VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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A Mini Project Report

on

WOMEN SAFETY ANDROID APPLICATION

Submitted in partial fulfillment of the requirements as a part of the Mobile Application Development Lab for the VI Semester of degree of ***Bachelor of Engineering*** *in* ***Information Science and Engineering*** *of Visvesvaraya Technological University, Belagavi*

submitted by

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CERTIFICATE

Certified that the project work entitled **"WOMEN SAFETY ANDROID APPLICATION"** has been successfully completed by **PHALGUNI S PRASAD (1RN20IS105) , PRAGNA G PRASAD (1RN20IS106) , PRAJNA S G (1RN20IS107),** Bonafede students of **RNS Institute of Technology, Bengaluru** in partial fulfillment of the requirements for the award of degree in **Bachelor of Engineering in Information Science and Engineering** of **Visvesvaraya Technological University, Belagavi** during academic year **2022-2023.** The mini project report has been approved as it satisfies the academic requirements with respect to the Mobile Applications Development laboratory.

Ms. Poornima S M Project Guide Assistant Professor Department of ISE	**Dr. Suresh L** Professor and HOD Department of ISE RNSIT	**Dr. Ramesh Babu H S** Principal RNSIT

External Viva

Name of the Examiners	**Signature with Date**
1. _____	1. _____
2. _____	2 _____

DECLARATION

We, **PHALGUNI S PRASAD [USN: 1RN20IS105], PRAGNA G PRASAD [USN: 1RN20IS106], PRAJNA S G [USN: 1RN20IS107]** students of VI Semester BE, in Information Science and Engineering, RNS Institute of Technology hereby declare that the Project entitled "WOMEN SAFETY APP" has been carried out by us and submitted in partial fulfillment of the requirements for the *VI Semester of degree* ***of Bachelor of Engineering in Information Science*** *and Engineering of Visvesvaraya Technological University, Belagavi* during academic year 2022-2023.

Place: Bengaluru
Date:12-07-2023

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ABSTRACT

In today's world, people using smart phones have increased rapidly and hence, a smart phone can be used efficiently for personal security or various other protection purposes. The heinous incident that outraged the entire nation have waken us to go for the safety issues and so a host of new apps have been developed to provide security systems to women via their phones. This proposed application for the Women Safety has three modules app can share the location for guardian, second user can search nearby police contact and user can register complaint online about any harassment by a single click. A single click on this app identifies the location of place through GOOGLE GEO LOCATION and sends a SMS message comprising this location to the registered contacts and also call on the first registered contact to help the one in dangerous situations.

Spark Women is a cutting-edge mobile application designed to enhance women's safety and provide a sense of security in today's fast-paced and dynamic world. This app aims to empower women by offering a wide range of features and functionalities that enable them to take control of their personal safety. Spark Women By leveraging the power of technology, creates a safe environment for women, fostering confidence, and encouraging independence. It strives to create a safe ecosystem where women can thrive without fear. By combining technological innovations with community support, this app aims to address the challenges women face in today's society and foster a culture of safety, respect, and equality.

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Place:Bengaluru
Date: 12-07-2023

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Table of Contents

List of figures.

Chapter 1

INTRODUCTION TO ANDROID

1.1 History

In past mobile phones were used only to make calls but with the introduction of smartphone the mobile phone has evolved to a low powered hand-held processing system. This evolution was caused by the operating system for the mobile phones making them smart that have processing and storage of their own. Now the mobile provides numerous functionalities from calling to texting, multimedia sharing, emails, socializing applications, word processor, excel sheets to various multiplayer games and much more.

The operating system for these hand-held devices are iOS by Apple Inc., Windows by Windows Inc. and Android by Google. Among the competitors in smartphone operating system industry Android holds the largest market share in terms of units shipped worldwide and number of users.

Android is an open-source operating system based on Linux kernel on which applications run on an application framework that controls the activities supported by the libraries and Dalvik virtual machine which compiles and converts all java class files into a single file. There can be number of virtual machines running simultaneously on a single device handling different applications or instances of an application.

Android operating system provides memory management and process management to the applications and services running. Each release of android improved user experience and brought enhanced features. In 2012 Android became the most popular operating system for mobile devices, surpassing Apple's iOS, and, as of 2020, about 75 percent of mobile devices run Android.

1.2Android Versions

The development of the Android operating system was started in 2003 by Android, Inc. Later on, it was purchased by Google in 2005. The beta version of Android OS was released on November 5, 2007, while the software development kit (SDK) was released on November 12, 2007

The first Android mobile was publicly released with Android 1.0 of the T-Mobile Gl (aka HTC Dream) in October 2008. The first Android version which was released under the numerical order format was Android 10.

Code name	Version numbers	API level	Release date
No codename	1.0	1	September 23, 2008
No codename	1.1	2	February 9, 2009
Cupcake	1.5	3	April 27, 2009
Donut	1.6	4	September 15, 2009
Éclair	2.0 - 2.1	5 - 7	October 26, 2009
Froyo	2.2 - 2.2.3	8	May 20, 2010
Gingerbread	2.3 - 2.3.7	9 - 10	December 6, 2010
Honeycomb	3.0 - 3.2.6	11 - 13	February 22, 2011
IceCreamSandwich	4.0 - 4.0.4	14 - 15	October 18, 2011
Jelly Bean	4.1 - 4.3.1	16 - 18	July 9, 2012
KitKat	4.4 - 4.4.4	19 - 20	October 31, 2013
Lollipop	5.0 - 5.1.1	21- 22	November 12, 2014
Marshmallow	6.0 - 6.0.1	23	October 5, 2015
Nougat	7.0	24	August 22, 2016
Nougat	7.1.0 - 7.1.2	25	October 4, 2016
Oreo	8.0	26	August 21, 2017
Oreo	8.1	27	December 5, 2017
Pie	9.0	28	August 6, 2018
Android 10	10.0	29	September 3, 2019
Android 11	11	30	September 8, 2020
Android 12	12	31	October 4, 2021
Android 13	13	33	August 15, 2022
Android 14	14	34	Q3 2023

Table 1.1 Android Versions

1.3 Android Architecture

Android operating system is a stack of software components which is roughly divided into five sections and four main layers as shown below in the architecture diagram.

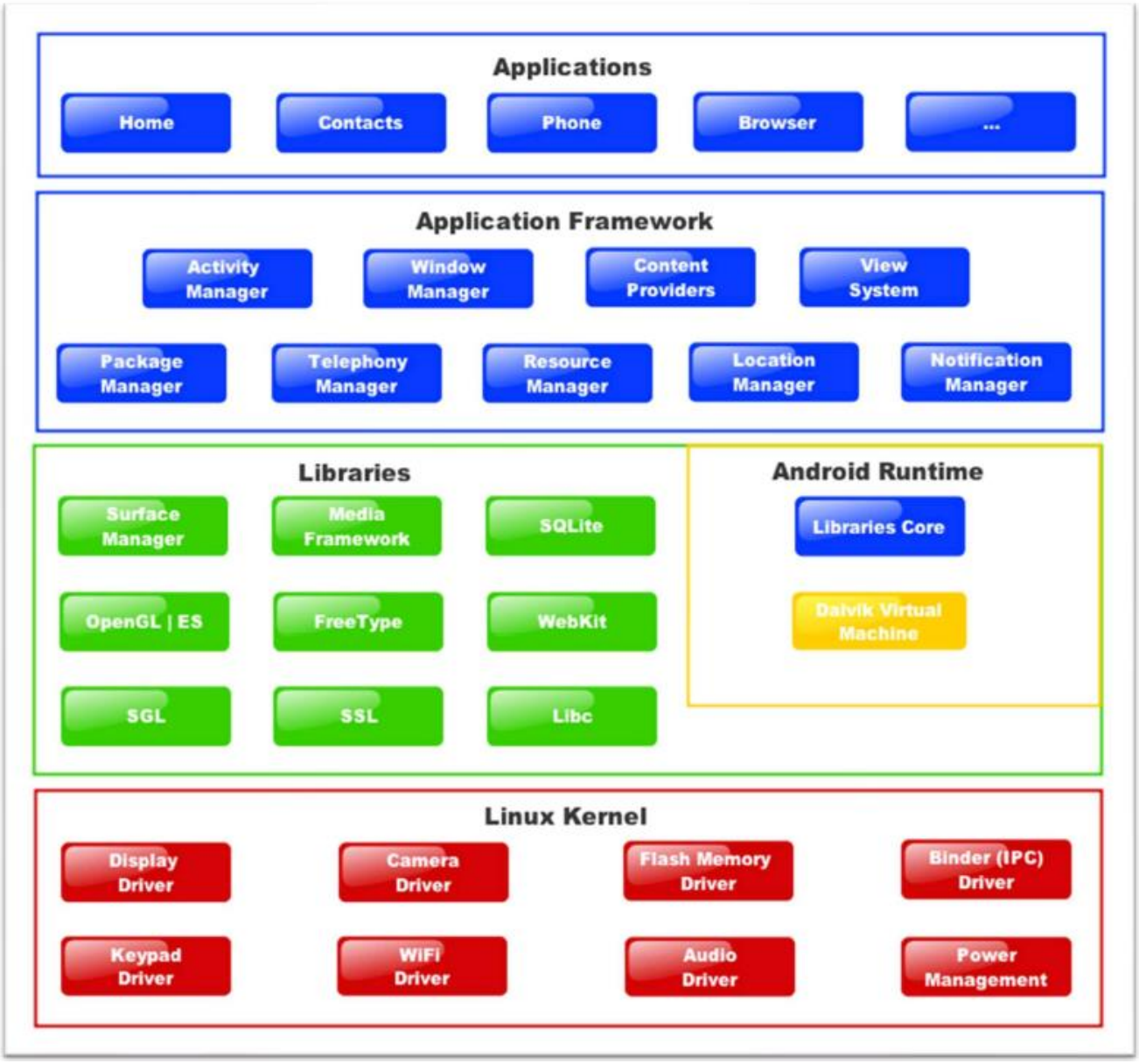

Figure 1.1 Android Architecture diagram

Linux Kernel: This is the layer at the very bottom of the Android architecture. All other layers run on top of the Linux kernel and rely on this kernel to interact with the hardware. This layer contains all the essential hardware drivers which help to control and communicate with the hardware. It provides the basic functionality like Process Management, Memory Management and Device Management like Camera, Display, Flash etc.

Libraries: This is a set of common functions of the application framework that enables the device to handle different types of data. Some of the most important set of libraries that are included are - Web kit which is the browser engine to display HTML, OpenGL used to render 2-Dor 3-D graphics on to the screen, SQLite which is a useful repository for storing and sharing of application data.

Summary of some key core Android libraries available to the Android developer is as follows:

android.app - Provides access to the application model and is the cornerstone of all Android applications.

android.content - Facilitates content access, publishing and messaging between applications and application components.

android.database - Used to access data published by content providers and includes SQLite database management classes.

android.opengl - A Java interface to the OpenGL ES 3D graphics rendering API

android.os - Provides applications with access to standard operating system services including messages, system services and inter-process communication.

android.text - Used to render and manipulate text on a device display.

android.view - The fundamental building blocks of application user interfaces.

android.widget - A rich collection of pre-built user interface components such as buttons, labels, list views, layout managers, radio buttons etc.

android.webkit - A set of classes intended to allow web-browsing capabilities to be built into applications.

Android Runtime : The Android runtime mainly consist of the Dalvik Virtual Machine (DVM). DVM is very much like the standard Java Virtual Machine (NM) except that it is optimized for mobile devices that have low processing power and low memory. DVM generates a.dex file from the .class file at compile time and provides higher efficiency in low resources devices. Each application has its own process and an instance of DVM.

android runtime also provides core libraries that enable the Android developers to create applications using the Java language.

Application Framework: The Android runtime mainly consist of the Dalvik Virtual Machine

(DVM). DVM is very much like the standard Java Virtual Machine (JVM) except that it is optimized for mobile devices that have low processing power and low memory. DVM generates a.dex file from the .class file at compile time and provides higher efficiency in low resources devices. Each application has its own process and an instance of DVM. Android runtime also provides core libraries that enable the Android developers to create applications using the Java language.

Applications : This is the topmost layer in the architecture and the layer where the application that we develop fits in. This layer provides several pre-installed applications that are default for certain things like Contacts Books, Browser etc..

1.4 Android Studio Installation

Android Studio is the official integrated development environment (IDE) for Android application development. It is based on the IntelliJ IDEA, a Java integrated development environment for software, and incorporates its code editing and developer tools.

To support application development within the Android operating system, Android Studio uses a Gradle-based build system, emulator, code templates, and GitHub integration. Every project in Android Studio has one or more modalities with source code and resource files. These modalities include Android app modules, Library modules, and Google App Engine modules.

PROCEDURE TO BE FOLLOWED TO DOWNLOAD AND INSTALL ANDROID STUDIO:

STEP 1 : Android Studio and the Software Development Kit can be downloaded directly from any web browser using the below link.

https://developer.android.com/studio

STEP 2 : Android Studio is available for Mac, Windows, and Linux desktop platforms.

Windows

To install Android Studio on Windows, proceed as follows:

1. If you downloaded an .exe file (recommended), double-click to launch it. If you downloaded a .zip file, unpack the ZIP, copy the android-studio folder into your Program

Files folder, and then open the android-studio> bin folder and launch studio64.exe (for 64-bit machines) or studio.exe (for 32-bit machines).

11.Follow the setup wizard in Android Studio and install any SDK packages that it recommends.

Mac

To install Android Studio on your Mac, proceed as follows:

1. Launch the Android Studio DMG file.

11. Drag and drop Android Studio into the Applications folder, then launch it.

111. Select if you want to import previous Android Studio settings, then press OK

1v. The Android Studio Setup Wizard guides you through the rest of the setup, which includes downloading Android SDK components that are required for development.

Linux

To install Android Studio on Linux, proceed as follows:

1. Unpack the .zip file you downloaded to an appropriate location for your applications, such as within /usr/local/ for your user profile, or /opt/ for shared users. If you're using a 64-bit version of Linux, make sure you first install the required libraries for 64-bit machines.

11. To launch Android Studio, open a terminal, navigate to the android-studio/bin/ directory and execute studio.sh.

111. Select whether you want to import previous Android Studio settings or not, then click OK.

1v. The Android Studio Setup Wizard guides you through the rest of the setup, which includes downloading Android SDK components that are required for development

CHAPTER 2

INTRODUCTION TO PROJECT

2.1 What is Mobile App Development?

An application is software that is used to accomplish specific requirements of user. For e.g. To read PDF files, creating documents, gaming applications, applications to play audio and video files etc. For all these types of different requirements different applications needs to be developed. Application development is the process of designing, building, and implementing software applications. It can be done by massive organizations with large teams working on projects, or by a single freelance developer. Application development defines the process of how the application is made, and generally follows a standard methodology.

Mobile application development is the process to making software for smartphones and digital assistants, most commonly for Android and iOS. The software can be preinstalled on the device, downloaded from a mobile app store or accessed through a mobile web browser. The programming and markup languages used for this kind of software development include Java, Swift, C# and HTML5.

Mobile app development is rapidly growing. From retail, telecommunications and e-commerce to insurance, healthcare and government, organizations across industries must meet user expectations for real- time, convenient ways to conduct transactions and access information. Today, mobile devices-and the mobile applications that unlock their value-are the most popular way for people and businesses to connect to the internet. To stay relevant, responsive and successful, organizations need to develop the mobile applications that their customers, partners and employee's demand.

Yet mobile application development might seem daunting. Once you've selected the OS platform or platforms, you need to overcome the limitations of mobile devices and usher your app all the way past the potential hurdles of distribution.

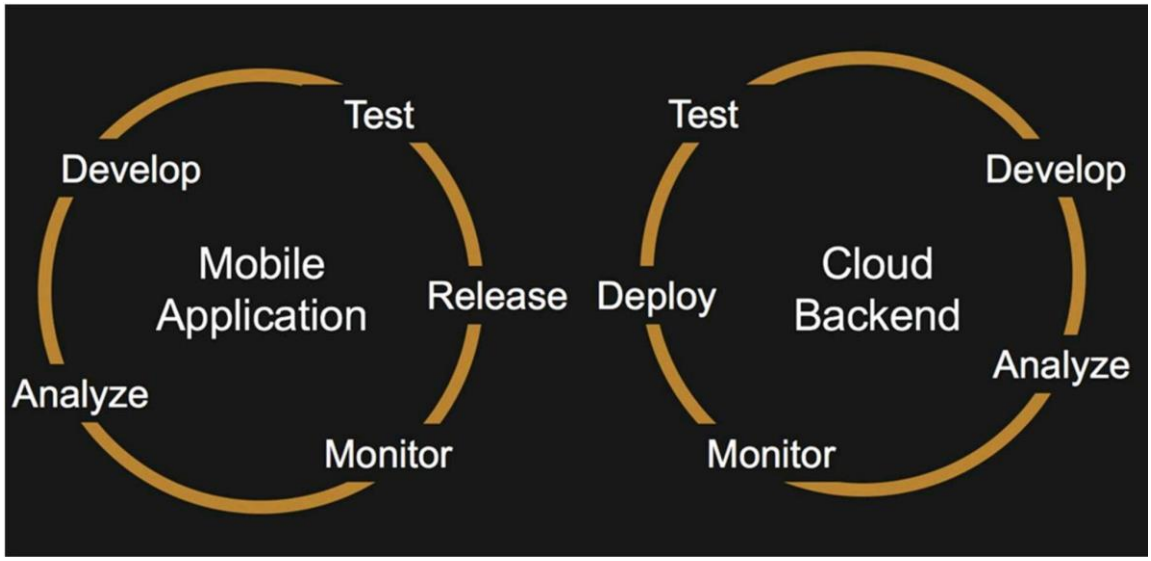

Figure 1.1 Mobile Application Development Lifecycle

2.2 Safety for women

- Today, the safety of women in India is widely discussed everywhere. Now it has become a serious problem. The crime rate is skyrocketing. Women are not safe either at home or outside. Female travelers from other countries also find themselves in a precarious position when traveling to India. But these fears cannot stop them from any social activity. There are laws, but there must be adequate security measures that must be strictly followed to protect against violence against women.
- Violence and discrimination threaten women's lives and prevent them from participating in any social activities. In India, she is revered by those who consider her goddess of the surge in crimes against women through Durga, Sati and Savitri. Previously, women were confined to their homes, but urbanization has forced women to break this prison and show the world their talents on an equal footing with men.
- Women showed off their talents in everything from taxi drivers to CEOs of multinational corporations. A woman should let go of the idea that she can't do anything when she leaves the house. They must admit that she also stepped on the moon. Kalpana Chawla, the first Indian woman to land on the moon, has become a role model not only for women around the world, but also for all men who dream of becoming astronauts. She has become an inspiration all over the world.
- Domestic violence, sexual assault and murder are common forms of violence against women in India. Dowry death is an extreme form of murder. Indians still have the psychology that a dowry is a tradition and the girl's father loses everything to pay for it. Domestic violence, or domestic violence, is committed by one partner with another in a relationship. Domestic violence is on the rise in India. 70% of women are victims of domestic violence. This leads to depression and suicide.
- It is not a direct murder, but the cause of the murder is certain. Moreover, girls are forced to marry at a young age. This young bride is not yet old enough to understand her responsibilities. Acid injection is a form of brutal attack that ruins the life of a beautiful girl. "Relationship cheating" is another common crime against women. A man easily breaks up with his wife and starts a new life with another bride.
- Women's safety is a major issue in India and many organizations have started working on it after the Nirbhaya incident. It is dangerous to travel alone at night in today's atmosphere, especially for women; it is dangerous to go alone since women are not as powerful as men. Identifying and utilizing resources to get you out of unsafe situations is an effective way to reduce your risks of being a victim of violent crime.

- As the rate of such crimes against women keeps increasing, the freedom of women is decreasing. Critical situations can arise at anytime, anywhere. Women need to learn a few self-defense tips and tricks to be useful in the worst-case scenario. Numerous videos and information about such protection techniques are available on the Internet to educate women about safety. Key and borderline advice for women: If you feel anything unsafe, we recommend that you leave immediately.
- Violence on public transport is common, so she should avoid using public transport at night, and if that's not possible, make sure she's traveling with enough crowds. Do not pick up strangers if she drives alone. Because their intentions are unclear. If you use your smartphone wisely, you can become your bodyguard in an emergency. There are many convenient devices on the market to help in an emergency. Keeping these gear, sprays, and small knives in your wallet can be useful in case something goes wrong. At such dangerous times , an android application which can help the women in need to get help or escape a situation as easily as possible is necessary. A safety app on your phone can help you lower your risk and receive help whenever you need it. Prevention is always better than cure!

2.3 Problem Statement

The basic problem with the police handling of critical occurrences such as women's harassment is that they are not always able to respond swiftly to distress calls. These limitations include not knowing the location of the crime and not knowing the crime is occurring at all. It is difficult for the victim to call the police confidently and quietly. So, the problem is to provide safety in a more efficient way for women by utilizing the advancements in technology. To aid in the removal of these prohibitions, this android mobile application presents the Women's Safety Application Suraksha, a smartphone app that provides a reliable way for women to inform about their location during emergency situations to their closed ones or also to call the police in an emergency.

2.4 Objectives

The purpose of this project is as follows:

i. To provide a safe environment for women through smartphones, as most people now carry smartphones with them everywhere they go.

ii. To provide an easier way to immediately contact the police or other women's helpline numbers.

iii. To send a message containing the user's geographical location to a pre-selected list of emergency contacts such as your loved ones.

iv. To train and support women living in communities to engage with community safety issues.

v. To provide a platform for women to express their grievances, or any abuse against them to the safety communities without being hesitant.

vi. To provide 24/7 active help and companion for women so that they don't ever feel that they are alone in the middle of a crisis situation.

vii. To build an effective, fast and reliant system to make the women of India feel safe and empowered.

viii. To provide a user-friendly and highly scalable interface for women.

2.5 Scope

There is scope for future development of this project. The mobile application development technology keeps finding new methods and technologies on a day-to-day basis for women empowerment as it is a critical need. It is dynamic and not static. The skills which is prominent today will become obsolete in a few days. To keep in pace with the technical developments, the application, Suraksha may be additionally improved.

CHAPTER 3

ABOUT SOFTWARE

Android Studio is the official Integrated Development Environment (IDE) for android application development. Android Studio provides more features that enhance our productivity while building Android apps.

Android Studio was announced on 16th May 2013 at the Google I/O conference as an official IDE for Android app development. It started its early access preview from version 0.1 in May 2013. The first stable built version was released in December 2014, starts from version 1.0. Since 7th May 2019, Kotlin is Google's preferred language for Android application development. Besides this, other programming languages such as Java are supported by Android Studio.

3.1 Features of Android Studio

- It has a flexible Gradle-based build system.
- It has a fast and feature-rich emulator for app testing.
- Android Studio has a consolidated environment where we can develop for all Android devices.
- Apply changes to the resource code of our running app without restarting the app.
- Android Studio provides extensive testing tools and frameworks.
- It supports Java, C++ and NDK.
- It provides build-in supports for Google Cloud Platform. It makes it easy to integrate Google Cloud Messaging and App Engine.

3.2 Android Studio Project Structure

The Android Studio project contains one or more modules with resource files and source code files.

These include different types of modules-

- Android app modules
- Library modules
- Google App Engine modules

By default, Android Studio displays our project files in the Android project view, as shown in the below Figure 2.1. This view is formed by modules to provide quick access to our project's key source files.

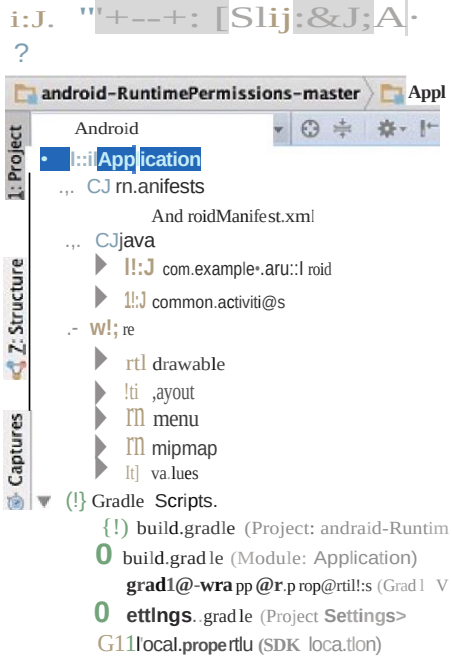

Figure 3.1 Android Project Structure

These build files are visible to the top-level under Gradle Scripts. And the app module contains the following folders:

- manifests: It contains the AndroidManifest.xml file.
- java: It contains the source code of Java files, including the runit test code.
- res: It contains all non-code resources, UI strings, XML layouts, and bitmap images.

We will see the actual file structure of the project by selecting the Project from the Project dropdown.

3.3 Android Studio User Interface

The Android Studio main window contains the several logical areas which are shown in the below Figure 3.2:

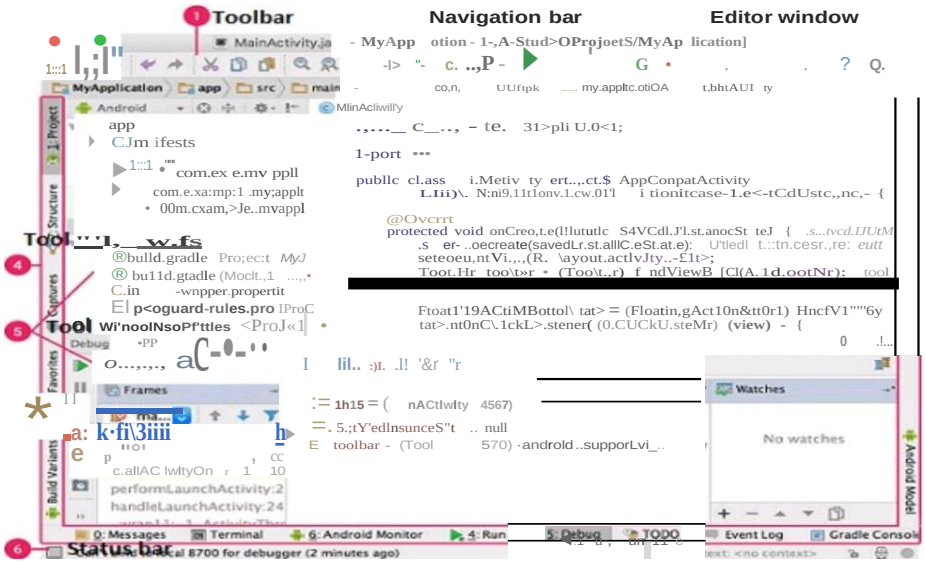

Figure 3.2 Android Studio Main Window

1. The **toolbar** provides us a wide range of actions, which includes running apps and launching Android tools.
11. The **navigation bar** helps in navigating our project and open files for editing. It gives a compact view of structure visible in the Project window.
111. The **editor window** is a space where we can create and modify our code. On the basis of the current file type, the editor can change. While viewing a layout file, the editor displays the Layout Editor.
1v. The **tool window bar** runs around the outside the IDE window and contains buttons that allow as to expand and collapse individual tool windows.
v. The **tool windows** provide us access specific tasks like search, project management, version control, and more. We can able expand and collapse them.
v1. The **status bar** displays the status of our project and IDE itself, as well as any messages or warnings.

3.4 Gradle Build System

Gradle build used as the foundation of the build system in Android Studio. It uses more Android-specific capabilities provided by the Android plugin for Gradle. This build system runs independently from the command

line and integrated tool from the Android Studio menu. We can use build features for the following purpose:

- Configure, customize, and extend the build process.
- We can create multiple APKs from our app, with different features using the same project and modules.
- Reuse resource and code across source sets.

3.5 Install and Setup Android Studio and Java JDK

i. JDK installation

- **Step 1:** Download the JDK by using below link according to your Operating system. https://www.oracle.com/java/technologies/javase-jdk16-downloads.html
- **Step 2:** Install the downloaded JDK in PC.
- **Step 3:** After Installing, Right Click on This PC or My Computer on Desktop

- **Step 4:** Click on Properties
- **Step 5:** Click on Advance System Settings
- **Step 6:** Click on Environment Variables in the bottom
- **Step** 7: Double Click on path in the second dialog box
- **Step 8:** Click on New to add path
- **Step 9:** Go to JDK path in C Drive
- **Step 10:** Copy and paste the JDK path in system settings
- **Step 11:** Go to JRE path in C drive
- **Step 12:** Copy and paste the JRE path in system settings
- **Step 13:** For verification, Go to Command Prompt and press javac command. If it is getting executed, then you have successfully installed the Java JDK.

ii. Android Studio Setup

- **Step 1:** Open Android Studio
- **Step 2:** Click on create new project
- **Step 3:** Select Empty Activity
- **Step 4:** You can name your application of your own choice in Name field and you can select your language either Java/Kotlin, and you can also select the Minimum SDK- The lower the version you select as a developer, your app will run approx. in all the existing devices. Then press finish to start programing.
- **Step 5:** It takes time to build gradle which depends on your Internet connectivity and system configuration. (Approx. 1-3 minutes)
- **Step 6:** After gradle building, you will get the Android Studio Main Window.
- **Step** 7: Run the program by clicking on Run command.
- **Step 8:** Output will be showed in Virtual Emulator as your mobile phone.

CHAPTER 4

SYSTEM REQUIREMENTS

Requirements analysis is critical for project development. Requirements must be documented, actionable, measurable, testable and defined to a level of detail sufficient for system design. Requirements can be architectural, structural, behavioral, functional, and non-functional. A software requirements specification (SRS) is a comprehensive description of the intended purpose and the environment for software under development.

4.l Hardware Requirement

- Minimum of 8GB RAM for efficient working
- 2 GB of available disk space minimum, 4 GB recommended
- Preferably SSD (Solid state drive) instead of HDD
- Minimum 512MB graphics card for better performance of virtual emulator
- 1280 x 800 minimum screen resolution
- Keyboard
- Mouse
- Display Unit
- Dual-Core or AMD with minimum of 1.5GHz speed

4.2 Software Requirement

- Microsoft Windows 7/8/10 (32-bit or 64-bit)
- Android Studio Bundle
- Java JDK

CHAPTER 5

DESIGN AND IMPEMENTATION

5.l SYSTEM DESIGN

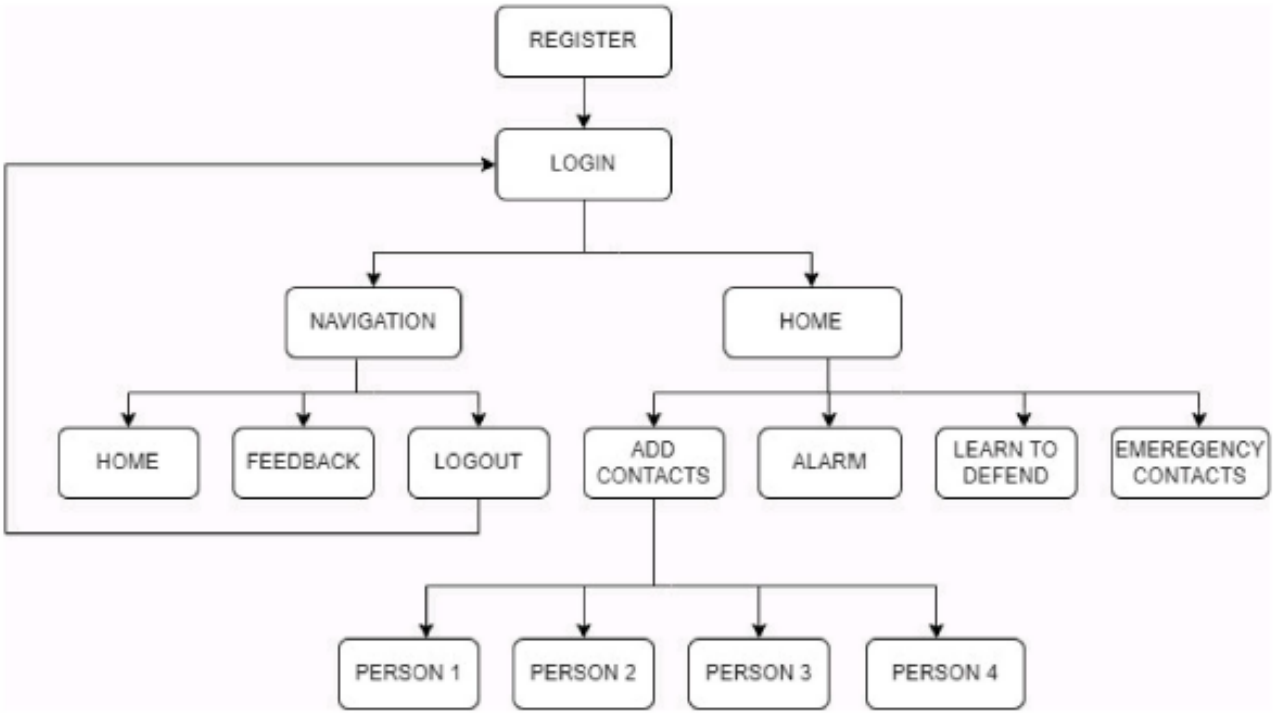

Figure 5.1 Flow of the project

Once the app is installed in the android mobile phone, the user will be able to open the app and the Welcome page which consist of our Logo and Motto appears on the screen as the app starts. A user can click on Get Started and register through email and password and all the details are sent to the firebase. This leads to the login page in which the email and password are conformed from the firebase and the users can login to their account. A user can also reset the password if she has forgotten the password. As soon as user reaches the home page of the app they are provided with four options along with the navigation bar at the top left. They can add up to four contacts to whom they wish to send their location during an emergency situation. The alarm feature triggers a siren and also sends messages containing the live location of the user to the four previously added contacts. The Learn to Defend option leads to a set of videos that help women to learn basic self-defense techniques in order to protect themselves. There are Emergency Contacts provided in the app and a single click leads to a phone call to the required helpline number. The home page is the first fragment of the navigation bar. The next fragment is the Feedback page. By clicking this option, the user can give a rating for the app and also share her opinion about the app which is stored in the firebase. This helps us in improving our app. The last fragment in the navigation bar is the Logout option which leads back to the Login page of the app.

5.2 DESIGN USING XML

5.2.1 Strings

A string resource provides text strings for the application with optional list styling and formatting. String array is an XML resource that provides an array of strings.

Strings.xml:

```
<resources>
  <string name="app_name">SparkWomen</string>

  <array name="lawsBig">

    <item>According to the International Research Centre for Women, almost 47 percent of girls
      are married before the age of 18. Currently, India ranks 13 in the world when it comes
      to child marriages. Since child marriage has been steeped into the Indian culture and
      tradition since centuries, it has been tough eliminating it.
      The Prohibition of Child Marriage Act was made effective in 2007. This act defines child
      marriage as a marriage where the groom or the bride are underage, that is, the bride is
      under 18 years of age or the boy is younger than 21 years.
      Parents trying to marry underage girls are subject to action under this law. Since the
      law makes these marriages illegal, it acts as a major deterrent.
    </item>
    <item>The objectives of this act is to provide – a special form of marriage in certain
      cases, provide for registration of certain marriages and, to provide for divorce. In a
      country like India and with the diverse religions and cast, when people from different
      faiths and caste chose to get married they do it under the Special Marriage Act.
      It is not applicable to the state of Jammu and Kashmir and also extends to intending
      spouses who are Indian nationals and living abroad.
    </item>
    <item>According to this act, taking or giving of dowry at the time of the marriage to the
      bride or the bridegroom and their family is to be penalised. Dowry system, giving and
      taking of dowry, is a norm in India. Dowry is often asked of the bride and her family by
      the groom and his family. The system has taken strong roots because women after marriage
      move in with their spouse and in-laws. Also, over the centuries, the lack for economic
      independence of women and the taboo towards divorce has resulted in bride burning. When
      demands for dowry even after marriage are not met by the girl's families, many women are
```

```
        tortured, beaten and even burnt.
        It is one of the major challenges that our society is grappling with. Women openly
        complaining about it has helped to spread the word and encourage other women to take a
        stand.
    </item>
    <item>The Indian Divorce Act allows the dissolution of marriage, mutual consent, nullity of
        marriage, judicial separation and restitution of conjugal rights.
        Family Courts are established to file, hear, and dispose of such cases.
    </item>
    <item>This act regulates the employment of women and maternity benefits mandated by law. It
        states that a woman employee who has worked in an organisation for a period of at least
        80 days during the 12 months preceding the date of her expected delivery is entitled to receive
        maternity benefits, which includes maternity leave, nursing breaks, medical
        allowance, etc.
    </item>
        <item>The National Commission for Women (NCW) is a statutory body of the Government of
        India, established in January 1992. Lalitha Kumara Mangalam was appointed its
        Chairperson in 2014.
        The NCW represents the rights of women in India and provides a voice for their issues
        and concerns. The National Commission for Women Act aims to improve the status of women
        and worked for their economic empowerment.
    </item>
    <item>This Act prevents discrimination in terms of remuneration. It provides for payment of
        equal recompense to men and women workers.
        It is necessary to know these and other laws in place to protect the interests of women.
        Only if you are aware of your rights can you fight against any injustice meted out to
        you at home, at the workplace, or in the society.
    </item>
  </array>
</resources>
```

5.2.2 Manifest File

Android Manifest is an XML file that is the root of the project source set.

AndroidManifest.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.darkness.sparkwomen">
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission android:name="android.permission.SEND_SMS"/>
    <uses-permission android:name="android.permission.CALL_PHONE"/>
    <uses-permission android:name="android.permission.FOREGROUND_SERVICE"/>
    <uses-permission android:name="android.permission.SYSTEM_ALERT_WINDOW"/>
    <uses-permission android:name="android.permission.MODIFY_AUDIO_SETTINGS"/>
    <uses-permission android:name="android.permission.RECORD_AUDIO"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"

            android:supportsRtl="true"
            android:theme="@style/Theme.SparkWomen">
        <activity android:name="com.darkness.sparkwomen.SmsActivity"></activity>
        <activity android:name="com.darkness.sparkwomen.MainActivity" />
        <activity android:name="com.darkness.sparkwomen.SplashActivity" android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name="com.darkness.sparkwomen.LawDisplayerActivity" />
        <activity android:name="com.darkness.sparkwomen.LawsActivity" />
        <activity android:name="com.darkness.sparkwomen.ContactActivity" />
        <activity android:name=".SelfDefenseActivity" />
        <service android:name="com.darkness.sparkwomen.ServiceMine" />
    </application>
</manifest>
```

5.3 IMPLEMENTATION

5.3.1 Main Activity

An intent is to perform an action on the screen. It is mostly used to start activity, send broadcast receiver, start services and send message between two activities. There are two intents available in android as Implicit Intents and Explicit Intents. Here is a sample example to start new activity with old activity.

```
package com.darkness.sparkwomen;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import android.Manifest;
import android.content.Intent;
import android.content.SharedPreferences;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationServices;
import java.util.HashSet;
import java.util.Set;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
   FusedLocationProviderClient fusedLocationClient;
   String myLocation = "", numberCall;
   SmsManager manager = SmsManager.getDefault();
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      fusedLocationClient = LocationServices.getFusedLocationProviderClient(this);//to get location of user
      findViewById(R.id.panicBtn).setOnClickListener(this);
      findViewById(R.id.fourth).setOnClickListener(this);
      findViewById(R.id.first).setOnClickListener(this);
```

```
        findViewById(R.id.second).setOnClickListener(this);
        findViewById(R.id.fifth).setOnClickListener(this);
    }
    @Override
    public void onClick(View view) {
        int id = view.getId();
        if (id == R.id.fourth) {
            startActivity(new Intent(MainActivity.this, LawsActivity.class));
            MainActivity.this.finish();
        }else if(id == R.id.first){
            startActivity(new Intent(MainActivity.this, ContactActivity.class));
            MainActivity.this.finish();
        }else if(id == R.id.fifth){
            startActivity(new Intent(MainActivity.this, SelfDefenseActivity.class));
        } else if(id == R.id.second){
            startActivity(new Intent(MainActivity.this, SmsActivity.class));
            MainActivity.this.finish();
        } else if (id == R.id.panicBtn) {
            if (ActivityCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED && ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) != PackageManager.PERMISSION_GRANTED)
            //It returns an integer value of PERMISSION_GRANTED or PERMISSION_DENIED
               {              return;          }
            fusedLocationClient.getLastLocation()
                    .addOnSuccessListener(location -> {
                        if (location != null) {
                            location.getAltitude();
                            location.getLongitude();
                            myLocation =
"http://maps.google.com/maps?q=loc:"+location.getLatitude()+","+location.getLongitude();
                        }else {     myLocation = "Unable to Find Location :(";          }
                        sendMsg();
                    });
            SharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
            numberCall = sharedPreferences.getString("firstNumber","None");
```

```
        if(!numberCall.equalsIgnoreCase("None")){
            Intent = new Intent(Intent.ACTION_CALL);
            intent.setData(Uri.parse("tel:"+numberCall));
            startActivity(intent);
        }
      }
   }
   void sendMsg(){
      SharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
      Set<String> oldNumbers = sharedPreferences.getStringSet("enumbers", new HashSet<>());
if(!oldNumbers.isEmpty()){
        for(String ENUM : oldNumbers)
            manager.sendTextMessage(ENUM,null,"Im in Trouble!\nSending My
Location:\n"+myLocation,null,null);
      }
   }
}
```

5.3.2 Contact Activity

Contacts page allows the user to enter their contact numbers of their close ones that will be contacted in case of an emergency of the user. SOS SMS will be sent along with their location and call be placed in case the “panic” button is pressed.

```
package com.darkness.sparkwomen;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import android.app.Dialog;
import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.view.Window;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ImageView;
```

```
import android.widget.TextView;
import android.widget.Toast;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.LinkedHashSet;
import java.util.Set;
public class ContactActivity extends AppCompatActivity {
    EditText contact;
    Button addContact;
    RecyclerView;
    HashMap<String,String> contacts;
    ArrayList<String> send;
    ContactsAdapter adapter;
    MyOnClickListener onClickListener;
    ImageView edit;
    TextView callerInfo;

    @Override
    public void onBackPressed() {
        super.onBackPressed();
        startActivity(new Intent(this,MainActivity.class));
        this.finish();
    }
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_contact);
        edit = findViewById(R.id.editCallButton);
        edit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Dialog = new Dialog(ContactActivity.this);
                dialog.requestWindowFeature(Window.FEATURE_NO_TITLE);
                dialog.setCancelable(false);
                dialog.setContentView(R.layout.dialog);
```

```
            Button close,save;
            close = dialog.findViewById(R.id.dialogCancel);
            save = dialog.findViewById(R.id.dialogSave);
            EditText  number = dialog.findViewById(R.id.dialogEditText);
            save.setOnClickListener(new View.OnClickListener() {
               @Override
               public void onClick(View view) {
                  String numberText = number.getText().toString();
                  if(numberText.length() == 10){
                     SharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
                     SharedPreferences.Editor editor = sharedPreferences.edit();
                     editor.putString("firstNumber",numberText);
                     editor.apply();
                     setCallingInformation();
                     dialog.dismiss();
                  }else {
                     Toast.makeText(ContactActivity.this, "Enter valid number!",
  Toast.LENGTH_SHORT).show();
                  }
               }
            });              close.setOnClickListener(new View.OnClickListener() {
               @Override
               public void onClick(View view) {
                  dialog.dismiss();
               }
            });
            dialog.show();
         }
      });
      callerInfo = findViewById(R.id.callText);
      setCallingInformation();
      contacts = new HashMap<>();
      send = new ArrayList<>();
      adapter = new ContactsAdapter(this, send, new MyOnClickListener() {
         @Override
```

```
            public void onItemClicked(int position) {
                deleteItemFromDatabase(position);
            }
        });
        recyclerView = findViewById(R.id.contacts);
        recyclerView.setAdapter(adapter);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));
        getData();
        contact = findViewById(R.id.contactGet);
        addContact = findViewById(R.id.addContact);
        addContact.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {       createContact(contact.getText().toString());
            }
        });
    }

    private void createContact(String contactString) {
        SharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
        SharedPreferences.Editor editor = sharedPreferences.edit();
        Set<String> oldNumbers = sharedPreferences.getStringSet("enumbers", new LinkedHashSet<>());
        oldNumbers.add(contactString);
        editor.remove("enumbers");
        editor.putStringSet("enumbers",oldNumbers);
        editor.apply();
        contact.setText("");
        editor.apply();
        getData();    }
    private void setCallingInformation(){
        SharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
        String firstNumber = sharedPreferences.getString("firstNumber","null");
        if (firstNumber.isEmpty()||firstNumber.equalsIgnoreCase("null")){ callerInfo.setText("Please add
number.");
        }else {           callerInfo.setText(firstNumber);       }
    }    private void deleteItemFromDatabase(int position) {
```

```
        SharedPreferences sharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
        Set<String> oldNumbers = sharedPreferences.getStringSet("enumbers", new LinkedHashSet<>());
        SharedPreferences.Editor editor = sharedPreferences.edit();
        editor.remove("enumbers");
        oldNumbers.remove(send.get(position));
        editor.putStringSet("enumbers",oldNumbers);
        editor.apply();
        getData();    }
    private void getData() {
        send.clear();
        SharedPreferences sharedPreferences = getSharedPreferences("MySharedPref",MODE_PRIVATE);
        Set<String> oldNumbers = sharedPreferences.getStringSet("enumbers", new LinkedHashSet<>());
        send.addAll(oldNumbers);
        adapter.notifyDataSetChanged();
    }
}
```

5.3.3 SMS Activity

SOS SMS is sent to the emergency contact number saved in the contacts by the user along with the current location of the user.

```
package com.darkness.sparkwomen;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.content.ContextCompat;
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.os.Build;
import android.os.Bundle;
import android.provider.Settings;
import android.view.View;
import android.widget.Button;
import com.google.android.material.snackbar.Snackbar;
public class SmsActivity extends AppCompatActivity {
   Button start,stop;
```

```
    @Override
    public void onBackPressed() {
        super.onBackPressed();
        startActivity(new Intent(SmsActivity.this,MainActivity.class));
    }
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_sms);
        stop = findViewById(R.id.stopService);
        start = findViewById(R.id.startService);
        start.setOnClickListener(this::startServiceV);
        stop.setOnClickListener(this::stopService);
    }
    public void stopService(View view) {        Intent notificationIntent = new Intent(this,ServiceMine.class);
        notificationIntent.setAction("stop");
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
            if(ServiceMine.isRunning){
                getApplicationContext().startForegroundService(notificationIntent);
                Snackbar.make(findViewById(android.R.id.content),"Service Stopped!",
Snackbar.LENGTH_LONG).show();
            }
        }else {
            if(ServiceMine.isRunning){
//                getApplicationContext().startService(notificationIntent);
                getApplicationContext().startService(notificationIntent);
                Snackbar.make(findViewById(android.R.id.content),"Service Stopped!",
                Snackbar.LENGTH_LONG).show();
            }       }    }
    public void startServiceV(View view) {
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
            if (!Settings.canDrawOverlays(this)) {
                Intent intent = new Intent(Settings.ACTION_MANAGE_OVERLAY_PERMISSION,
                        Uri.parse("package:" + getPackageName()));
                startActivity(intent);
```

```
        }       }
      if (ContextCompat.checkSelfPermission(this, Manifest.permission.SEND_SMS) ==
PackageManager.PERMISSION_GRANTED && ContextCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) == PackageManager.PERMISSION_GRANTED
&& ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION) ==
PackageManager.PERMISSION_GRANTED  ) {
          Intent notificationIntent = new Intent(this,ServiceMine.class);
          notificationIntent.setAction("Start");
          if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
              getApplicationContext().startForegroundService(notificationIntent);
              Snackbar.make(findViewById(android.R.id.content),"Service Started!",
Snackbar.LENGTH_LONG).show();
          }else {
             getApplicationContext().startService(notificationIntent);
             Snackbar.make(findViewById(android.R.id.content),"Service Started!",
            Snackbar.LENGTH_LONG).show();          }       }    }}
```

5.3.4 Laws Activity

In this part of the app, the information about basic laws for women such as dowry prohibition act,Indian Divorce Act etc are displayed so that women are aware of them.

```
package com.darkness.sparkwomen;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import android.content.Intent;
import android.os.Bundle;
public class LawsActivity extends AppCompatActivity {
    @Override
    public void onBackPressed() {
        super.onBackPressed();
        startActivity(new Intent(LawsActivity.this,MainActivity.class));
        LawsActivity.this.finish();
    }
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_laws);
        RecyclerView recyclerView = findViewById(R.id.recycleLaws);
        String[] laws = new String[]{"The Prohibition of Child Marriage Act, 2006","Special Marriage Act,
1954","Dowry Prohibition Act, 1961","Indian Divorce Act, 1969","Maternity Benefit Act,1861","Medical
Termination of Pregnancy Act,1971","Sexual Harassment of Women at Workplace (Prevention,
Prohibition and Redress) Act, 2013","Indecent Representation of Women(Prevention)
Act,1986","National Commission for Women Act, 1990","Equal Remuneration Act, 1976"};
        MyAdapter adapter = new MyAdapter(this, laws, position -> {
            Intent intent = new Intent(LawsActivity.this,LawDisplayerActivity.class);
            intent.putExtra("position",position);
            startActivity(intent);
        });
        recyclerView.setAdapter(adapter);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));
        findViewById(R.id.backBtn).setOnClickListener(view -> {
            startActivity(new Intent(LawsActivity.this,MainActivity.class));
            LawsActivity.this.finish();
        });
    }
}
```

5.3.5 Self Defense Activity

This particular part of the app shows a video related to self defense.

```
package com.darkness.sparkwomen;
import android.os.Bundle;
import android.webkit.WebChromeClient;
import android.webkit.WebView;
import android.webkit.WebViewClient;
import androidx.appcompat.app.AppCompatActivity;
public class SelfDefenseActivity extends AppCompatActivity {
    WebView webView;
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_self_defense);
        webView = findViewById(R.id.webView);
        webView.setWebChromeClient(new WebChromeClient());
        webView.getSettings().setLoadsImagesAutomatically(true);
        webView.getSettings().setJavaScriptEnabled(true);
        webView.loadUrl("https://www.youtube.com/embed/T7aNSRoDCmg");
    }
}
```

CHAPTER 6

SNAPSHOTS

6.1 Welcome Page

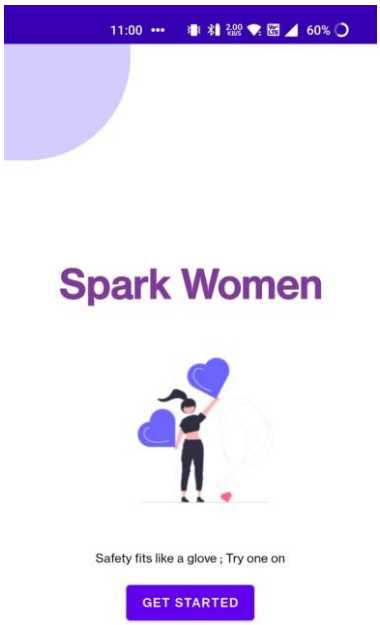

Figure 6.1 Welcome page

6.2 Home Page

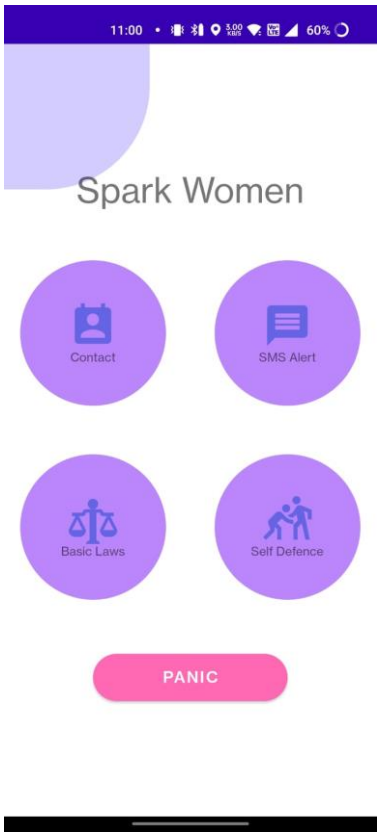

Figure 6.2 Home page

6.3 Emergency Contact Details Page

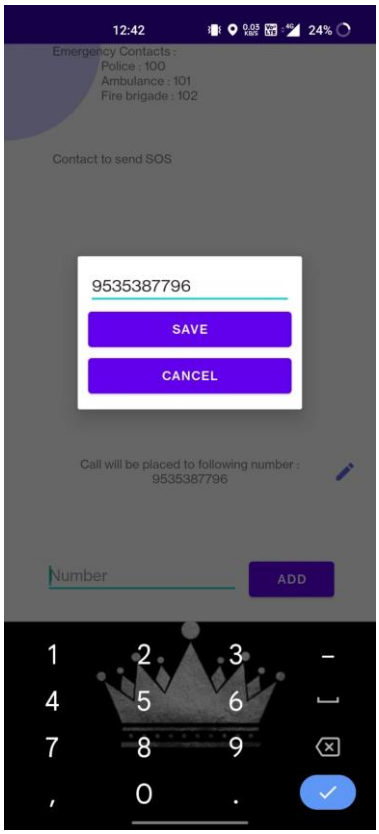

Figure 6.3 (a) Enter emergency contacts number

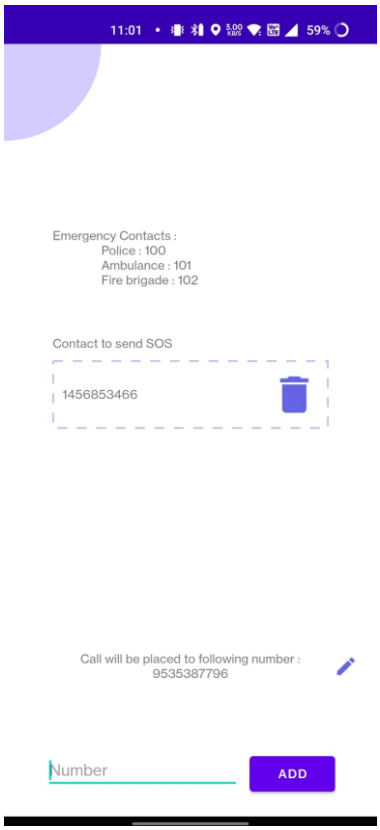

Figure 6.3 (b) Emergency contacts are saved for SOS SMS and Panic Call

6.4 SOS SMS Alerts and notifications

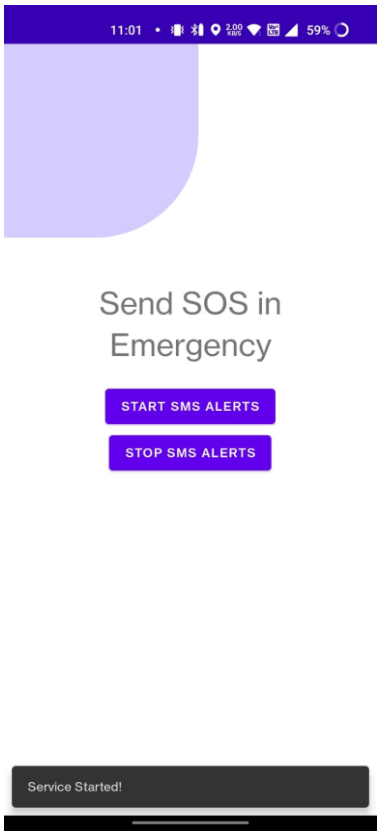

Figure 6.4(a)SMS service started

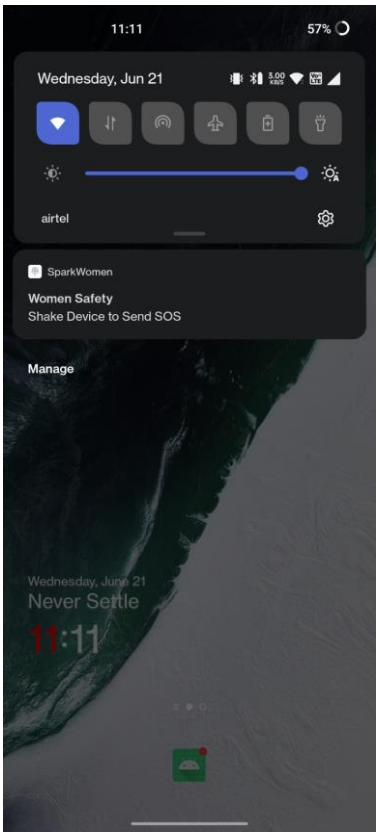

Figure 6.4(b)SOS Notification

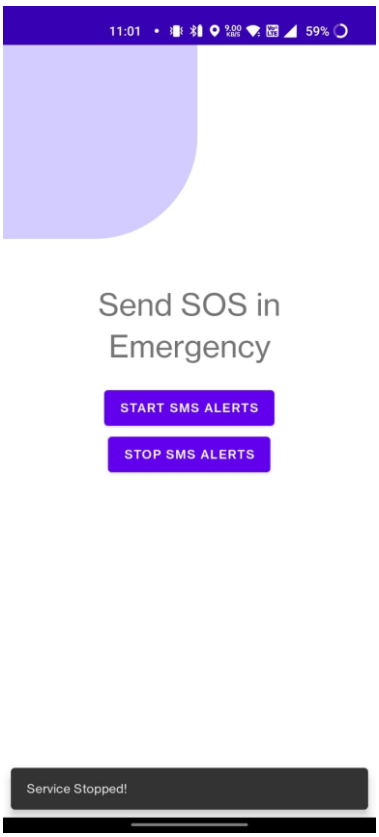

Figure 6.4(c)SMS service ended

6.5 SOS SMS with current location

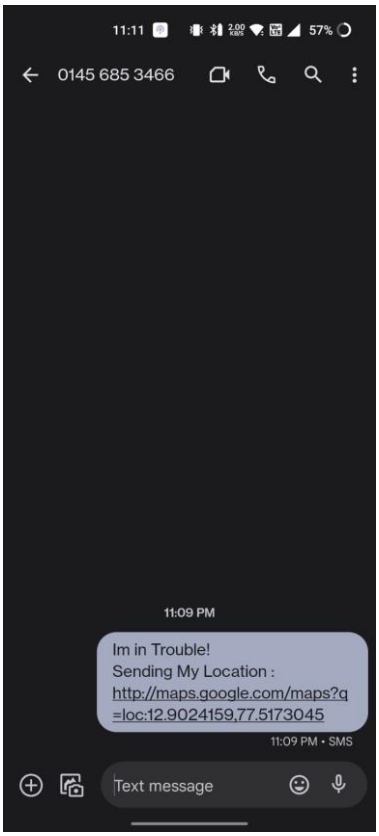

Figure 6.5 (a) SOS SMS sent to emergency contact saved.

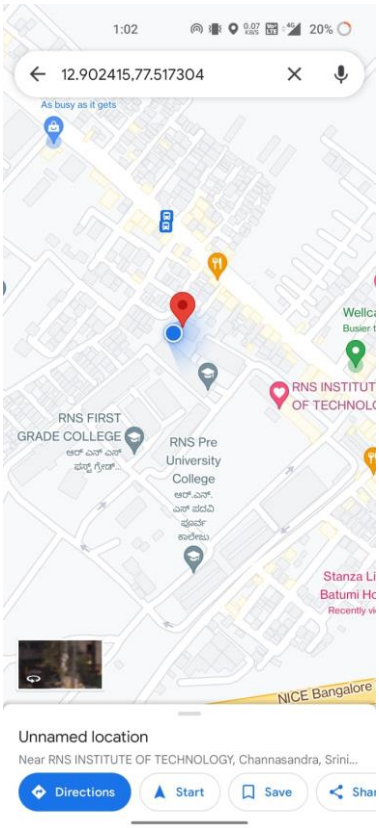

Figure 6.5 (b) Location of user in SOS SMS

6.6 Basic Laws for Women

Figure 6.6(a)Basic Laws for Women

Figure 6.6(b) Each basic law in explained in detail

6.7 A video on Self defense

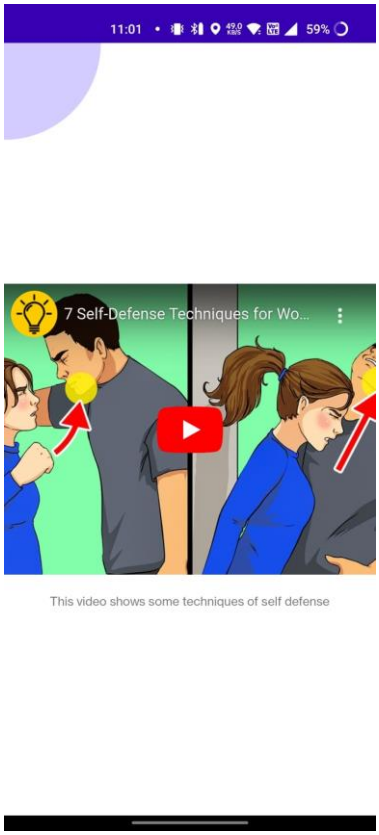

Figure 6.7 A video to learn self defense

6.8 Panic Call

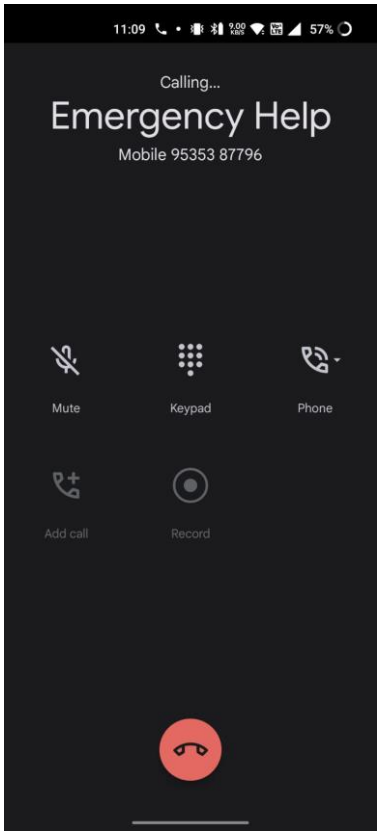

Figure 6.8 A call goes to emergency contact number when "Panic" is pressed.

CHAPTER 7

CONCLUSION

The Women safety app describes the application, Security Alert that is designed in android platform for safety of women with the aid of recent improvements in mobile technology. has been developed to satisfy all the proposed requirements. The process is maintained simpler and easier in ensuring the women safety. The system is highly scalable and user friendly. Almost all the system objectives have been met. The system has been tested under all criteria. The system minimizes the problem arising in the existing manual system and it ensures the immediate action to be taken when an unfavorable situation is encountered. The design of the database is flexible ensuring that the system can be implemented. It is implemented and gone through all validation. All phases of development were conceived using methodologies. User with little training can get the required report. In this project the user can send live location on one click to four people, which is useful for the user when she is in some problem or needs any help. When the user opens this application, she can see an PANIC button. Also, she can send a message to four contact numbers. Also, the user can see an EMERGENCY CONTACTS button. Click that button to call to any of the women helpline numbers. The software executes successfully by fulfilling the objectives of the project.

FUTURE ENHANCEMENTS

- For future development, this application can be integrated with the law enforcement database (e.g., city police control room database) instead of experimental database used here in the project.
- Also, some further upgrade can be done when the mobile network is not available for the root device and also if the root device is switched off.
- The location services can be enabled to run in the background of the device even if the application is closed by the user.
- The application can also be upgraded to send a voice message based on shaking the phone at some particular frequency.
- There can be a further enhancement such as sending a message when the user tells a particular code word aloud.
- The number of contacts can be increased to send messages to many people. Thus, this app can help in a big way to rescue the women or men from unsafe conditions

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