Advance Woman Security System based on Android

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Abstract

Security for women has become a major issue as the number of crimes over women and girls increasing day-by-day. This paper describes about women safety and their security by using electronic device to both detect The problem & alert Authorities This paper suggests a new perspective to use technology to protect women. we use an android based smart phone with an integrated feature that alert and provide location based Information. This Document describe GPS and GSM based "Women Security System "that provides the combination of GPS devices as- well-as provide alerts and message with an emergency button Trigger. Whenever somebody is in Trouble They Only have to press Volume Key Button After that a message alert is sent to Register Contact list and a Voice Call to the Number registered first and give a message "I AM In TROUBLE PLEASE HELP ME" Now a day safety of women is becoming very poor with the help of this Application The project was development in Android Which Graphical User Interface it provide the level of reliability, availability and compatibility .All these make Android an appropriate language for this project because Android language is based on JAVA language.
Keywords: Women security, Smartphone, Registered contacts, Database, GPS (Global Positioning System), GSM (Global System for Mobile)

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I. INTRODUCTION

This application designed to provide security to women main purpose of this application to provide the awareness on the time of critical situation for women. Generally you can active this service by clicking on ACTIVE SERVICE button. When you clicking on this button service get activate and know whenever you click on VOLUME key it open a new window and send SMS to those contact which you saved at the time of registration the SMS contain your message and your current location. This application is provide deactivate service also when we fill secure this application is mainly required correct information to fill otherwise this app will not work correctly

A. Purpose
The main purpose the project is to provide highly reliable security system for the safety of women. The proposed system is based advanced sensors, Microcontroller and GSM. The basic aim of the system is to develop a low cost solution for GPS based women tracking system (women safety system). The main objective of the system is to track the current location of the person which has an android enabled mobile by extracting the longitude and latitude of that target person.

B. Paper Organization
Organization of paper is as follows: SECTION II covers the design of the system which includes explanation about existing systems and proposed system, it also contains details about different modules implemented in the system, and DFD's, activity diagram. SECTION III explains about technologies implemented in the system. SECTION IV covers the view on working of an application and results of the application. Finally SECTION V takes the conclusion and feature scope for the system development

II. SYSTEM DESIGN

A. Existing System
Keeping the same concern in mind many developers have come up with innovative applications. Few of such applications are as follows-
1) VithU App:
This is an emergency app initiated by a popular Indian crime television series "Gumrah" aired on Channel [V]. In this app when the power button of the Smartphone is pressed twice consecutively, it will begin sending out alert messages with a link to the location of the user every two minutes to the contacts fed into the app.

2) SHE (Society Harnessing Equipment):

It is a garment designed by three engineers from Chennai. This garment has an electric circuit that can generate 3800kv of current which can help the victim to escape.In case of multiple attacks it can send upto 82 electric shocks. Since the fabric is bilayer, the user is not affected. It can also send emergency messages.

B. *Proposed System*

The proposed system is especially for the women safety and overcomes the disadvantages of existing system:-

This proposed system is 'GSM & GPS Based women Security System'. It consists of GPS device ie. Any Android Phone and an emergency button. GPS device must to be placed inside the device (Android Phone). The device will provide the position information such as latitude, longitude of women. An emergency button is fixed on the device at a particular position. Whenever women in any kind of trouble she will press the emergency button and an alert will be immediately sent to the nearest police station. Then it is the responsibility of police squad to handle the situation.

1) Features

1) This project presents an alert system for Women safety detection.
2) The system provides a realizable and efficient.
3) The application is easier to use all the woman.
4) The application is normal budget.
5) For user there is no need of external hardware or software to use this application
6) This application is free for user, which does not affect user's cost
7) User only need a Smartphone or tablet which has Android OS to the work.

C. *System Modules*

This project contains the following five modules:

1) Profile Module

Profile is an important component to users, which helps the users to add his/her personal details: Name, Address, Email Id, Mobile Number.

2) Police Station

The user will get information about the nearer police station

3) Emergency Contacts

Required details of one who is in danger will be contacted to the right persons or family members or friends or help lines

4) Emergency Button

When we sense any danger, we can escape by using emergency button.

D. *Data Flow Diagram (DFD)*

Data Flow Diagrams are a graphical tool used to describe and analyze the movement of data through a system. DFD's are used to capture the essential feature of both existing real system and future physical implementation of the system. The DFD is a graphical technique that depicts the information flow and the transforms that are applies as data move from input to the output.
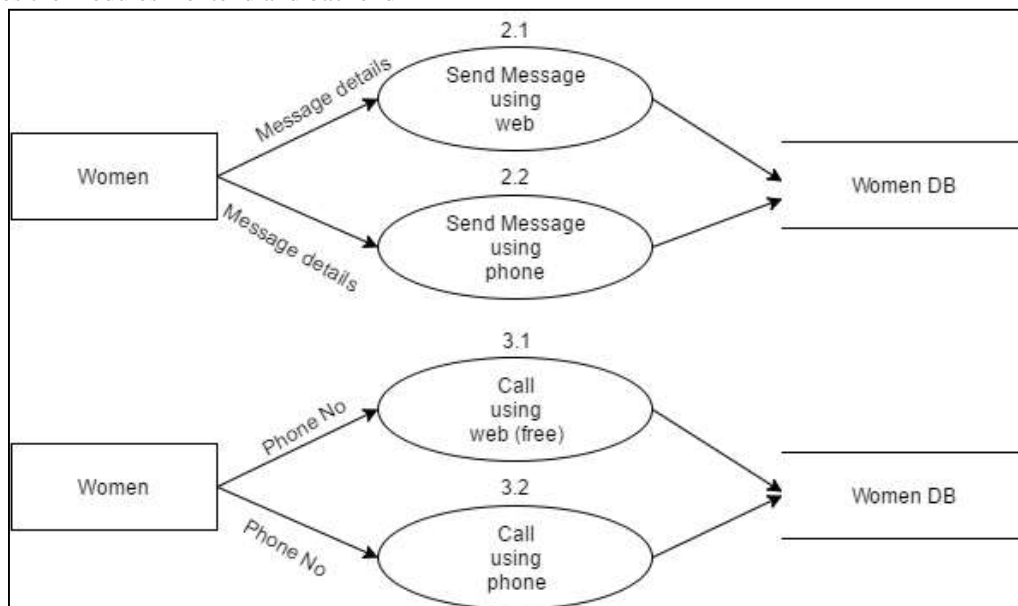
1) Level-0 DFD Shows outline of the System Models
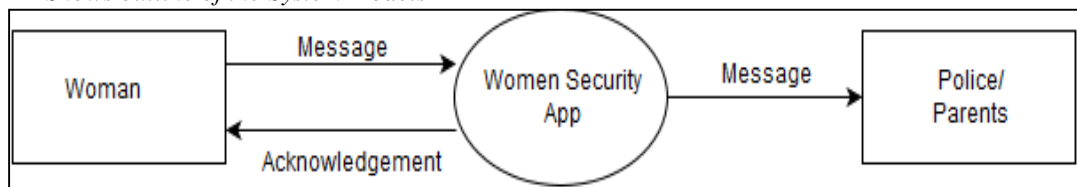
2) Level-1 DFD

This shows the separation of all external modules, relationship between those modules and the application
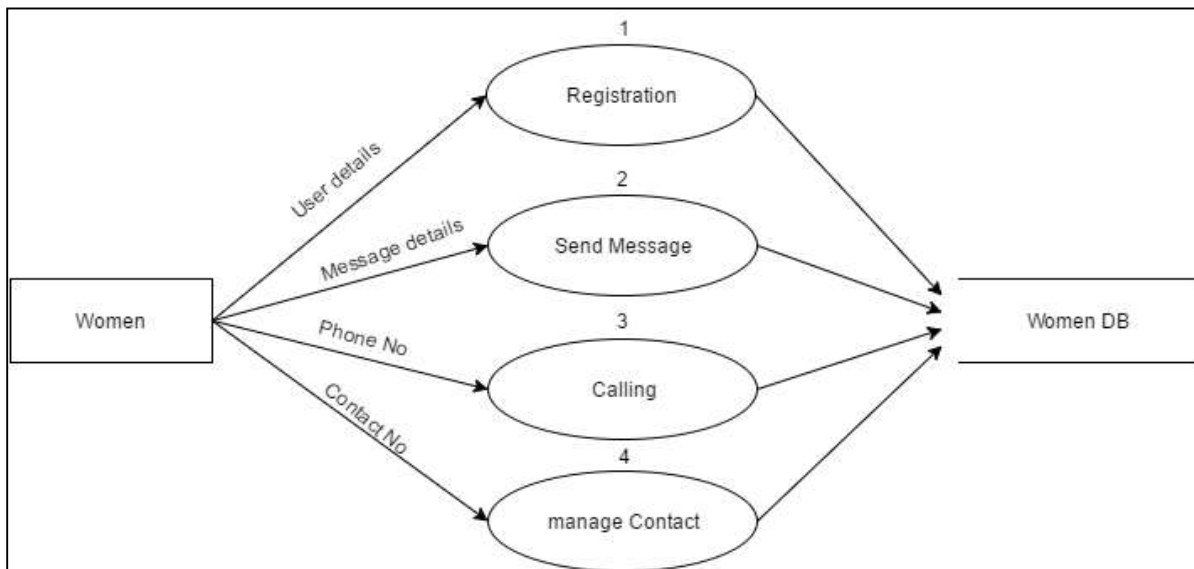
3) Level-2 DFD
This differentiates the modules frontend and backend

III. TECHNOLOGIES USED

A. *Functional Requirement*
This specification is used to specify the requirements for the initial implementation of the system and update the system in future. The software requirement specification bridges the gap between client/user and the system developer. This is the document that describes the user needs accurately

B. *Performance Requirement*
This document will provide general description of the project product perspective, and overview of requirement, general constraint and user view of the product while using. In additional will also provide the specific requirement and functional needs for this project such as interface, functional and performance requirements. The purpose of this software requirement specification is to properly document the requirement of the user necessary in order to build this application.

C. *Software Requirement*
This system compromises an Android Operating System, using Java has a core language, with Android SDK 2.3 has its version, Implementation of Front end is done by XML and we have used SQLite has back end, the documentation of this system is done using MS-Office.

D. *Java Platform*

A platform is the hardware or software environment in which a program runs. The Java platform differs from most other platforms in that it's a software-only platform that runs on top of other, hardware-based platforms. Most other platforms are described as a combination of hardware and operating system. The Java platform has two components: The Java Virtual Machine (Java VM) and The Java Application Programming Interface (Java API) Java VM is the base for the Java platform and is ported onto various hardware-based platforms. The Java API is a large collection of ready-made software components that provide many useful capabilities, such as graphical user interface (GUI) widgets. The Java API is grouped into libraries (packages) of related components. The following figure of Java Structure depicts a Java program, such as an application or applet, that's running on the Java platform. As the figure shows, the Java API and Virtual Machine insulates the Java program from hardware dependencies.
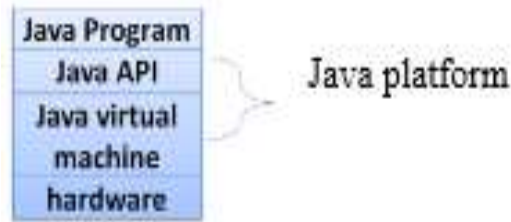
1) *Figure Java Structure*

As a platform-independent environment, Java can be a bit slower than native code. However, smart compilers, well-tuned interpreters, and just-in-time byte code compilers can bring Java's performance close to that of native code without threatening portability.

E. *Android SDK –API 23*

Android is an operating system based on Linux with a Java programming interface[2]. The Android Software Development Kit (Android SDK) provides all necessary tools to develop Android applications. This includes a compiler, debugger and a device emulator, as well as its own virtual machine to run Android programs. Android is primarily developed by Google. Android allows background processing, provides a rich user interface library, supports 2-D and 3-D graphics using the OpenGL libraries, access to the file system and provides an embedded SQLite database. Android application consists of different components and can re-use components of other applications. This leads to the concept of a *task* in Android; an application can re-use other Android components to archive a task.

F. *Android Development Tools*

Android is a widely anticipated open source operating system for mobile devices that provides a base operating system, an application middleware layer, a Java software development kit (SDK), and a collection of system applications. Android mobile application development is based on Java language codes, as it allows developers to write codes in the Java language as illustrated in the below architecture figure of Android structure.   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.

G. *Andriod Studio 1,3.2*

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:

−   A flexible Gradle-based build system
−   A fast and feature-rich emulator
−   A unified environment where you can develop for all Android devices
−   Instant Run to push changes to your running app without building a new APK
−   Code templates and GitHub integration to help you build common app features and import sample code
−   Extensive testing tools and frameworks
−   Lint tools to catch performance, usability, version compatibility, and other problems
−   C++ and NDK support

−   Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine
This page provides an introduction to basic Android Studio features. For a summary of the
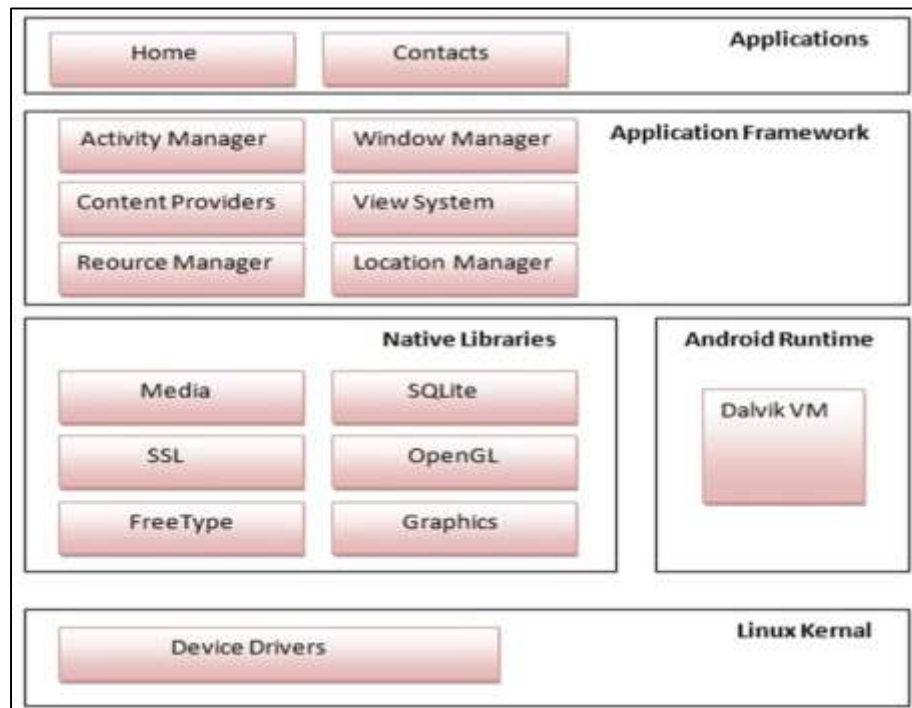
Android Architecture or Android Software Stack Is Categorized into Five Parts:
1) linux kernel
2) native libraries (middleware),
3) Android Runtime
4) Application Framework
5) Application

1) Linux Kernel

It is the heart of android architecture that exists at the root of android architecture. Linux kernel is responsible for device drivers, power management, memory management, device management and resource access.

2) Libraries

On the top of linux kernel, there are Native libraries such as WebKit, OpenGL, FreeType, SQLite, Media, C runtime library (libc) etc.

The WebKit library is responsible for browser support, SQLite is for database, FreeType for font support, Media for playing and recording audio and video formats.

3) Android Runtime

This is the third section of the architecture and available on the second layer from the bottom. This section provides a key component called Dalvik Virtual Machine which is a kind of Java Virtual Machine specially designed and optimized for Android. The Dalvik VM makes use of Linux core features like memory management and multi-threading, which is intrinsic in the Java language. The Dalvik VM enables every Android application to run in its own process, with its own instance of the Dalvik virtual machine. The Android runtime also provides a set of core libraries which enable Android application developers to write Android applications using standard Java programming language.

4) Application Framework

On the top of Native libraries and android runtime, there is android framework. Android framework includes **Android API's** such as UI (User Interface), telephony, resources, locations, Content Providers (data) and package managers. It provides a lot of classes and interfaces for android application development.

5) Applications

On the top of android framework, there are applications. All applications such as home, contact, settings, games, browsers are using android framework that uses android runtime and libraries. Android runtime and native libraries are using linux kernel

H. Hardware Requirements

This System is built on Intel Pentium 4 CPU, having clock speed of 3.0GHz, with RAM size 512MB, 40Ghz of hard disk capacity, display is of 15-inch color monitor, and internet keyboard.

IV. APPLICATION WORKING AND RESULT

Fig. 1:

Figure 1. Illustrates the general view of icons of various applications in an android phone, our application has been named as Women Security System.

Fig. 2:

For a short time a flash screen will appear as shown in fig.2 after clicking on women security app icon.

Fig .3:

    After that A registration page will open where we can enter the user details as illustrated in Figure 3. This contains details such as Name of the user, Address of the user, his/her Mobile Number and Email-id. These details are saved by clicking on save button. It has been designed by keeping all the constraints in mind like, the mobile number is limited to 10 digits and user needs to enter only the digits, email-id is set using standard email-id format, if user enters some wrong format or misses @ or .com then it flashes an error.

Fig. 4**:**

After registering user information shown in Figure 3, User can add the contact details of his/her close associates such as Police Station, family members or friends, who can reach immediately for help in case of emergency. Illustrated in Figure 4, a user can add new contact's with an emergency message which contains Name and Mobile Number. Which can be viewed soon after clicking on update contact button of the application. The call and message both will send only to the first number registered. Remaining 3 contacts will receive the emergency message only.
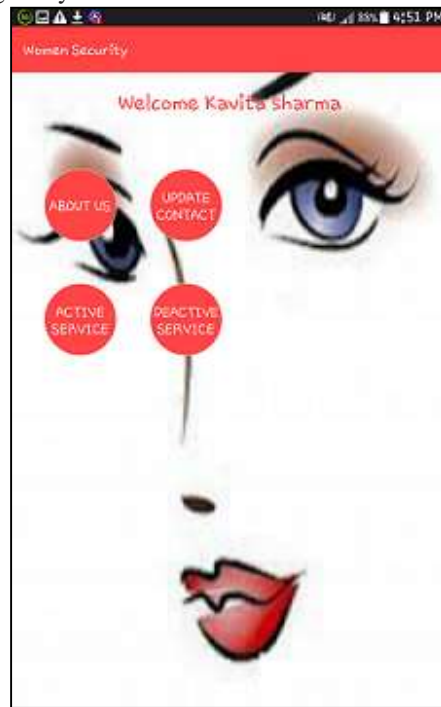

Fig. 5:

Figure 5. Illustrates graphical view of developed application it comes into view soon after registering personal information and contact list on woman security app icon illustrated in Figure 1. This contains easily recognizable icons as illustrated in Figure 5 , those are: About Us, Update contact, Active service and Deactivate service.

Fig. 6:

After clicking om about us icon. You can read a description about woman security app and easily introduced with functions and processing of woman security app as shown in fig.6.
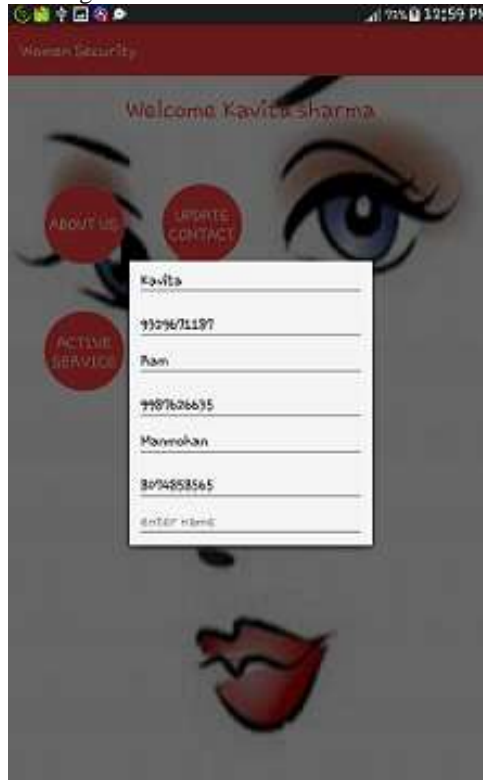

Fig. 7:

On clicking update contact button the contacts appears as illustrated in Figure.7. By clicking on this button we can add a new contact and name of person. Hence the user can delete or update his contacts by clicking on update contact icon any time in case of change in mobile number or name.

Fig. 8:

The last and most important feature of this application is sending Help message and making call by simply pressing volume key. After pressing volume key a small screen will appear for confirm to turn on GPS or not. After proceeding, the number registered

first in contact list of woman security app will only receive both the emergency message and a call by pressing volume key as shown in figure.8. Remaining 3 contacts will receive the emergency message only without voice call.
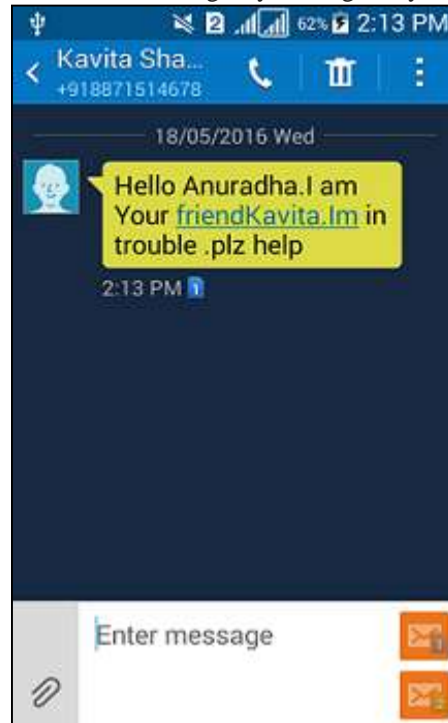

Fig. 9:

Just a click on the volume key button will send the emergency message to all the contacts added in the emergency contact list. If GPS and internet both are not then the sent emergency message will be simple without location as illustrated in figure.9.
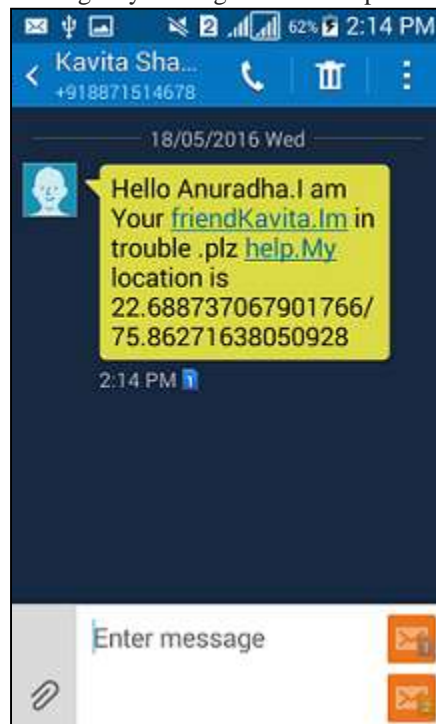

Fig. 10:

As shown in figure 10, If the location of smart phone will be turn on and internet connection will be off at the time of pressing volume key. The emergency message will be send with longitude and latitude of victim's sim's last network fetch by GPS.
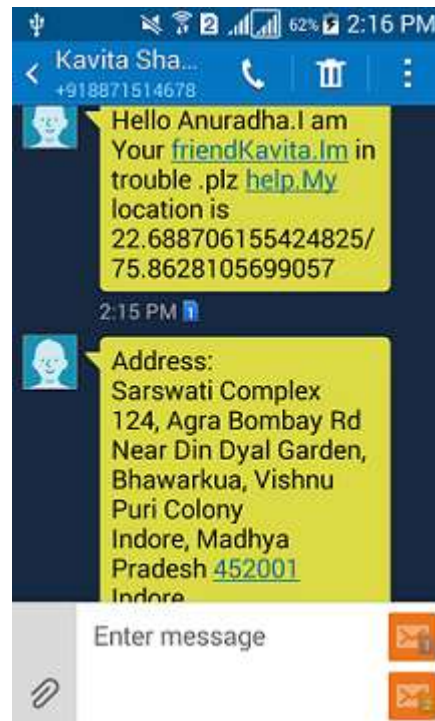
Fig. 11:

By pressing volume key, Women security app will only make call to the first number registered but it will send the emergency message to all the contacts added in the emergency contact list. If both the internet and location of victims android phone will turned on then GPS will fetch the location automatically and send an emergency message to all contacts with the exact location of victim and their landmark with longitude and latitude in two messages. So that the nearby associate can reach the victim easily for His/Her help. The sample result is illustrated in figure.11.

V. CONCLUSION

The problem of the women safety is increased rapidly in this environment, so I proposed as an effective Android application to prevent such type of the suspicious or natural disaster, by alerting the concern authorities using the android mobile phone which helps to stop such type of illegal activates and to trace the concern.

A. Scope
Scope of this project is very broad in terms of other tracking system. It is online as well as offline system. This can be used insecurity world of women. It helps to efficiently increase the security and safety of women's.

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