

# SHERAKSHA-WOMEN SAFETY APPLICATION

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**Abstract:** The paper deals with the design and implementation of SheRaksha – Women safety application using Iot and Android development. It utilizes mobile technology to facilitate essential security for the women who are in danger. The proposed system works on the real time monitoring, so that the system can be utilized by shaking the mobile phone without any manual operation. It uses shake event listener to monitor and maintain the application. The proposed outcome of the project aims as numerous benefits by saving the women as well as keep the users family members or friends updated about their security with an option of shaking the mobile phone. The biggest advantage of the proposed system over existing ones is that it can be easily used when and where necessary without opening the application or without pressing any buttons. Many systems assure limited access security and safety environments. But, even if there are many developed systems that support it, some of them have very complicated registration and the login process. These systems are related with both security and safety of women in any place such as homes, work places or other places where security is needed.

**Keywords:** Vibration Sensor, Shake Event Listener, SMS and Call alert, Location with or without Internet, Women security, Smartphone, Registered contacts, Firebase, GPS (Global Positioning System).

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# She-Raksha Women Safety Application

## 1. INTRODUCTION

Security for women has become a major issue as the number of crimes over women and girls increasing day-by-day. In the last decades, we have witnessed an enormous increase in the end user acceptance of mobile communications. The need for security makes many people look for different ways to protect themselves due to high rate of crimes. This document describes a GPS based “She-Raksha - women security system” that provides location of women as well as provide messages and calls by shaking the mobile phone as well as call and message button trigger. Whenever some body is in trouble, they might not have so much time, all that they have to do is shake the mobile phone. Our system provides a real, cost effective solution to problem detection. Now a days due to recently happened cases such as rape by drivers or colleagues, harassments etc., security, especially women security has become the foremost priority of the world. System uses the Global Positioning System (GPS) technology to find out the location of women. The information of women position provided by the device can be viewed on Google maps using Internet. The IT companies are looking forward to the security problem and requires a system that will efficiently evaluate the problem of women security working in night shifts, traveling alone. We focus on the proposed model that can be used to deal with the problem of security issue of women using GPS based security system.

Women are adopting at mobilizing diverse groups for a common cause. They often work across ethnic, religious, political, and cultural divides to promote peace. We are all aware of importance of women's safety, but we must realize that they should be properly protected. Women are not as physically strong as men in an emergency situation; a helping hand would be a relief for them. The best way to minimize your chances of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to identify and call on resources to help you out in dangerous situations. Whether you're in immediate trouble or get separated from friends during a night out and don't know how to get home, having these apps on your phone can reduce your risk and bring assistance when you need it. Although several apps were originally developed for students to reduce the risk of sexual assault on campus, they are suitable for all women in the light of recent outrage in Hyderabad which shook the nation and woke us to the safety issues for our daughters, people are gearing up in different ways to fight back. A host of new apps have been developed to provide security systems to women on their phones.

## 2. DESIGN

The She-Raksha– Women safety application is a collection of Activities and Recycler views that are presented to the user. These Activities and Recycler views have associate XML files (Layouts) declared in the layout folder which determine the graphical user interface for these components. The She-Raksha – Women safety application also contains other Service and Broadcast Receivers along with the declarations and necessary permissions in the Manifest file in the root directory of the project. The total lines for the application are 4500 which includes Java and XML files. Additionally, there are 600 lines of Firebase firestore code to enable the app to interact with the server.

The breakdown for the lines of code is as follows:

Language	Lines of code (LOC)
Java	2500
Firebase firestore	600
XML	743

3.

Table: Lines of code (LOC)

### AUTHENTICATION SCREEN

The user should authenticate in She-Raksha – Women safety application using the below interface. The user has to select their country code from country code picker and enter the phone number. Once he completed the selection of country code and entering of mobile number, then the user has to click on send OTP button. Then, it will redirect the user to next activity (otp\_auth).

### OTP SCREEN

If the user redirected to the next interface (otp\_auth activity), then the user can able to get the 6 digits one time password (OTP) to the already entered mobile number. If the user wants to edit or change the mobile number or entered the wrong mobile number, then user can press the back button on the left top corner. Then, the user will redirect to Authentication screen. If the

user selected the wrong country code form country code picker or entered the wrong number, then the 6-digit one time password (OTP) will not be sent to the user.

If the user entered code and the code sent by app will match, then only the user authentication will be successful. Otherwise, a resend otp button will be visible after the code is sent. By pressing the resend the otp button, the application will send Another otp to the entered mobile number.

#### AUTHENTICATION SUCCESSFUL SCREEN

Once the authentication successful, then the user will redirect to the above interface. Then, they have to click on get started button. If they click on get started button then, a dialog box will appear for entering their user name. After the user entered their name, they have to click on save button. Then, the user can able to see the main screen (Home activity).

#### MAIN SCREEN

When the user enters into the main screen, it will ask to grant the necessary permissions. If the user denied any permission either by mistake or wantedly, then it will ask again to grant the permissions. Because, those permissions are necessary or required for her safety. There are 2 buttons and 1 floating action button in main screen. To add the emergency contacts, the user has to click on add floating action button. Then, the user will redirect to select the emergency contacts.

#### SELECT EMERGENCY CONTACTS SCREEN

After clicking the add floating action button, the user can able to see their contact list. From that list, user can able to add the emergency contacts. By clicking on the contact then, the dialog box with three options will be displayed. The user can select operation i.e., only call, only message or both call & message for the selected contact number. If the women shake her mobile phone when she is in danger then, this selected operation only will be performed for the concerned contact.

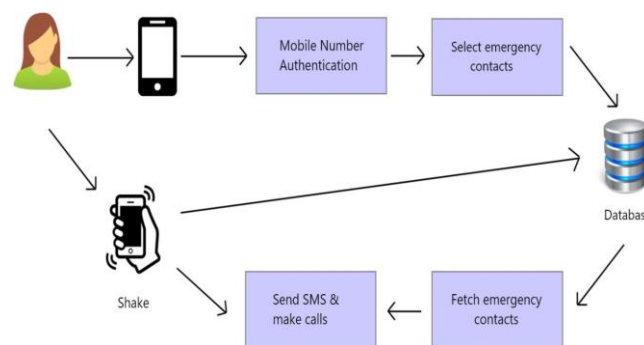
#### DISPLAYING THE SELECTED CONTACTS LIST

Once the selection process for the emergency contact list is completed. The user will again come to main screen. In main screen, all the selected emergency contacts list will be displayed along with the mobile number, name of the contact and the selected type

#### MESSAGE & CALL FORMAT

When the women are in danger, she just need to shake her mobile phone.

Then, we will send the messages along with the current location of the user using GPS with or without internet or WIFI and make calls. After she shake her mobile phone, for confirmation to her that we are sending messages and making call, the application will give a vibration. For the alternative purpose, we have the call and message buttons in app. If they are in a situation that they can open and click the buttons the, they can click the concerned buttons to do the operations. It's not mandatory to open the app. We just kept it for alternative purpose.



Figure

## 4. ANALYSIS

In the proposed system, the user has to authenticate themselves with her mobile number. Then, a 6 digits one time password will be sent to that mobile number. Whenever user changes their location or whenever they want to update their emergency contacts, they can do that. User just need to select the contacts from her contact list for the available 3 options (only call, only message, both call and message). When the user is in danger, she just needs to shake her mobile. Then, we will send

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the messages with current location and call the emergency contacts automatically. We will get the current location whether internet or WIFI is available or not.

The different components in the architecture are –

- i. User – This is the person who installs the application on their Android device. The user provides various inputs like username, password, and contact numbers etc. and triggers various events on the application.
- ii. Mobile phone - A telephone with access to a cellular radio system so it can be used over a wide area, without a physical connection to a network.  
Mobile phone authentication - Mobile authentication is the verification of a user's identity through the use a mobile device and one or more authentication methods for secure access.
- iii. Mobile phone authentication - Mobile authentication is the verification of a user's identity through the use a mobile device and one or more authentication methods for secure access. Mobile authentication maybe used to authorize the mobile device itself or as a part of a multifactor authentication scheme for logging into secure locations and resources.
- iv. Select emergency contacts - An emergency contact is the first-person medical personnel will get in touch with in an emergency, but your emergency contact may not have the legal authority to act on your behalf unless you explicitly provide that power.
- v. Database - A database is a systematic collection of data. A structured set of data held in a computer, especially one that is accessible in various ways.
- vi. Fetch emergency contacts – It means obtaining data from a database management system. In this case, it is considered that data is represented in a structured way, and there is no ambiguity in data. In order to retrieve the desired data, the user present a set of criteria by a query. Then the Database Management System (DBMS), software for managing databases, selects the demanded data from the database. The retrieved data may be stored in a file, printed, or viewed on the screen.
- vii. Send SMS & Call - SMS (Short Message Service), commonly referred to as "text messaging," is a service for sending short messages of up to 160 characters (224 characters if using a 5-bit mode) to mobile devices, including cellular phones, smartphones and PDAs. An instance of speaking to someone on the phone or attempting to contact someone by phone.
- viii. Shake - If you shake something, you hold it and move it quickly backwards and forwards or up and down. You can also shake a person, for example, because you are angry with them or because you want them to wake up.

## 5. RESULTS

Primary step is to install the SheRaksha – Women safety application. Next, the user has to authenticate in the application using their mobile number. In authentication module, the user has to select their country code from country code picker and enter their mobile number. Then, the user has to select the send OTP button. Then, the user will be redirected to OTP page. Here, user has to enter the 6 digits one time password (OTP) sent to entered mobile number. On successful authentication of OTP, user has to enter their name in the dialog box in the next module

Whenever user clicks on add floating button then the users contact list would be fetched. Here, User has to select the emergency contacts for the available options. When the user is in danger, she just needs to shake her mobile phone. Then, the app will send the SMS along with the current location of user with or without internet or WIFI connection and also make calls to the emergency contacts. When the user changes her location then she can able to change the emergency contacts whenever she wants.

## 6. CONCLUSIONS

She-Raksha – Women safety application is an essential app to have on a Smartphone. It is a personal security app that lets you send notifications to certain people via text messages and make calls in case of emergencies. It also gives you the ability to make calls and send SMS on the tap of a message and call buttons as an alternative option if the shake option couldn't be done. The app also sends your current location as a link via text messages to the emergency contacts that you have already saved in application. This can be very needful if you are in emergency situations and want to notify your people. The text messages sent contain the location information.

She-Raksha – Women safety application was a great accomplishment as an Android application. It made me to have good exposure to the Android app development. The app enabled me in understanding the advance concepts of Android development and learning about Firebase firestore databases, Google Maps, Services, receivers for Android and performance testing the app.

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