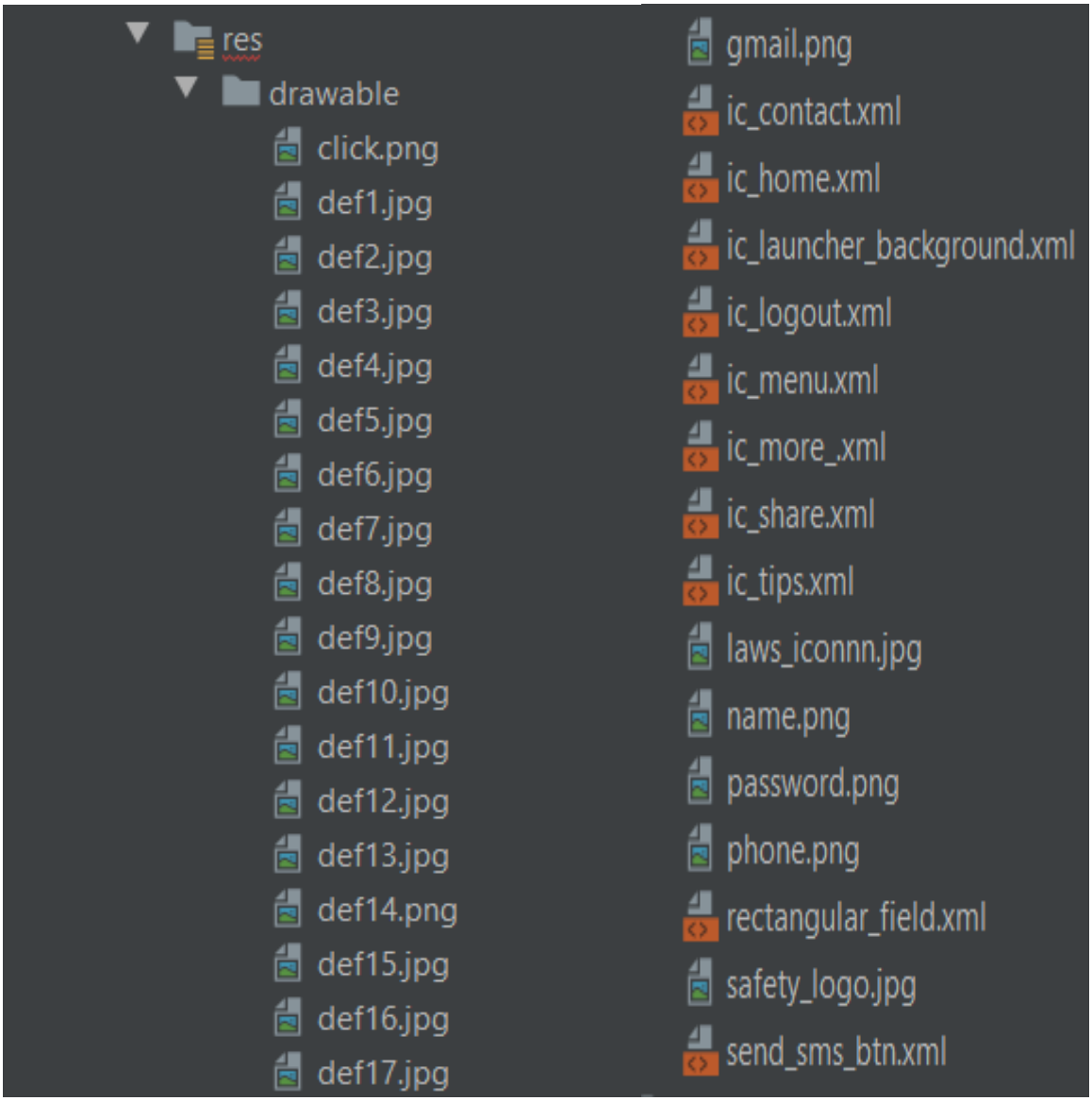

Figure 5.1.2: Data from Android Studio platform

5.2 Implementation of Front-End Design

Registration and Login:

This is the beginning part. A new user will give necessary information for registration and then login. An old user will just login and directly goes to main menu. In case of emergence, user can skip this part too and directly access to home page.

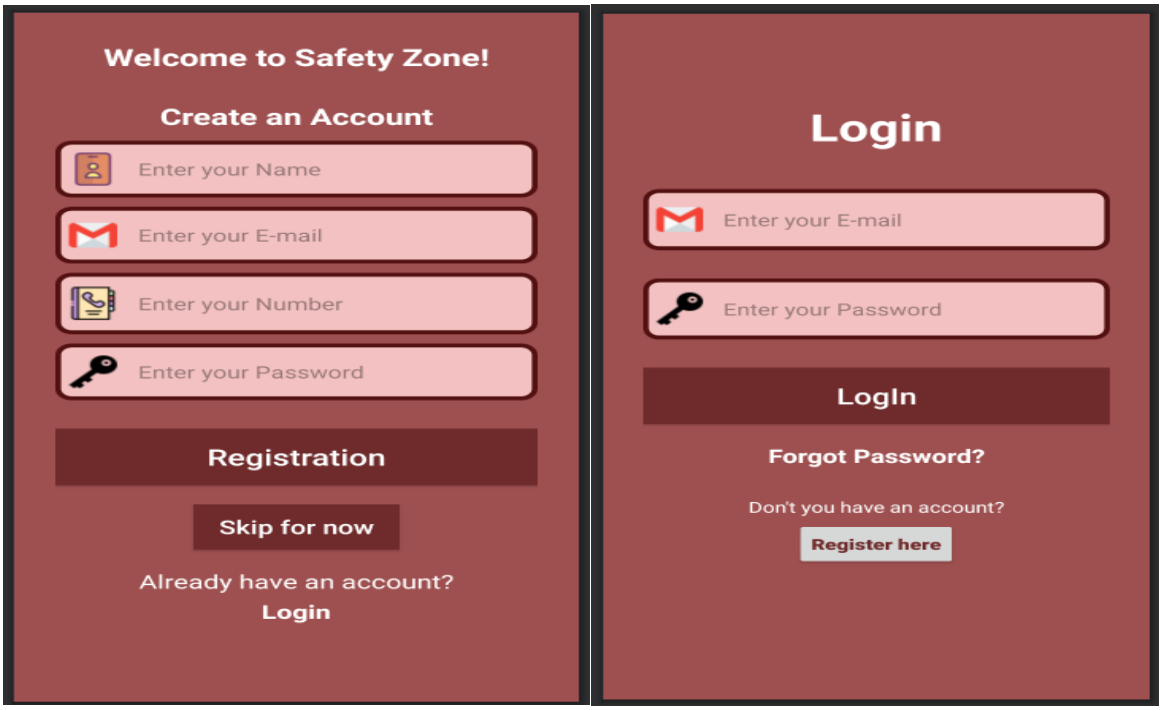

Figure 5.2.1: Registration & Login page

Women Safety Home Page:

Here's the main services of the application. User can take advantage of any of the services given below:

Figure 5.2.2: Women Safety Home Page

Navigation Drawer Module:

Figure 5.2.3: Navigation drawer module

Laws Module:

Necessary laws are provided here in this section. If any girl falls in a situation and can't attack the culprit being afraid of authority, then she can check out the authentic laws regarding women.

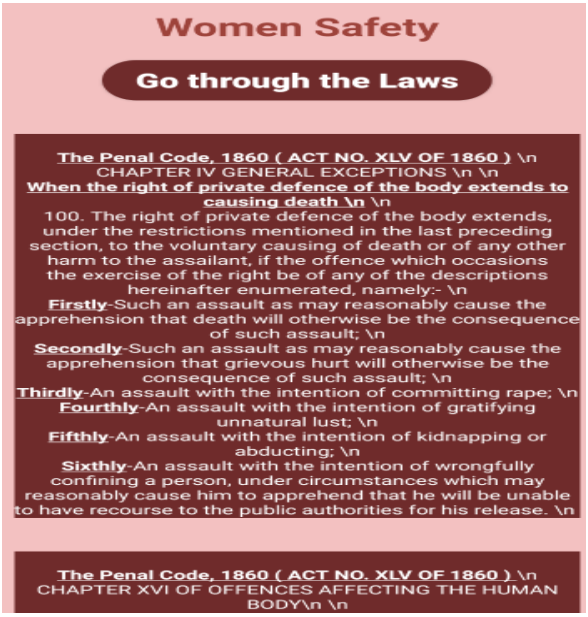

Figure 5.2.4: Laws module

Tips and Tricks Module:

Essential women self-defense tricks with photos have been provided in this section. There are some tips also.

Figure 5.2.5: Tips & tricks module

5.3 Implementation of Back-End

Application Permissions:

All the required permission for running the application:

```
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.CALL_PHONE" />
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-permission android:name="android.permission.SEND_SMS" />
<uses-permission android:name="android.permission.READ_PHONE_STATE"></uses-permission>
```

Figure 5.3.1: Application permissions

Application Dependencies:

All the library dependencies for implementing the application:

```
dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])
    implementation 'androidx.appcompat:appcompat:1.1.0'
    implementation 'androidx.constraintlayout:constraintlayout:1.1.3'
    implementation 'com.google.firebase:firebase-auth:16.0.5'
    implementation 'com.google.firebase:firebase-firestore:17.1.2'
    implementation 'com.google.android.gms:play-services-location:18.0.0'
    testImplementation 'junit:junit:4.13'
    androidTestImplementation 'androidx.test.ext:junit:1.1.1'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.2.0'
    implementation 'androidx.cardview:cardview:1.0.0'


}
```

Figure 5.3.2: Application dependencies

SDK Build Numbers:

The minSDK, TargetSDK version lets to know the device requirements to run the app. This application is able to perform on about 95% Android phone.

```
android {
    compileSdkVersion 28
    buildToolsVersion "29.0.2"
    defaultConfig {
        applicationId "com.exa
        minSdkVersion 21
        targetSdkVersion 29
```

Figure 5.3.3: SDK build numbers

Database Configuration:

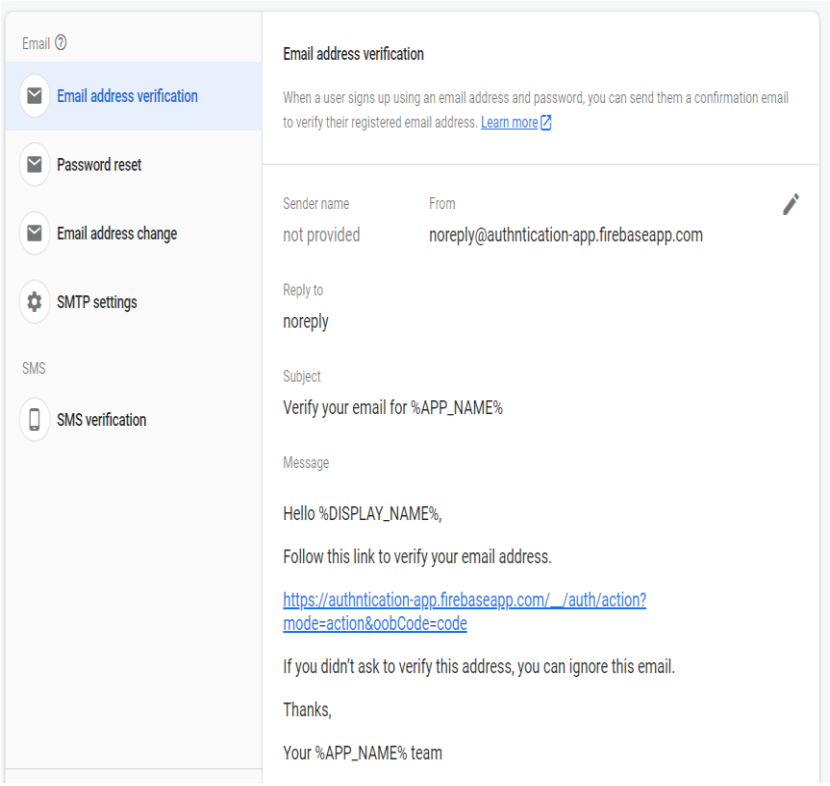

Figure 5.3.4: Database Configuration

Location Service:

Glimpse of background code for location provider is given below [1] :

```
            new AlertDialog.Builder( context: Location_get_and_send.this)
                    .setTitle("Enable GPS Service")
                    .setMessage("We need your GPS location to show Near Places around you.")
                    .setCancelable(false)
                    .setPositiveButton( text: "Enable", (paramDialogInterface, paramInt) -> {
                                startActivity(new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS));
                            })
                    .setNegativeButton( text: "Cancel", listener: null)
                    .show();
        }
    }

    void getLocation() {
        try {
            locationManager = (LocationManager) getSystemService(Context.LOCATION_SERVICE);
            locationManager.requestLocationUpdates(LocationManager.NETWORK_PROVIDER,  minTime: 500,  minDistance: 5, (LocationListe


        } catch (SecurityException e) {
            e.printStackTrace();
        }
    }

    @Override
    public void onLocationChanged(Location location) {
        try {
            Geocoder geocoder = new Geocoder(getApplicationContext(), Locale.getDefault());
            List<Address> addresses = geocoder.getFromLocation(location.getLatitude(), location.getLongitude(),  maxResults: 1);
```

Figure 5.3.5: Location service

5.4 Test Results and Reports

Testing is a crucial part of any development project. After several testing, it's being ensured that every service works properly. The alarm section starts working after one click. The second option is calling police which also requires one click only. Recording video option allows to record instant video of that place. Nearby police searching section allows to give proper information about nearest police stations.

GPS Service Test Report:

The application has been checked and tested several times whether it works or not. The GPS location service works perfectly at any place. It gives an instant update of current location to a known contact through text message. The text message conveys an important note.

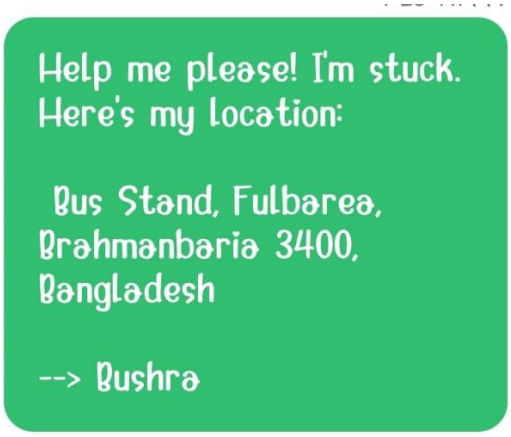

Figure 5.4.1: GPS service test report

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

The application is mainly designed for emergence usage purpose. Not only women, anyone can enjoy the privilege of this service. The goal of the application is to reduce women rape rate and sexual assault. It is also to make women safe, secure and aware of the surrounding.

This app is a portable safeguard. After registration procedure, user can access the main course of the application. In case of emergence, user can also skip the part of login and sign up and directly access to main course. It provides security to users which includes fetching current location, sending SMS update, allows screaming sound, calls police in one click, records video in one click which can be useful as evidence in future, gives information about nearest police stations. The app also allows offline helpline, provides national authentic law information about harassment and assault, tips and tricks. Even the police calling section, video recording, and alarm are both offline and online based. During awkward situation, human can't decide what to do next. Therefore, his application can be a great tool during emergence situations because it is a package of all the necessary helps.

6.1 Limitations

Developing projects are always ongoing process. During the working period of the project, I'd intentions to make the application perfect but some components didn't work properly and somehow, I failed to meet some challenges at last. I assure to amplify the project methodology in the upcoming future updates. There are some limitations here which should overcome.

Scope for future work:

- The project is implemented in only Android platform, it can be implemented in IOS platform
- The SMS service directly takes user to phone's contact, it's a lengthy process. A group of contact can be pre-defined to send information too all at once.
- The location service should work without internet connection

These facilities can improve the productivity of the application and can be a genuine helpline during emergence situations.

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6. SOS alert app. Available at https://play.google.com/store/apps/details?id=com.rghvsapp.android.sosalert [Last accessed on 30-05-2021 at 10.30PM]
7. Family Locator app. Available at https://play.google.com/store/apps/details?id=com.familylocator.familytracker.gps.locationtracker.forandroid [Last accessed on 30-05-2021 at 10PM]
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Plagiarism Report:

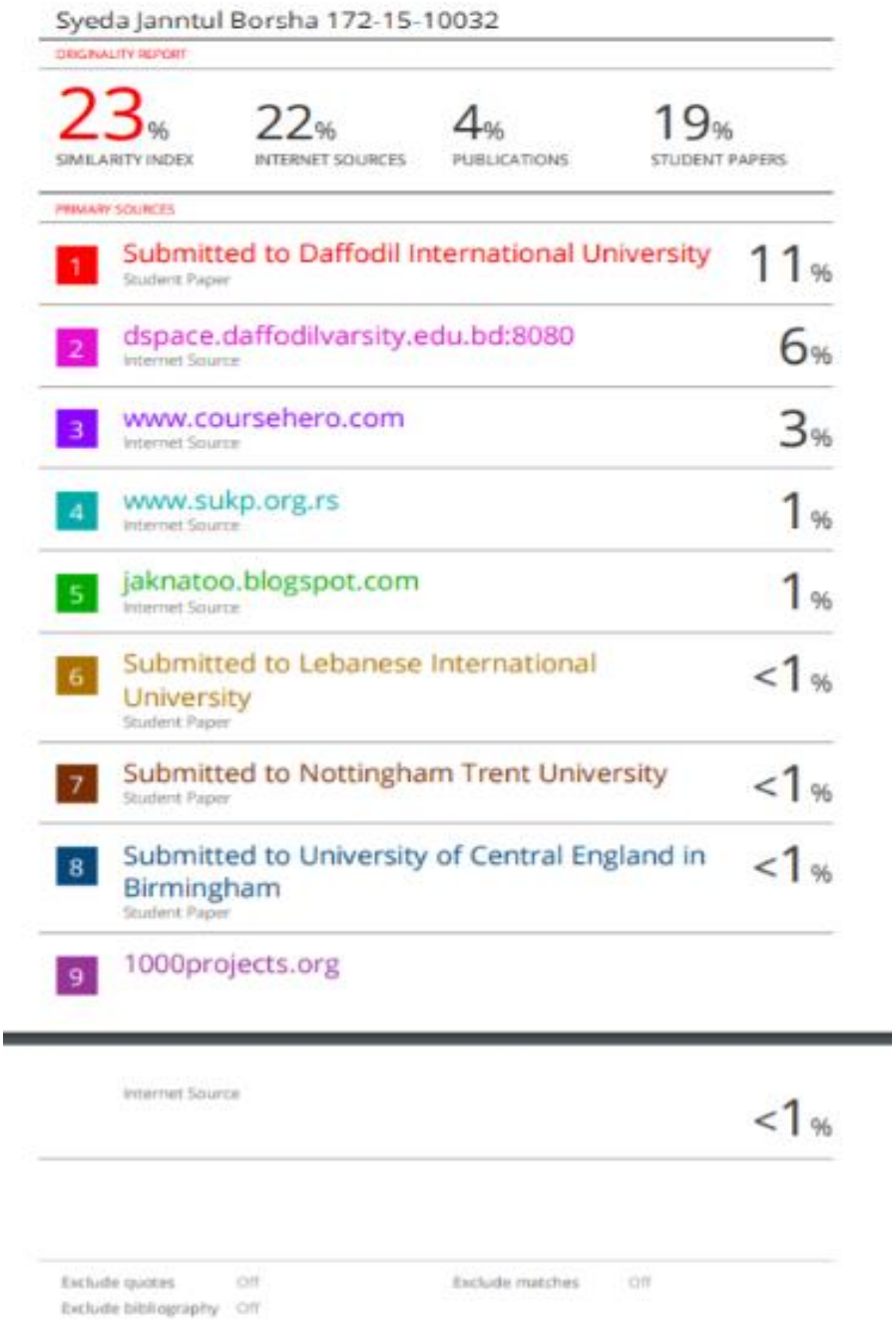

Figure 5.4.2: Plagiarism report