SOFTWARE REQUIREMENTS SPECIFICATION

for

PratiRaksha (Andriod App For Safety)

Prepared by : 1.Aayush Jain (19ESKIT002)
2. Ankit Saini (19ESKIT009)
3. Archika (19ESKIT015)
4. Darshan Parsoliya (19ESKIT022)

Submitted to : Dr. S.R. Dogiwal
(Associate prof.)

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1 Introduction

1.1 Methodology

Pratiraksha Safety Application can be used to find and Help people in emergency. In recent time it's been identified lots of misbehaving activity in urban and rural part of our country. With some statistics citing the occurrence of one rape incident every 20 minutes, it is evident that it has reached epic proportions. Since mobility growth is been identified in recent 10 years and Smartphone penetration started 5 years ago. With the rapid growth of Android user and cheaper internet cost we can provide a simple medium to create safety awareness among the working and professional women of young and teen age. Pratiraksha Safety Application can show you exact location of the person in help to their relatives, guardian and friends along with the specific location, where you can go and help it.
Pratiraksha Safety Application system offers the added protection of being track by relatives on different time interval and different location. In the addition to this family, parents can easily track and monitor their son or daughter. Pratiraksha Safety Application as every girls have mobile phones and rarely put them down. Lots of families and professionals are waking up to the many benefits that Pratiraksha Safety Application.

1.2 Purpose

The main purpose the project is to provide highly reliable security system for the safety of women. The proposed system is based upon advanced sensors and GPS. The basic aim of the system is to develop a low cost solution for GPS based women tracking system (Pratiraksha 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.

1.3 Scope

We provide this application were women and other user can use this application to contact the parents and friends in the time of need or in case of any emergency .The application provide a friendly interface to use various other emergency tools at the time of emergency. 5 The application can be used both in online and offline mode. Students and other members having Android platform can easily use the application. The application provide various tools in the form of buttons so as to provide friendly interface to the users. The user just needs to tap on the button to use the tools such as loud alarm

button texting along with sending the user location and sending the location via the SMS when the end user is not having the Android platform.

1.4 Tools used :

1.4.1 Java

Java is an object-oriented programming language developed by Sun Microsystems a company best known for its high end UNIX workstations. Java language was designed to be small, simple, and portable across platforms, operating systems, both at the source and at the binary level, which means that Java programs (applet and application) can run on any machine that has the Java virtual machine (JVM) installed.

1.5 Technologies to be used

- IDE: Android Studio
- Programing Language : Java
- Database: SharedPrefrences

1.6 Overview

Overview contains the existing models its drawbacks and new modal

1.6.1 Existing System

- Registration of User.
- Make Emergency Calls
- Send current location

1.6.2 Drawback Of The Existing System

- Requires good network connectivity
- Good Android platform
- Difficult to inform immediately the location of the user in trouble

1.6.3 Proposed System

- The proposed system is for people especially women safety and overcomes the disadvantages of the existing systems.
- This proposed system is GPS based "Pratiraksha Security System". It consists of GPS device i.e. any Android Phone .The device will provide the position information such as latitude, longitude of the user.
- The proposed system is based on advanced sensors. Whenever the user shakes his/her phone, a distress signal will get generated automatically and then a message alert is sent to the contacts which are added in the emergency contacts list.

2 Overall Description

This project is aimed at developing an android app for the security of people by raising an SOS. The app provides a prompt alert signal in a single trigger to listed emergency contacts in case of an attack or abuse.

2.1 Product Prespective

2.2 Software Interface

- Operating System - Android.
- API Level - 14 or higher.
- Disk Usage – 20-50 Mb.

2.3 Hardware Interface

- Processor: Snapdragon, Dual Core.
- Memory Space: 150 Mb
- RAM: 512 MB.
- GPS enabled Android Phone

2.4 Graphical User Interface

- The system shall provide use of icons and toolbars
- Graphical user Interface has been made interactive so that user can feel good while using the application.
- We have provided the proper image of buttons so that user can understand properly

2.5 Database Design

- Shared Preferences can be thought of as a dictionary or a key/value pair. common use is to store user preferences

3 Problem Analysis

Problem analysis contains the product description, feasibility analysis, technical feasibility, operation feasibility, social feasibility and economical feasibility.

3.1 Product Description

Pratiraksha security application provides a user-friendly interface to their users. This application works in both online and offline mode. Users and other members who have installed this android application can get the help immediately by just shaking up their handset. They can also check the feedback provided by the various users. By clicking on loud alarm option, it produces a kind of alert sound which make the other people nearby to that location and they get to know that something wrong happens and they can also help that user. There is also an option of fake caller which helps the user to initiate a fake call into their phone if they want an interruption in the situations where the user feel unsafe.

3.2 Feasibility Analysis

Inputs are required for developing the system, which stored for the process and for future use. System will work on the inputs given by the user and itself gathers most of the information necessary for its activities. The main objectives that are guiding as in the input stages are:

- Controlling the amount of inputs
- Avoiding inordinate delay
- Controlling errors Feasibility analysis (FA, also called feasibility study) is used to assess the strengths and weaknesses of a proposed project and present directions of activities which will improve a project and achieve desired results.

The nature and components of feasibility studies depend primarily on the areas in which analysed projects are implemented. As the name implies, a feasibility study is used to determine the viability of an idea. The objective of such a study is to ensure a project is legally and technically feasible and 6 economically justifiable. It tells us whether a project is worth the investment. It is used to carry out to select the best system that meets the performance requirements. It involves preliminary investigation of the project and examines whether the designed system will be useful to the users. By doing the research beforehand, companies can save money and resources in the long run by avoiding projects that are not feasible.

3.3 Technical Feasibility

A study of resource availability that may affect the ability to achieve an acceptable system. Technical feasibility is the most difficult area to ensure at initial stage. Since the objectives, functions, performance cannot be predicted to its fullest, everything seems possible, provided the right assumptions are made. It is essential that the process of analysis and definition can be conducted in parallel with an assessment of technical feasibility. The consideration that is normally associated with technical feasibility includes resource availability at the organization where the project is to be developed and implemented.

3.4 Operation Feasibility

It deals with the consideration about working of the system after installation. The proposed system would be beneficial to its users as their needs are fully satisfied. As this project satisfies all the requirements of the users it is operationally feasible. All the operational aspects are considered carefully here. Only by spending tie to evaluate feasibility we will be able to reduce the chances for extreme embracement at later stages of a project. The benefits of proposed system are :

- Ability to handle large amount of a data
- Fast and accurate information is possible
- Security features based on user roles
- Easy Report generation Thus, considering the above facts management felts that the project is feasible.

3.5 Social Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

3.5.1 Non Functional Requirements

Non-functional requirements are the quality requirements that stipulate how well software does what it has to do. These are Quality attributes of any system; these can be seen at the execution of the system and they can also be the part of the system architecture.

3.5.2 Accuracy

The system will be accurate and reliable based on the design architecture. If there is any problem in the accuracy then the system will provide alternative ways to solve the problem.

3.5.3 Usability

The proposed system will be simple and easy to use by the users. The users will comfort in order to communicate with the system. The user will be provided with an easy interface of the system.

3.5.4 Accessibility

The system will be accessible through internet and there should be no any known problem.

3.5.5 Performance

The system performance will be at its best when performing the functionality of the system.

3.5.6 Reliability

The proposed system will be reliable in all circumstances and if there is any problem that will be affectively handle in the design

3.5.7 Security

The proposed system will be highly secured; every user will be required registration and username/password to use the system.

3.6 Economical Feasibility

The purpose of an Economic Feasibility Study (EFS) is to demonstrate the net benefit of a proposed project for accepting or disbursing electronic funds/benefits, taking into consideration the benefits and costs to the agency, other state agencies, and the general public as a whole i.e Cost Benefit Analysis

- Resource cost is based on the estimated resources within the technical analysis
- Employee costs should be based on salaries and overhead
- Any hardware or software that you purchase should be listed as well
- Additional costs (if any): This section is an assessment of additional costs incurred from licensing, contracting, out-sources testing, and so on. Cost of maintenance of equipment.

4 Product Functions

4.1 SMS Alert

It is perfect for the females as well as other users that need some kind of safety alarm in case they found out that someone is following or stalking them. It consists of of scream alarm.It's an initial distraction which will buy some time and allow the user to escape from the trouble.

- Police siren

Siren will Be on Shaking the Device few times and we can stop the Siren by using Stop Button as nowdays safety and security is everybody's concern

4.2 Fake Call

The fake call timer allows the user to make fake calls in the time of need. It helps user to escape from an undesirable situation citing an important call from anyone who needs him/her urgently and rest depends upon user creativity. This feature also helps the user to escape from boring social events . In order to set a fake call the user have to select the "Fake Call" icon and after that user could write any name from which he/she wants a fake call. The fake call will be of 7 rings if he/she will not press the answer button the call will get cut. In a critical situation, the user just have to long term press the fake call button and automatically get a fake call from the desired selected name in the settings.

4.3 My Location

Your friend is out somewhere for a late night party. How could you check where that respective person is ? Where are you feature allows the user to see the recent location of the friends and family when needed without disturbing the person being tracked. While first request is send by the sender. The sender will have to select the "My Location" icon and then a new dialog box of "Pick a Friend" will open up. The sender could select any friend and the request will be sent to the receiver. The receiver will accept that request from their end and a message will be sent to the receiver with the present location of the user. This way user can send her/his location to a friend or relative so that they know where the user is.

4.4 Contact

This list shows all the contact numbers of family and friends which are added by the user through contacts. This could be done by selecting the contact icon on the bottom right corner of the friends list. This Contact list also contains some Emergency Contacts numbers which will be helpful in a Emergency

4.5 Settings

The "Settings" function consists of the following features -:

- Contact Services : It allows the Stay Safe Application to set number of caller to whom your CALL and SMS with the exact location will be sent to the emergency contacts.
- Fake Call : The user could set the fake caller name as per the requirement.

4.6 PANIC

As soon as the user press either the Panic button on the application or a long press on the upper and lower volume button the emergency call and a SMS with current location will sent to the registered number on the application through contacts.

4.7 Basic Laws

Not to forget in today's scenarios, women are excelling in all fields. But women are not considered safe in our houses, workplace and even at night time. In our society not only housewives but also many of the independent working women don't know much about their rights. Laws against child marriage and dowry have gained much awareness but other than these laws, there are many laws that a woman should be aware of which are mentioned in details.

4.8 Self Defense

It is perfect for the females as well as other users that need learn some kind of self defense techniques by pressing this self defense button he/she will be able to watch an video perfect for learning attacks in a very short time.

5 Designing the Project

Project design is an early phase of the project where a project's key features, structure, criteria for success, and major deliverables are all planned out. The aim is to develop one or more designs that can be used to achieve the desired project goals.

5.1 System Design

In System design the design functions and operations are described in detail, including screen layouts, business rules, process diagrams and other documentations. The output of this stage will describe the new system as a collection of modules or subsystems. The design stage take as its initial input the requirements identified in the approved requirements document.

5.1.1 Logical Design

The logical design of our system pertains to an abstract representation of data flows, inputs and outputs of the system. In the context of systems design, modelling can undertake the following forms, including:

- Data Flow Diagrams
- UML Diagrams
- Flow Charts

5.1.2 Physical Design

The physical design relates to the actual input and output process of the system. This is laid down in terms of how data is input into our system, how it is verified/authenticated, how it is processed, and how it is displayed as output.

6 Design Notations

Design notations are used when planning and should be able to communicate the purpose of a program without the need for formal code.

6.1 Data Flow Diagram

A Data Flow Diagram (DFD) is a graphical representation of the "flow" of data through an information system modeling its process aspects. Often it is a preliminary step used to create an overview of the system that can later be elaborated

6.1.1 Data flow Diagram (Level 0)

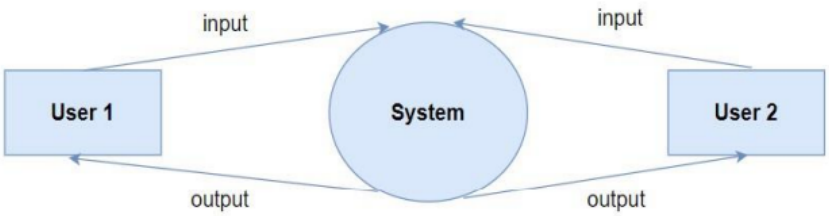

Figure 6.1: Data flow Diagram (Level 0)

6.1.2 Data flow Diagram (Level 1)

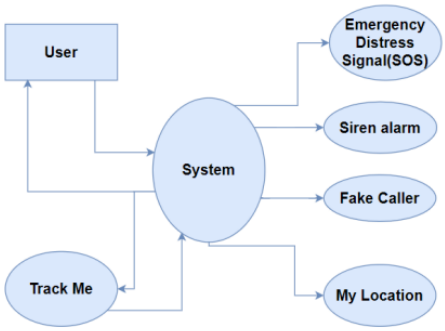

Figure 6.2: Data flow Diagram (Level 1)

6.1.3 Data flow Diagram (Level 2)

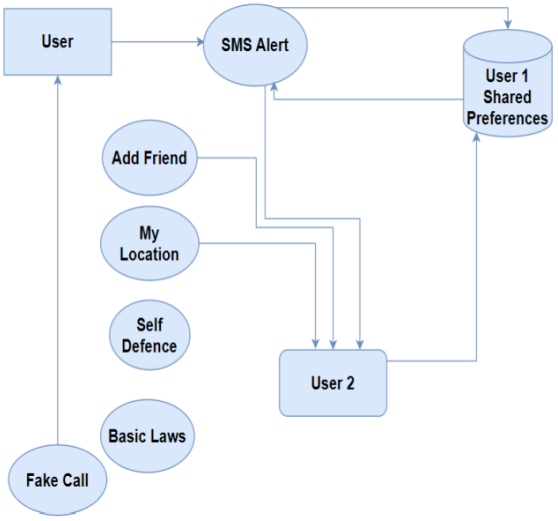

Figure 6.3: Data flow Diagram (Level 2)

7 Other Requirements

7.1 Use Case Diagram

Figure 7.1: Use Case Diagram

7.2 ER Diagram

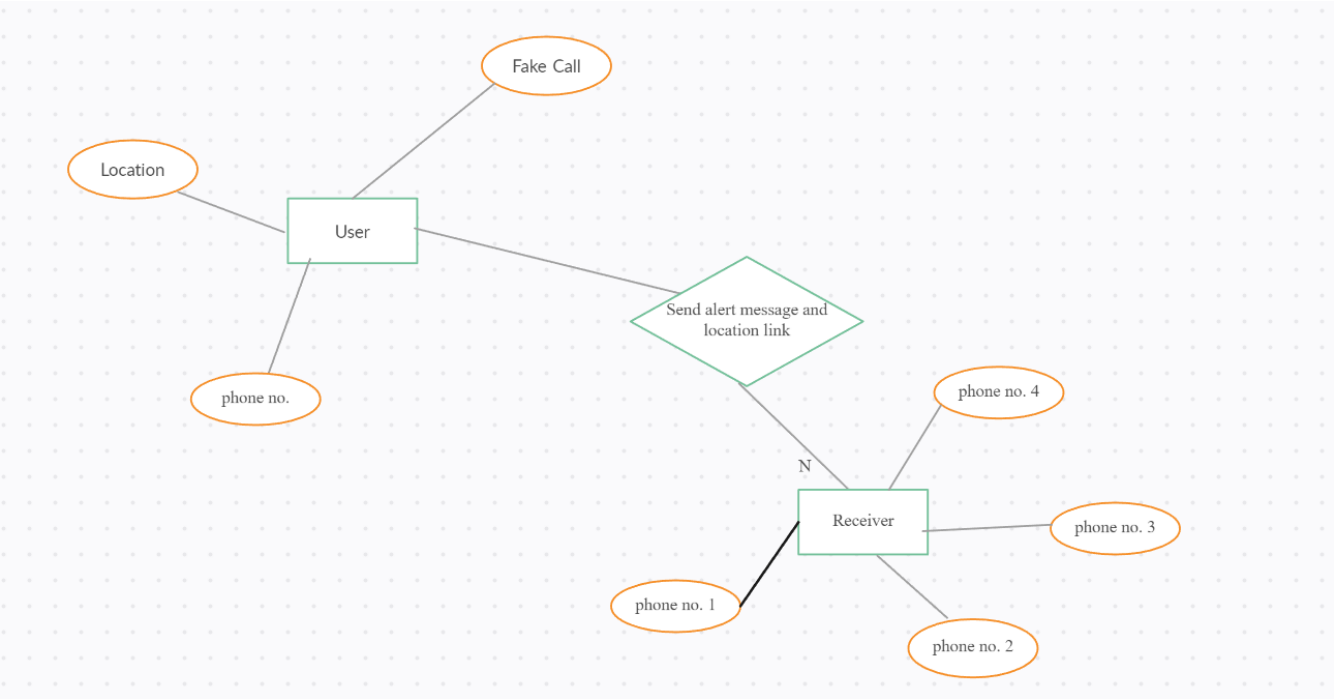

Figure 7.2: ER Diagram

7.3 Activity Diagram

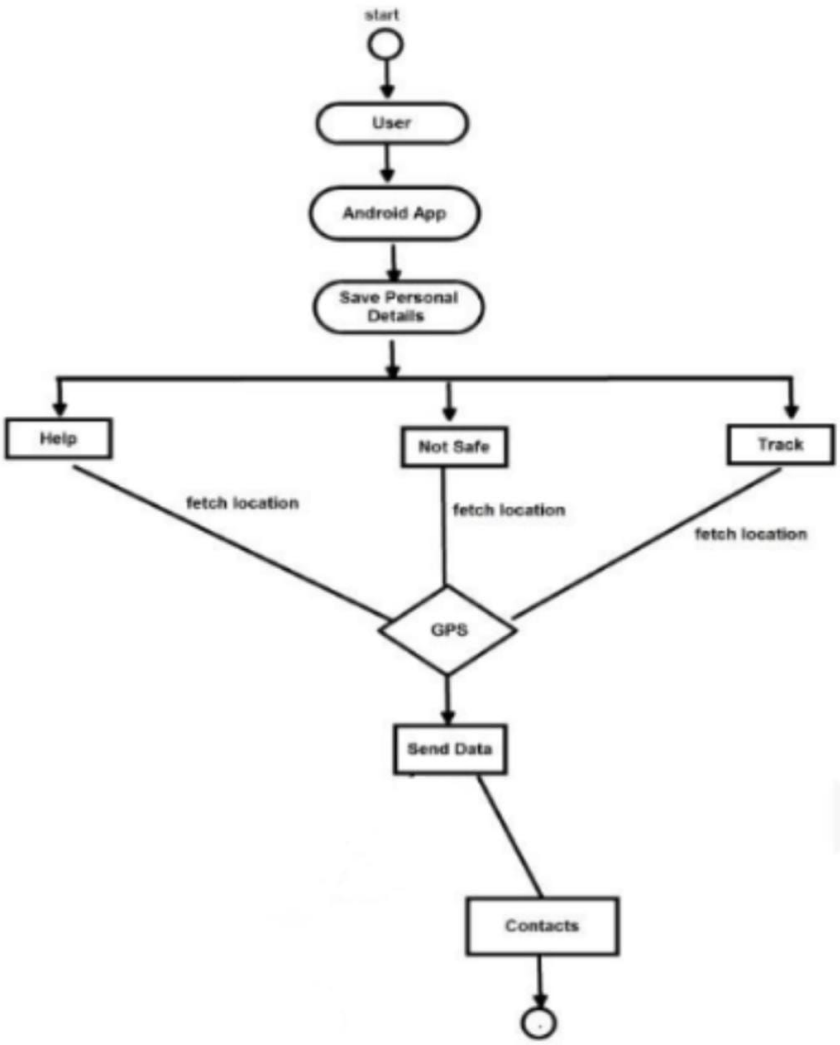

Figure 7.3: Activity Diagram

7.4 Sequence Diagram

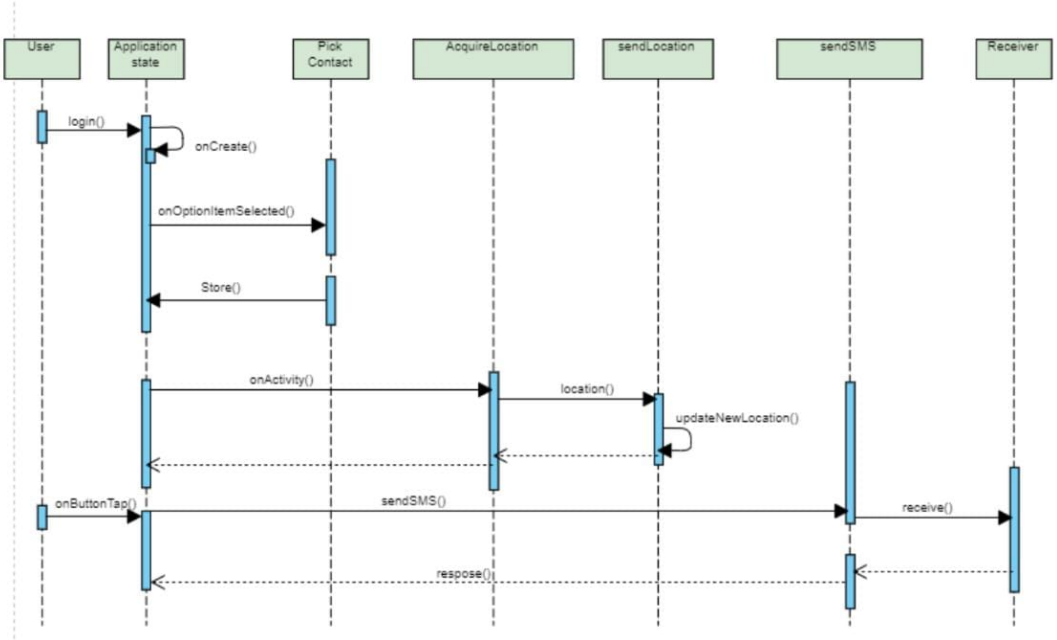

Figure 7.4: Sequence Diagram

7.5 Class Diagram

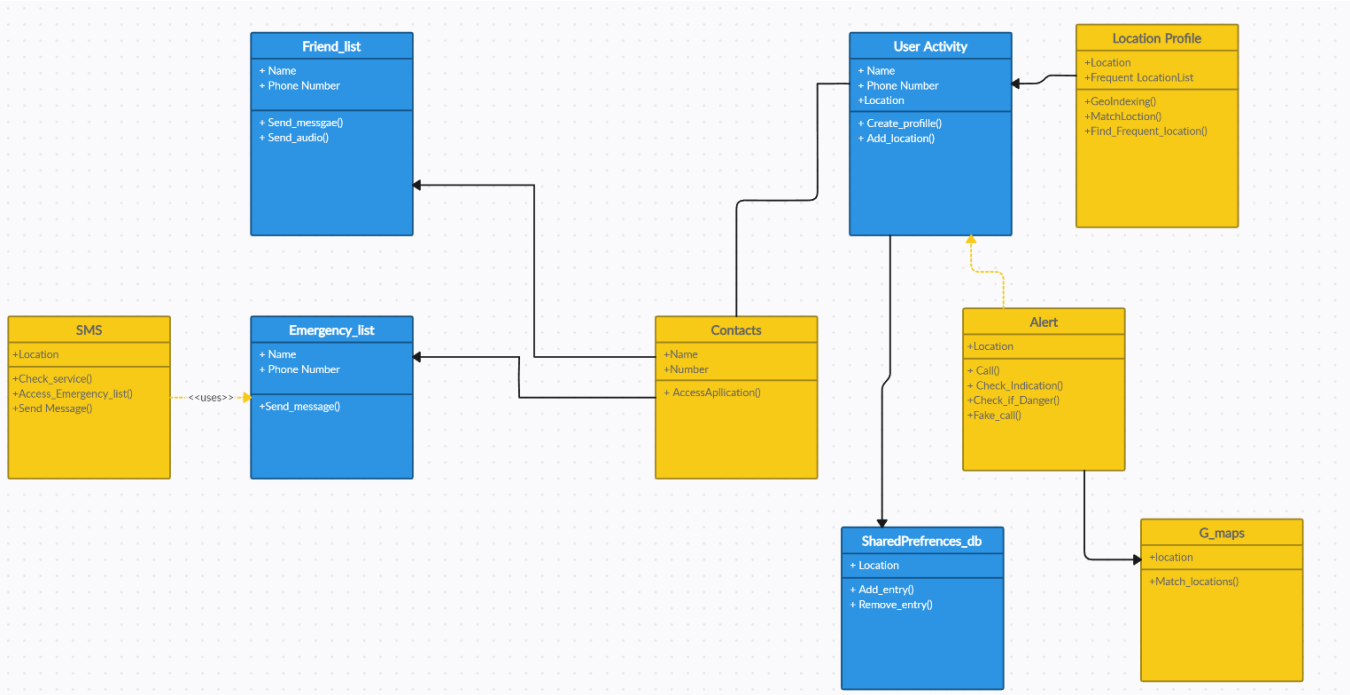

Figure 7.5: Class Diagram

8 Non Functional Requirement

Non-functional requirements make up a significant part of the specification. They are important as the client and user may well judge the product on its non-functional properties. Provided the product meets its required amount of functionality, the non-functional properties – how usable, convenient, inviting and secure it is – may be the difference between an accepted, well-liked product, and an unused one.

8.1 Performance Requirements

The system shall accommodate high number of users without any fault. Responses to view information shall take no longer than 5 seconds to appear on the screen

8.2 Safety Requirements

System use shall not cause any harm to human users.

8.3 Security Requirements

System will use secured database. Normal users can just read information but they cannot edit or modify anything except their personal and some other information. System will have different types of users and every user has access constraints.

8.3.1 Software System Attributes

- Reliable
- Secure
- Available

9 References

- Adler M. J. (2009). Harvard Business Review. Health Care Requires Big Changes to Complement New IT, 87, 20.
- Hello, Android: Introducing Google's Mobile Development Platform Book by Ed Burnette
- Android Programming: The Big Nerd Ranch Guide Book by Brian Hardy
- Programming Android Book by G. Blake Meike, Laird Dornin, Masumi Nakamura, and Zigurd R. Mednieks