A

Project Report titled

EMERGENCY ALERT

Submitted to

Department of Information Technology.

Bunts Sangha's

S. M. Shetty College of Science, Commerce and

Management Studies, Powai.

For Partial Fulfilment for Degree of Master of Science
(Information Technology)

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In the Subject Head

Project (Semester IV)

Submitted by

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under the guidance of

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CERTIFICATE

This is to certify that **Chandan Vinod Yadav**, a Part II student of Master's of Information Technology (M. Sc.IT) from University of Mumbai has successfully completed the project entitled "**Emergency Alert**" as a part of academic in the subject head Project which is approved for degree of Master's of Information Technology (M.Sc.IT) a post-graduate course of Mumbai University during academic year 2020-2022.

Internal Guide

Coordinator

External Examiner

Date: Saturday, June 18, 2022

College Seal

DECLARATION

I hereby declare that the project entitled, "Emergency Alert**" done at Bunts Sangha's S. M. Shetty College of Science, Commerce andManagement Studies, Powai.**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university. The project is done in partial fulfilment of the requirements for the award of degree of **MASTER OF SCIENCE (INFORMATION TECHNOLOGY)** to be submitted as final semester project as part of our curriculum.

Chandan Vinod Yadav

Name and Signature of the Student

ABSTRACT

SOS (which stands for Save Our Souls or Save Our Ships) has primarily been used as an International Morse code distress signal. It is commonly used in navigation by Sailors when under attack by Pirates or when they need help of some kind. But the signal is not limited to navigation and is used in a more general sense whenever a notification has to be sent about a situation that requires immediate attention.

EMERGENCY ALERT application is very easy in this application we have to enter the number of car and search the number user get the full information of the car owner. EMERGENCY ALERT have tracking system user can tracking the car using the application. EMERGENCY ALERT also have a emergency service like police, hospital and relative. EMERGENCY ALERT send the message or call the user friends and provide the emergency service to the user. EMERGENCY ALERT have tracking system if user allow there friends to track him then they can track him otherwise they can't. . It provides fast, accurate, reliable and user friendly experience of using getting information and tracking system to the user.

ACKNOWLEDGEMENT

I express my deep sense of gratitude to **Dr. Tushar Sambare** for his deepest interest, valuable guidance, constant supervision, support and encouragement throughout the course of the project.

I am also grateful to respected Principal, **Dr. Sridhara Shetty**, IT faculty and the whole Department of Information Technology for giving me an opportunity to embark on this project.

I would like to express my heartfelt thanks to the canteen manager and canteen staff for their kind co-operation and help.

I also thank my classmates who have willingly helped me out with their abilities.

Lastly, I would like to express my deep appreciation and indebt ness to my mother for providing me financial and moral support, which helped me in successful completion of this project.

Chandan Yadav

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CHAPTER 1

INTRODUCTION

1.1 Background

SOS (which stands for Save Our Souls or Save Our Ships) has primarily been used as an International Morse code distress signal. It is commonly used in navigation by Sailors when under attack by Pirates or when they need help of some kind. But the signal is not limited to navigation and is used in a more general sense whenever a notification has to be sent about a situation that requires immediate attention.

EMERGENCY ALERT application is very easy in this application we have to enter the number of car and search the number user get the full information of the car owner. EMERGENCY ALERT have tracking system user can tracking the car using the application. EMERGENCY ALERT also have a emergency service like police, hospital and relative. EMERGENCY ALERT send the message or call the user friends and provide the emergency service to the user. EMERGENCY ALERT have tracking system if user allow there friends to track him then they can track him otherwise they can't. . It provides fast, accurate, reliable and user friendly experience of using getting information and tracking system to the user.

1.2 OBJECTIVES

The objectives of EMERGENCY ALERT are:

- To get emergency service in the emergency.
- To reduce paper work
- To provide fast, efficient and user-friendly automated environment.
- To reduce long process to get the information.
- To manage all the emergency service online through an android application

1.3 Purpose, Scope and Applicability

1.3.1 Purpose

EMERGENCY ALERT have tracking system user can tracking the car using the application. EMERGENCY ALERT also have a emergency service like police, hospital and relative. EMERGENCY ALERT send the message or call the user friends and provide the emergency service to the user. EMERGENCY ALERT have tracking system if user allow there friends to track him then they can track him otherwise they can't.

The purpose of develop this application is to solve the personal safety against public fear problem . Though there are several existing applications in market, but all of them have unsatisfied problems. This project would improve and make some innovation to help those users to prevent unhappy case happen and reduce their public fear when they hang out with friends or family.

1.3.2 Scope

EMERGENCY ALERT to get the user car location with the help of EMERGENCY ALERT application.
This location tracking and emergency system is a mobile application which is in android platform. User may use to send their emergency alert including current GPS location to their pre-set urgent contact person. Other than that, user also can track their friend list status whether they have reach destination and their approximate arrival time. Furthermore, in order to make sure user identity, user need to key their secure pin to check in to prevent someone with malicious to cheat their member.

Function of the project:

- Reduce the long process to get the details.
- Allows the user to get the emergency service at the time of emergency.
- Carries out smooth and secure operations.
- It provide the user to get the friend location of the EMERGENCY ALERT user.

1.3.3 Applicability

The project EMERGENCY ALERT is directly/indirectly applicable in the following areas:

- Emergency-
  EMERGENCY ALERT can be use in the emergency such as accident or a medical requirement.

1.4 ACHIEVEMENTS

In the course of this project, I learned about the following things:

- Android app development
- Working with Firebase
- Installation and use of plugins and services

1.5 ORGANIZATION OF REPORT

- The project report consists of details about the latest technologies available related to the problem area in Chapter 2: Survey of Technologies. Requirement analysis will be carried out to define the requirements of the system, followed by planning and scheduling of the project.
- In Chapter 3, all the requirements are specified for the development and implementation of the project
- Chapter 4 describes the system design that contains features and operations of the project, including screen layouts, business rules, process diagrams, pseudocode and other documentation.
- Chapter 5 describes about Implementation and Testing Approaches whereas
- Chapter 6 discusses about reports and test reports of the project. It also describes the working of the software.
- The conclusions derived from the project and its future scope are listed in Chapter 7. It also explains the limitations encountered during the testing of the project.

Chapter 2

SURVEY OF TECHNOLOGIES

2.1 Existing Systems

2.1.1 Safe Application that can invite friends to walk with user to get home to prevent alone. It allows user to set an automated alarm to notify user so that if user fail to check in after a set amount of time and also will notify your friends where you've been and where you currently are. A 10- second video will start recording when the SOS alarm is on. Besides that, bSafe come with 1 interesting features that other application doesn't have, a Fake Call. This fake call function will trigger a fake call to user itself, in case of such a ruse makes it easier for user to extricate themselves from an uncomfortable or unsafe situation (Satapathy, 2012). However, it also can be an interesting feature to play around with kids, or to prank their friends.

2.1.2 SOS - Stay Safe! Application that use shaking to trigger the SOS alert to customize contact list. It sends a message to the pre-set contact list that contain victim's mobile phone battery life, current location, time trigger, and recorded sound clip of the user's situation. This app need to create a pin passcode, this passcode is use to verify user and stop the SOS. Also, a shaking pattern is record and recognize (iXtentia, n.d.) to trigger to SOS, except shaking, SOS also can be trigger by pressing the Power button 3 times.

2.2 Available Technologies

Table 2.2.1: Comparative study of technologies

Technology	Description	Advantages	Disadvantages
HTML5	Mark-up language , has advanced features and new APIs for mobile development	Elegant forms, clean code, geolocation support.	Difference in execution time, only modern browsers support it.
CSS	Style sheet language used to describe style of html page	Improves site speed, low maintenance.	Fragmentation, different levEmergency
Java	High level , Object-oriented language, Platform independent	Distributed, secure, multithreaded.	Slower than C, C++.

.NET	Used to build web, mobile and windows based applications	Feature rich framework, supports 70+ languages.	Object relational support is limited, vendor lock in.
Android	Open source, most widely used operating system developed for phones, tablets etc.	Most customisable, cost effective, open platform.	Needs more code, complex.
MYSQL	Simplest and fully featured relational database management system	Easy to use, open source, inexpensive.	Limitations to developers.
SQL Server	SQL Server is Microsoft's relational database management system (RDBMS).	Portable, multiple data view, well defined standards	Occupies large space, cost, and complex interface.
Cloud	Cloud computing is a type of computing that depends on shared computing resources rather than having local servers or personal devices to handle applications.	Accessibility, disaster recovery, cost savings	Requires compulsory internet connection, data security concerns.
JSP	Java Server Pages (JSP) is a technology that helps software developers create dynamically produced web pages based on HTML, XML, etc.	Universally readable, supports web development tools, component level	No rich features, database connectivity is complex, numerous syntax issues.
PHP	It is an open source, server-side, scripting language used for the development of web applications. It is written for the automation of tasks.	Free, speedy, Cross platform, easy database connection, easy to learn and code	No debugging tools
JavaScript	It is a high-level, interpreted programming language.	Client side, fastest, rich interfaces	Security issues, no network application.
Swift	Native development language. Mostly used for iOS.	Safe, fast, automated memory management	Used only for iOS.
C++	Simplest dynamic language	Simple, object oriented, portable	Code redundancy, inefficient, no security
Oracle	An RDBMS implements objectoriented features such as userdefined types, inheritance,	Functionality, reliable, atomicity, isolation.	Difficult to learn, high complexity, high cost.

	and polymorphism.		
EJB	Enterprise JavaBeans (EJB) is the server-side and platformindependent Java applicationprogramming interface (API) for Java Platform.	Object oriented, free access to complex resources is allowed, cached and pooled, use of annotation and attributes.	Complex, high cost, time consuming, lots of resources.
Active X	ActiveX is a set of object-oriented programming technologies and tools that Microsoft developed for Internet Explorer to facilitate rich media playback.	Build quick and easy web pages, Mobile No. messages, open pdfs.	Security vulnerabilities

2.2 JUSTIFICATION FOR SELECTION OF TECHNOLOGY

- **Android:** It offers best development facilities and application deployments.
- **Java:** It is object-oriented programming language, which is the official language for Android development. This language is easy to handle and develop Android applications with its own GUI system.
- **HTML and CSS** – For developing web-frontend applications for mobile devices.
- **PHP** – It is object-oriented and uses a three-layered model to help create dynamic mobile apps and web applications. It works great for apps that require database integration.
- **MySQL:** It is a relational database management system constructed on Structured Query Language. It can be used for e-commerce applications. It is based on a client-server model. MySQL works along with numerous utility programs, which support the administration of MySQL databases. Commands are sent to MySQL Server via the MySQL client, which is installed on a computer.

CHAPTER 3

REQUIREMENTS AND ANALYSIS

3.1 Problem Definition

According to the official data (Anon., 2016) and (SHAHRUDIN, 2016), crime index and public fear both shows an upward trend. Public fear of crime is referring to the fear that citizens scaring as they will be one of the next victim of crime. Hence, some family or parent has limit their children or old people steps out the door. Besides that, when people wants to hangout for gathering or to the garden to release stress and relax, they have to worry about their personal safety including their friends. There are a lot of applications available throughout many countries but only a few in Malaysia. This application is to reduce the criminal cases and improve personal safety purpose, but there is still some dissatisfaction and imperfection to the user.

If you stuck some where there is many problem to find him or her very easily this take a long time period to find someone if user is stuck anywhere he or she can share the location to the friends or police to find him/her. If there is emergency like there is a fire or someone is injured you have to call the fire bridge or a ambulance one by one it take a time which lead many problem in the emergency there is a emergency button user have to press the button message or location is send to the fire bridge or a ambulance directly you don't have to call one by one in emergency. If you want to share the location of your you have to call the person and say that my here at the land mark etc in the EMERGENCY ALERT you have to share the location easily.

3.2 Requirements Specification

The following are the **FUNCTIONAL** requirements for the proposed system:

- To provide the functionality to user for better result.
- The system is required to register the user through phone number.
- It needs to save user and order information into the database.
- It needs to update user record.
- The system needs to display visual menu on the android application.

- The system provide the emergency help in accident.
- The system allow to search the location to the user friends if user wants.
- It send the user location in accident.

Feasibility study:

- Feasibility study consists of considering all the possible ways to provide a solution to a given problem and tells if a problem is solvable. It defines all the problems of existing system. It finds technology required to solve problems and determines most suitable solution.
- **Technical Feasibility**: The proposed system is technically feasible as it uses reliable technologies and software, which are easy to maintain.
- **Operational Feasibility:** It is also known as behavioral feasibility. The proposed system is feasible as it is suitable for human, organizational and political aspects. It is easy to operate and the user of the system do not need any extra training to operate it just beside basic computer and phone operating knowledge.
- **Economical Feasibility:** The proposed system is economically feasible, as it do not need any extra expensive gadget beside just an android phone.

3.3 Planning and Scheduling

Before starting the actual production, the planning is done. It is an ongoing project management activity, which involves creation of set of plans that will help to manage time, cost, quality and risks.

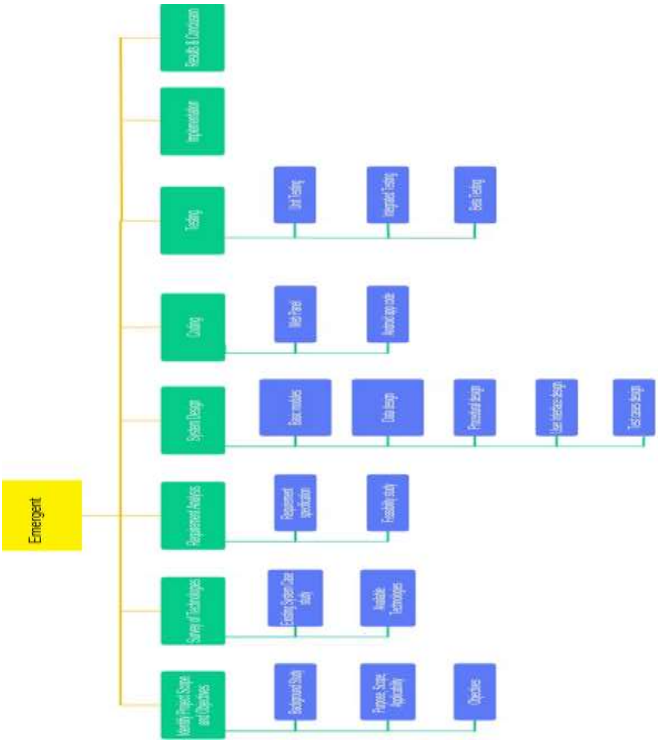
The project plan of EMERGENCY ALERT:

- Scope of the project in short: To bridge the gap between canteen and its usage by automating it with the help of technology.
- Work Breakdown Structure (WBS) of EMERGENCY ALERT is shown in the diagram. 3.3.1 .
- Project scheduling – lists the schedules of activities involved in the project.
- Resources required for the project- Android phone, laptop/pc, printer, paper, software.

Project Scheduling: The project schedule is a calendar that is used to associate the tasks to be performed with the resources that will perform them. Before a project schedule is estimated, a WBS is designed in an attempt to estimate the time needed to implement each task. Project scheduling is about distributing or allocating the estimated efforts. It arranges the tasks to make optimal use of workforce. It also reduces the task dependencies to avoid delays.

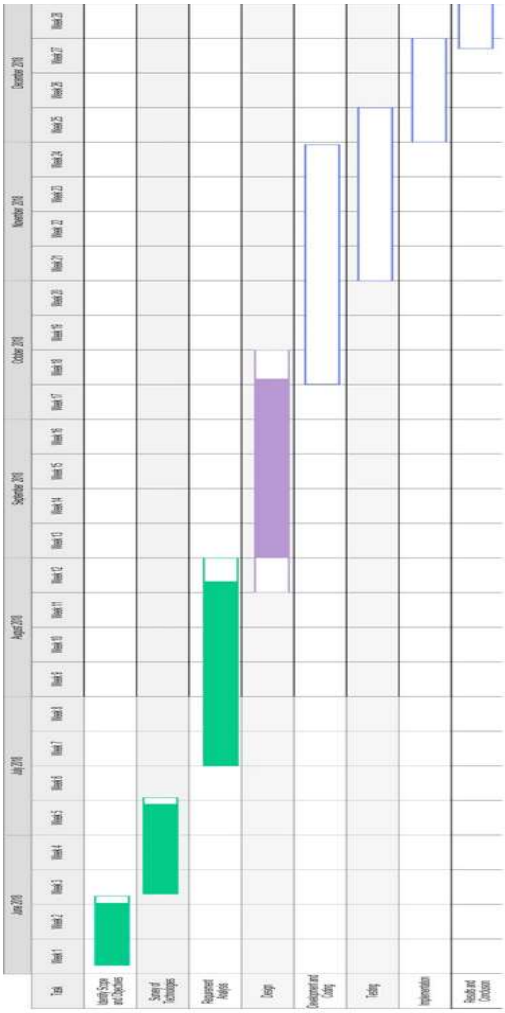
Gantt chart: A Gantt chart or bar chart is one of the most commonly used project management tools and are used in tracking project schedules. Gantt chart provides a standard format for displaying project schedule information by listing project activities and their corresponding start and finish dates in a calendar format.

Program Evaluation Review Technique (PERT): It was developed to handle projects when time duration for each activity is no longer just a single time estimate but is a random variable, which is characterized by some probability distribution.

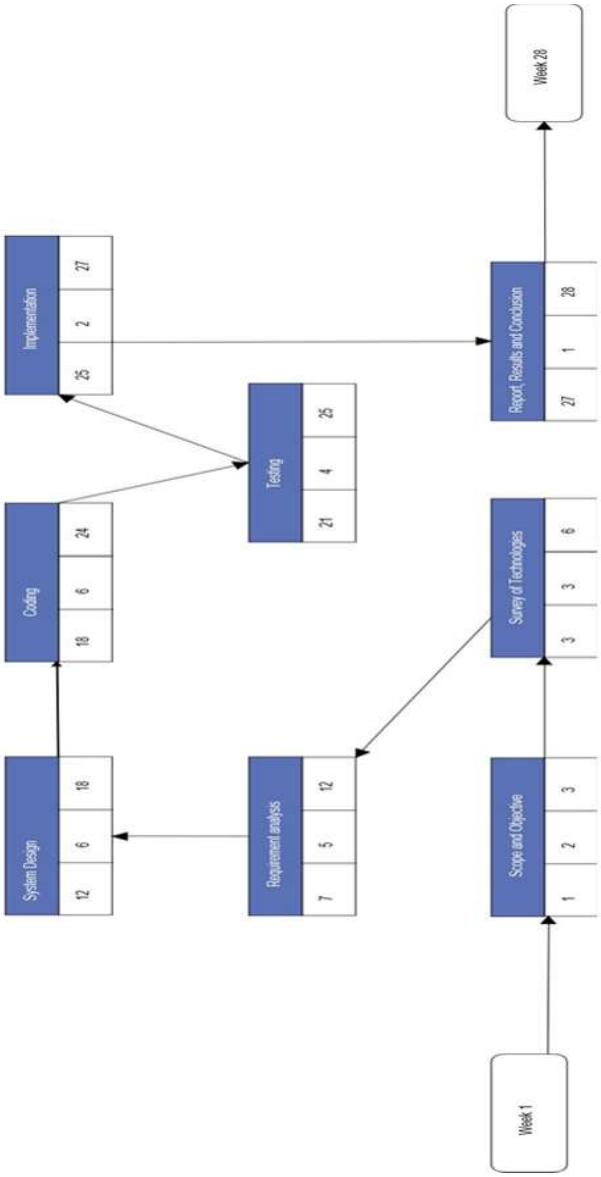


3.3.1 WBS

3.3.2 Gantt chart



3.3.3 PERT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3.4 Software and Hardware Requirements

3.4.1 Hardware requirements:

- Processor: Intel i3 or higher
- Hard disk: 20 GB
- RAM: 4GB
- Graphics card: Integrated Intel Graphics or any other graphics card of minimum 2 GB
- Android Smart Phone
- Internet Connectivity

3.4.2 Software requirements:

- Operating system for application: Android
- Android version: 4.1 or higher
- Android Tools: Android Studio 2.3.3
- Operating system for Web Panel: Windows 7, 8, 10
- Language: Java (Android Studio)
- Frontend: HTML, XML, CSS- (Notepad)
- Scripting language: PHP, JavaScript
- Database: MySQL 8.0, Firebase Integration for Analytics
- Browser: Chrome, Microsoft Edge, Mozilla, any latest browser.
- Gmail, cPanel hosting
- Libraries: Retrofit Network library
- Other softwares for project report: MS Word, Star UML.

3.5 Preliminary Product Description

The product EMERGENCY ALERT is a combination of android application and web panel through which the whole process of emergency is automated. The application provides a very friendly environment to the user where the user get the car details very easily with help of application there is not a long process to get the information . EMERGENCY ALERT is use to provide the location of the user or get the location of the another user if the user gives the permission otherwise they can't get the location. The application EMERGENCY ALERT also have a emergency service like police, ambulance or relative in the emergency the EMERGENCY ALERT have a emergency button user have to press the button application send the location or send the message that you want a help and application also call if you are in the position to talk make a call to the relative or a emergency service.

The web panel is used to mange and confirm details of the users. It enables the admin to update the application and send the notification which is reflected dynamically in the android application.

3.6 Conceptual Mod Emergency

3.6.1 ER Diagram

Entity relationship model is a graphical representation of entities and their relationships to each other. An entity is a definable thing. It has relationships and attributes.

Cardinality in ER:

Zero or one: 

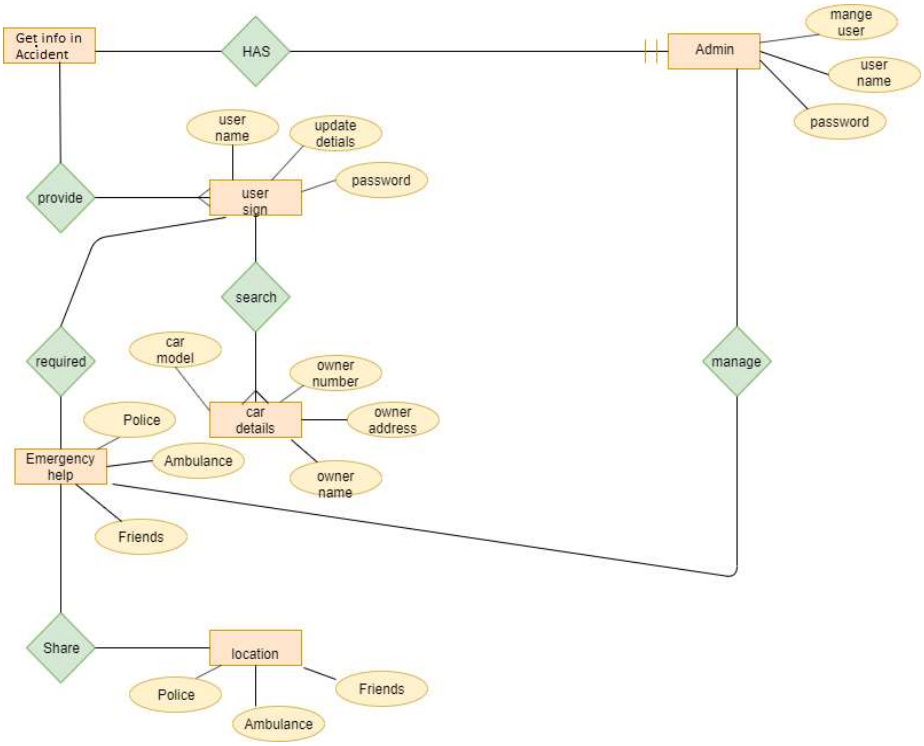
Many: 

One: 

One and only one: 

Zero or many: 

One or many: 



3.6.2 Use Case Diagram

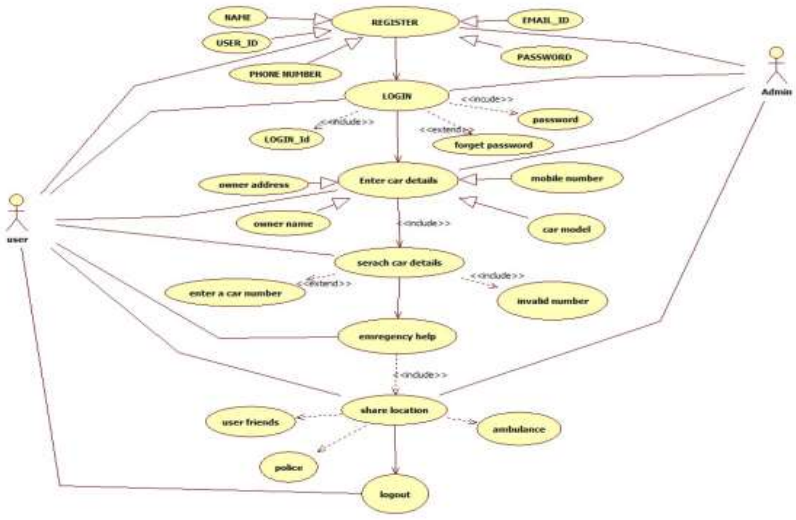
A use case diagram is a graphic depiction of the interactions among the elements of a system. It is used to identify, clarify and organize system requirements. Actors represent roles that users take when they use the system. Use cases describe the interactions that take place between actors and system. An association is a connection between an actor and a use case. An include relationship indicates that one use case is included in another whereas extend indicates optional relationships.

System: System

Actors: Actor

Use Case:

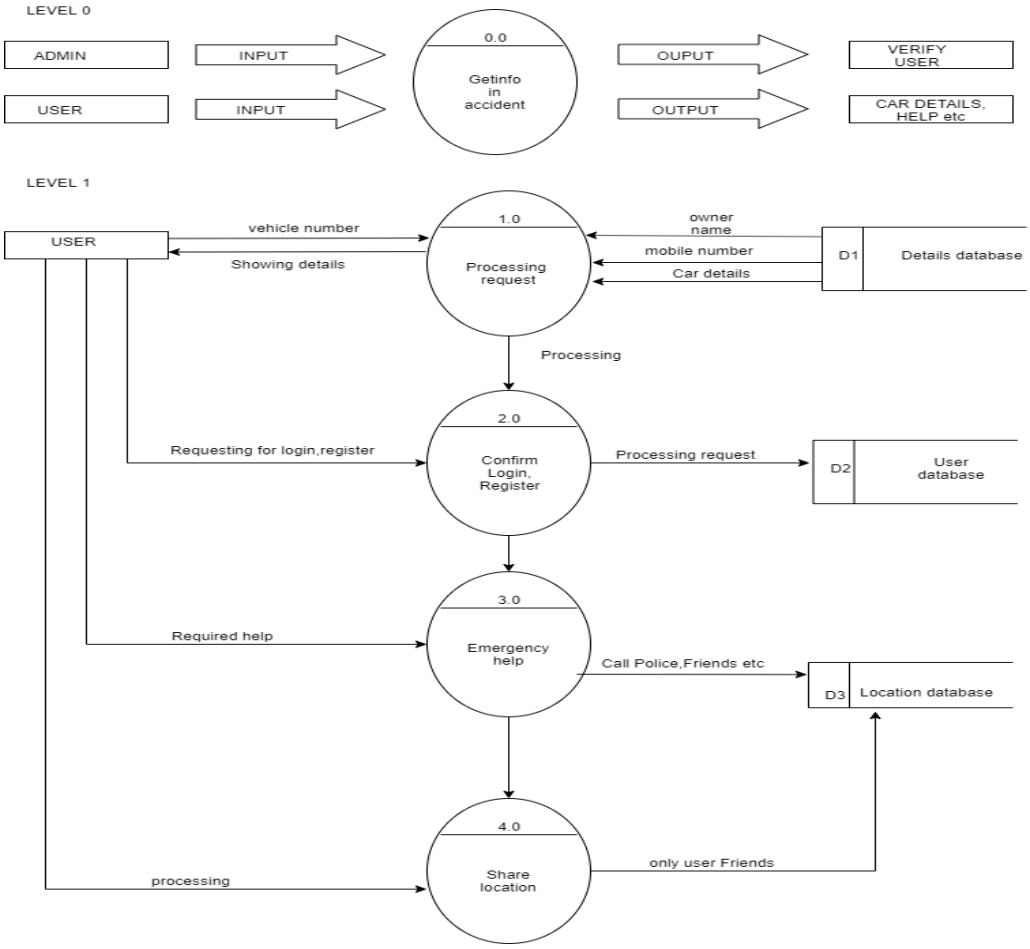
Relationships: <<include>> <<extend>>

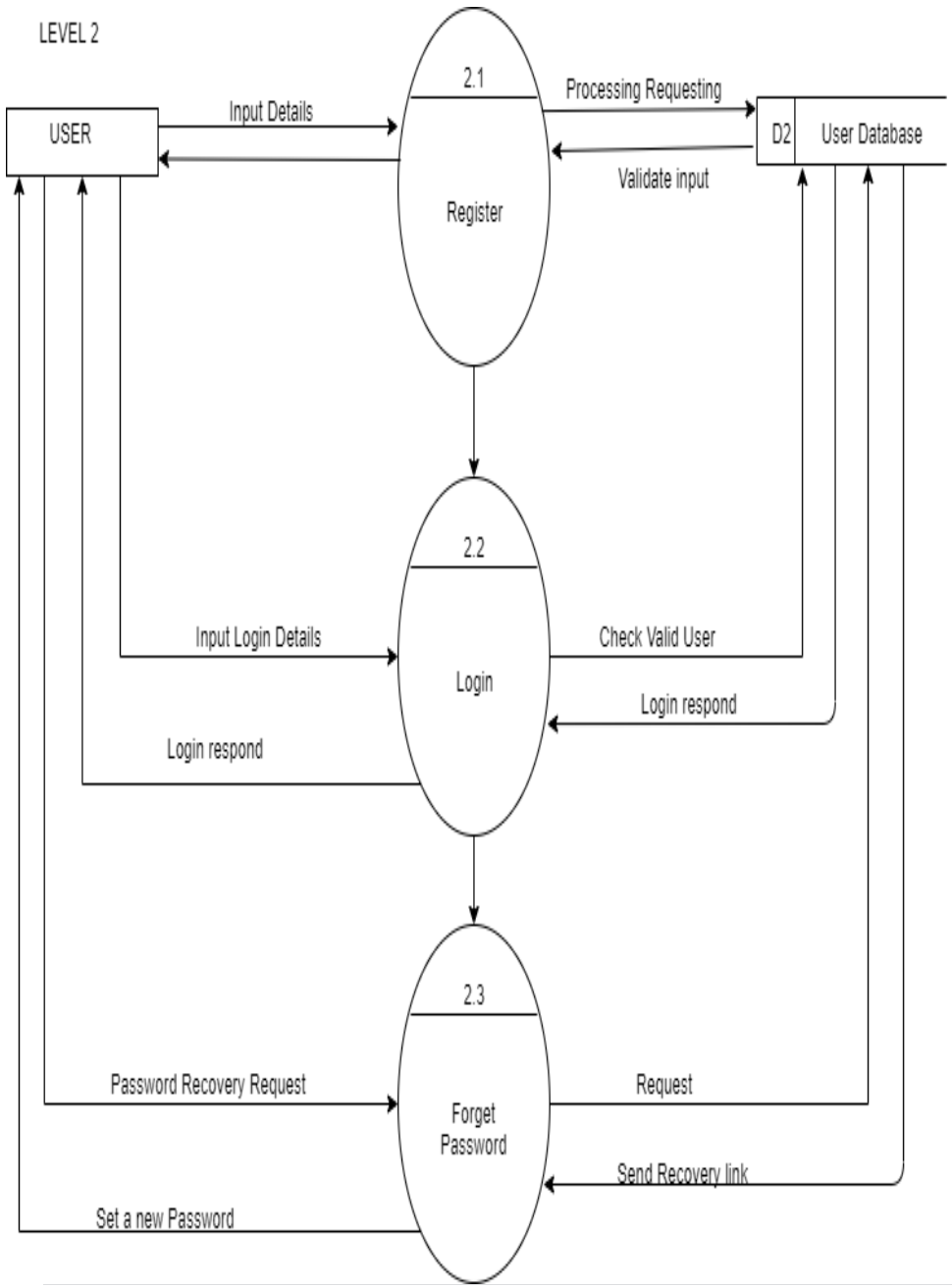


3.6.3 DFD Diagram

Data flow diagrams are used to graphically represent the flow of data in a business information system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation.

Data flow diagrams can be divided into logical and physical. The logical data flow diagram describes flow of data through a system to perform certain functionality of a business. The physical data flow diagram describes the implementation of the logical data flow.




LEVEL 2
USER
Input Details
2.1
Register
Processing Requesting
D2
User Database
Validate input
2.2
Login
Input Login Details
Check Valid User
Login respond
Login respond
2.3
Forget Password
Password Recovery Request
Request
Send Recovery link
Set a new Password

CHAPTER 4
SYSTEM DESIGN

4.1 Basic Modules

There are 5 basic modules of EMERGENCY ALERT are:

- **Module 1- Admin:**

  The admin module consists of all the functionalities performed by the admin. It is divided further into:

  Admin login: It includes an interface for the admin to log into the system through a username and OTP. If the admin forgets the OTP, it can be reset with the help OTP stored in database.

  Manage users: It allows the admin to add, delete and edit users.

  Admin settings: It will enable the admin to update his/her personal details and also change the OTP.

  Manage Pages: Admin will be able to edit pages such as FAQ, Terms and Conditions, About us and Contact us.

  Update settings: It allows the admin to update cafeteria details such as name, address, contact.

- **Module 2- Customer:**

  It allows user to register and login into the android application and place order online. User module is divided into:

  Signup/ Sign in: It enables users to register or log in to the app.

  Home: It displays different categories of modules like find car details get emergency help and track the location.

  My profile: It shows all the user information and allows user to update their details.

  My friend: It allow the user to add the friend and give them a rights to track you. And you also track them.

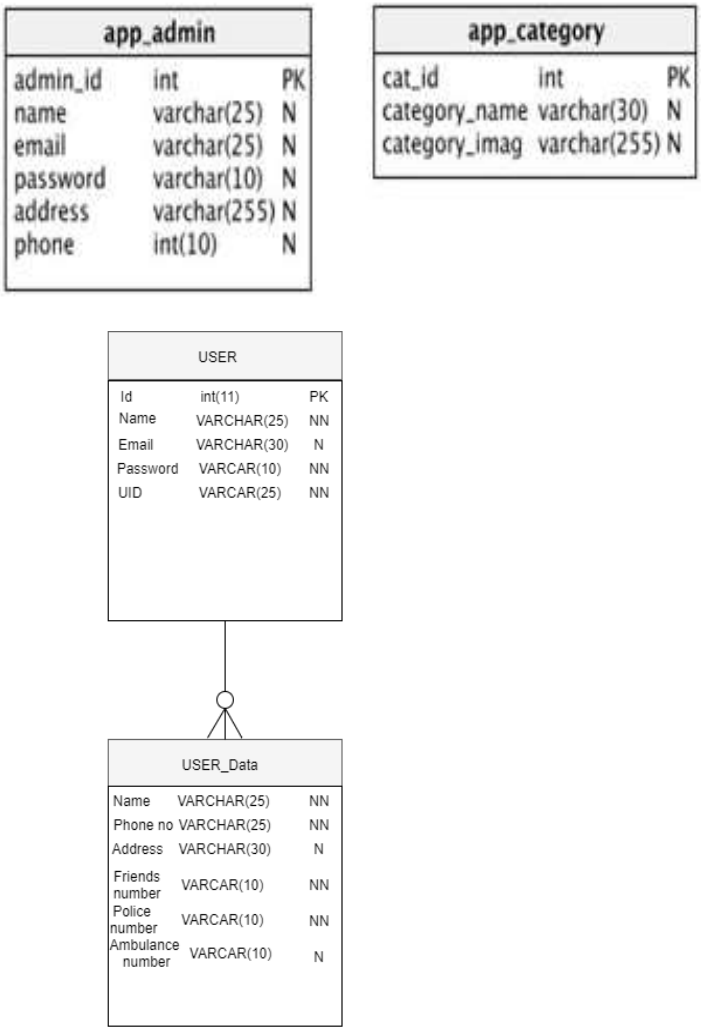
  Log out: Allows customers to log out from the android application.

- **Module 3 – About us:** It provides information about the EMERGENCY ALERT along with visual insights
- **Module 4 – Contact us:** It displays address, contact number, Mobile No. etc. of the ENERGENT.
- **Module 5 - Share & Rate App:** It allows customers to share app through WhatsApp, Mobile No., etc.

4.2 Data Design

4.2.1 Schema design

Schema refers to design or structure of a data organization. It is a graphical representation of different tables and their relationships, which are based on the various business rules. It provides an overview of the database.



4.2.1.1 Schema design

4.2.2 Data integrity and constraints

- Entity Integrity Constraint:

  Primary key (PK): Uniquely identifies each entity in the entity set. It must have unique values and cannot hold null values

- Referential Integrity Constraint:

  Foreign key (FK): One field is common between two tables. It may have either null entry as long as it is not a part of its table's primary key or an entry that matches the primary key value in a table to which it is related.

- Constraints:

  NOT NULL (NN): The column does not hold a null value.

  UNIQUE: Takes only unique values in a column.

  DEFAULT: Provides a default value to a column.

  CHECK: It is used to set user defined constraint for the column.

4.2.2.1 App_category

Field name	Data type	Integrity Constraints
Cat_id	Int(255)	PK
Category_name	VARCHAR(30)	NN
Category_image	VARCHAR(255)	NN

4.2.2.2 Users

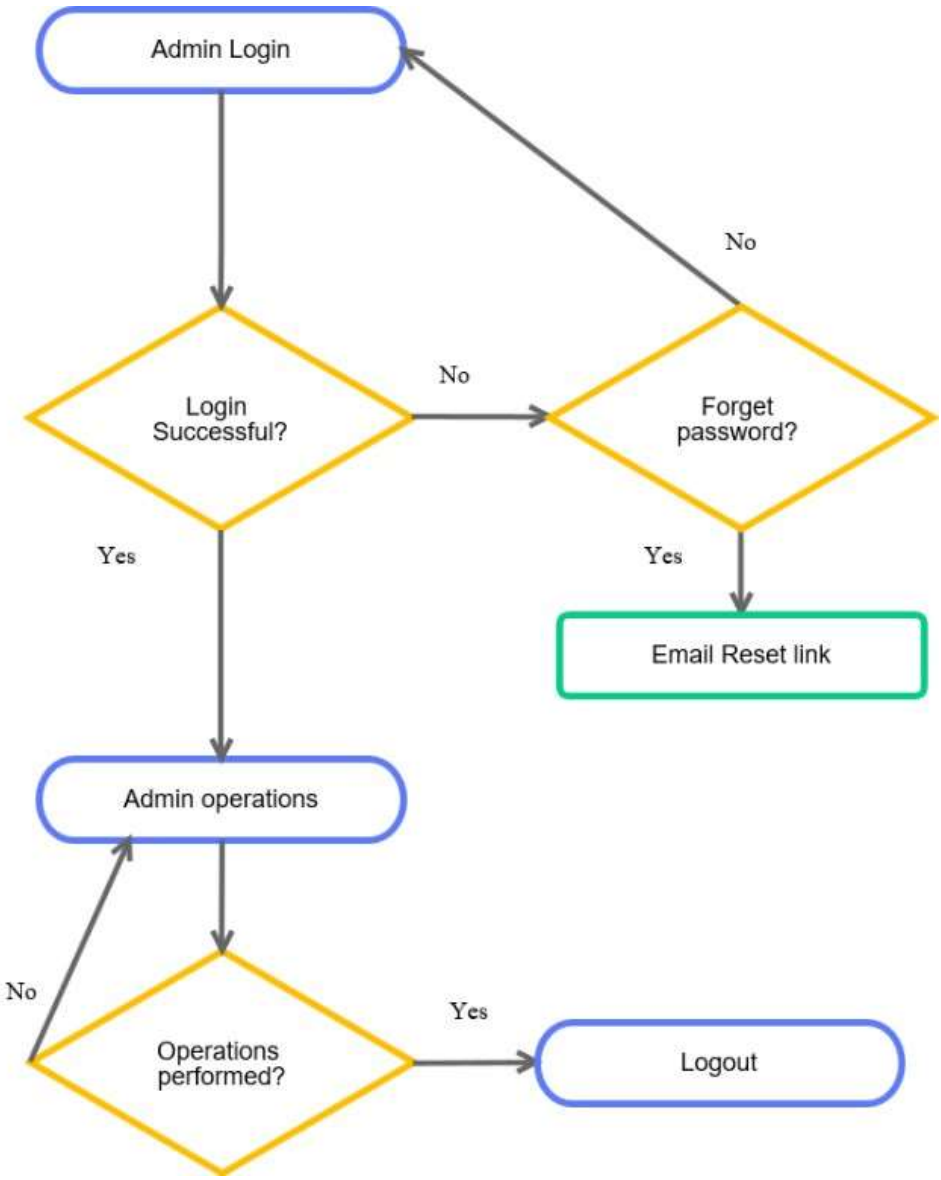
Field name	Data type	Integrity Constraints
Id	Int(11)	PK
Name	VARCHAR(25)	NN
OTP	VARCHAR(10)	NN
Uid	VARCHAR(25)	PK

4.2.2.3 User_data

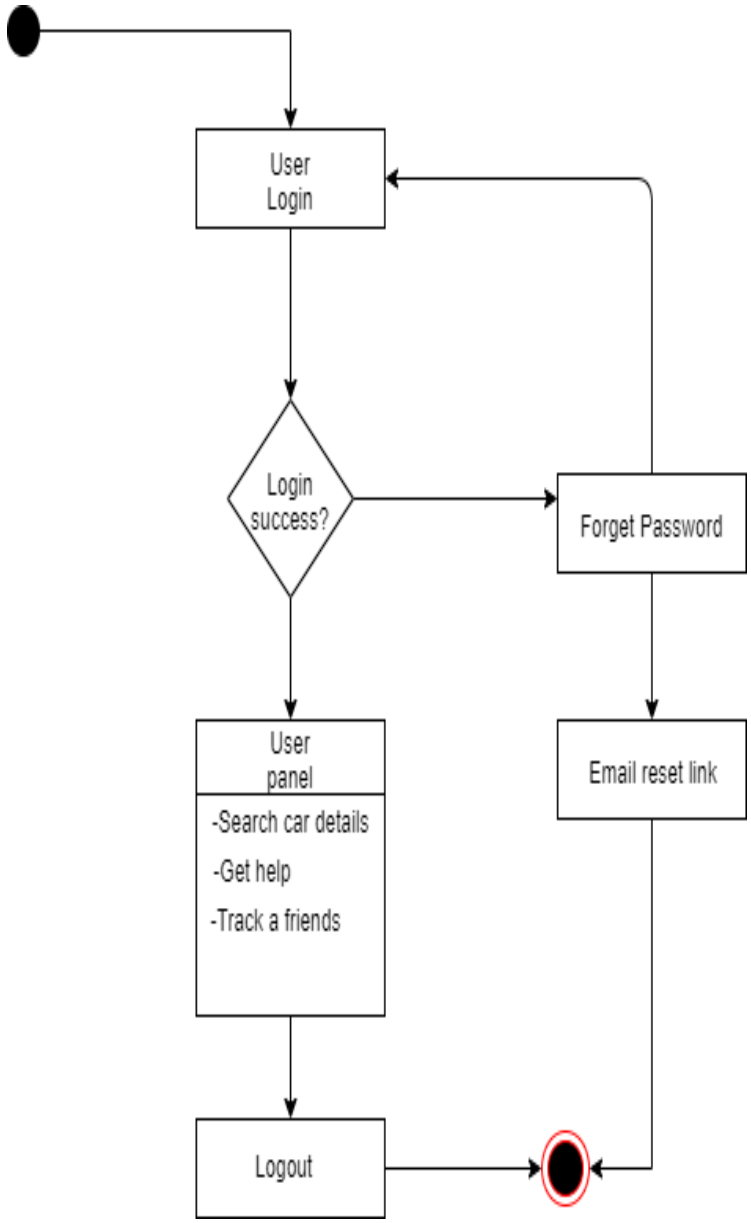
Field name	Data type	Integrity Constraints
Name	VARCHAR(25)	NN
Phone no	VARCHAR(25)	NN
Person 1	VARCHAR(10)	NN
Person 2	VARCHAR(10)	NN
Message	VARCHAR(max)	NN

4.3 Procedural Design

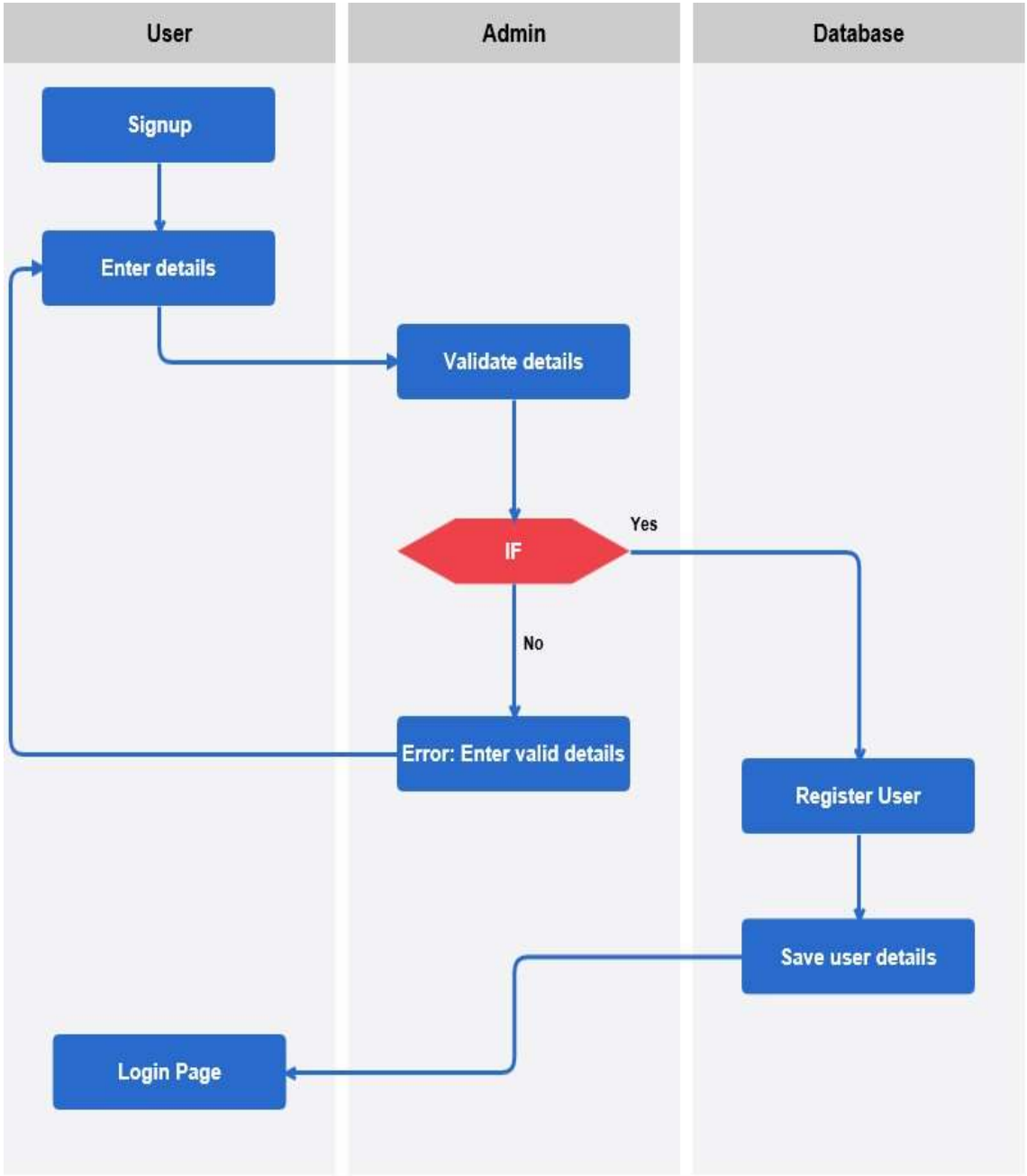
4.3.1 Logic diagrams



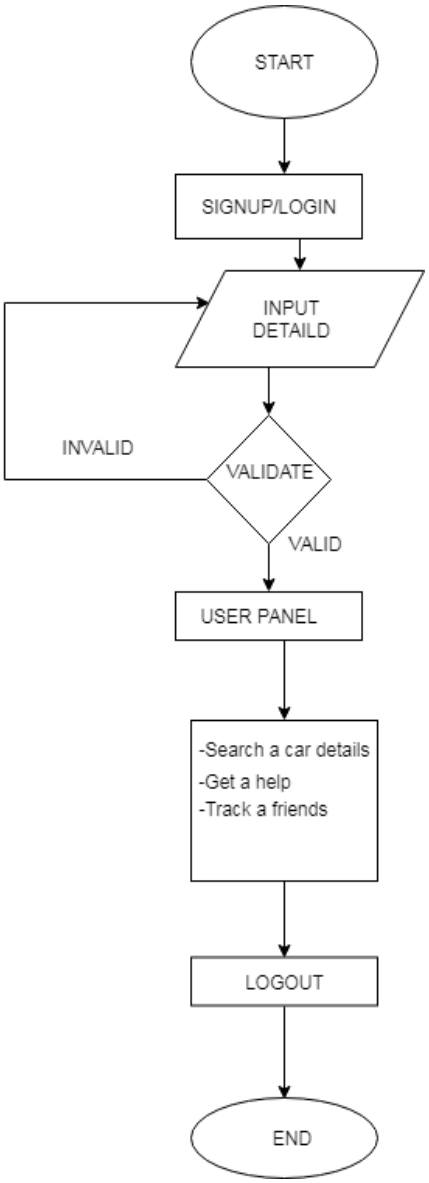
4.3.1.1 Control flow chart for Admin operations



4.3.1.2 Flow chart for User operations



4.3.1.3 Process Diagram for User registration



4.3.1.4 Basic flow chart for user operations.

4.3.2 Data structures

- **BitSet** class implements a group of bits, or flags that can be set and cleared individually. It is useful to represent group of Boolean flags. A flag is a Boolean value that is used to denote one of a group of on/off type states in a program.
- **Vector** class is similar to an old Java array. The elements of a Vector object can be retrieved by an index into the vector. It implements incremental array of objects.
- **Stack** is a typical data structure used to model information that is accessed in a specific order. The Stack class implements a last-in-first-out (LIFO) stack of elements.
- **Dictionary** class is an abstract class that defines a data structure for mapping keys to values. This is suitable where we want to access data via a particular key rather than an integer index. It provides the framework for a key-mapped data structure rather than a specific implementation.
- **Hashtable** provides an actual implementation of a key-mapped data structure. The Hashtable class provides a means of organizing data based on some user-defined key structure.
- **Enumeration** is an interface, which provides a standard way of iterating through a list of sequentially stored elements.

4.4 User Interface Design

- User: The user of the system is the one who will interact and use the system. In EMERGENCY ALERT, the users are Admin and User..
- Task: The task of User interface is to enable users to access the functionalities of the system, hence simplify, and automate the process of getting information of vehicle owner very easily or track our friends**.**
- Environment: The project EMERGENCY ALERT is developed to operate in the real-world environment with the help of latest technologies

The user interface refers to the dialogue between the system and the users of the system. It should be user-friendly and attractive. The UI should be easy to understand, efficient and simple.

Components of User Interface:

- Layouts: It defines structure for user interface and are built using View and ViewGroup objects. Views are used to draw elements the user can interact with.

- Material design: The android application is built on material design, which provides rich features to customizes the interface of the application.
- Adaptive icons: Display various shapes of icons.
- Buttons: A button can be a text or icon, which performs an action when the user clicks on it or touches it.
- Textbox: To take inputs from the user.
- Tooltip: Small descriptive message that appears when we hover over an icon.
- Notification: A message that android displays outside the application user interface.
- App bar or action bar: Has a dedicated space in the UI, which provides visual structure to the users and enables them to access important actions.
- Swipe-to-refresh: It allows users to refresh the content on the screen.
- Toasts: Provide simple feedback after an action is performed within a small popup.
- Menu: Collection of activities of the system.
- Style: Collection of attributes that specify the design of a single view.
- Theme: It is a type of style, which is applied to entire application.
- Checkbox: Allows users to select one or more than one option.
- Radio button: Allows users to select only one option from many options.
- Toggle button: Allows users to change a setting between two states.
- Spinners: Provides a quick way to select from multiple options.
- Pickers: Pickers are used to pick date and time.
- Navigation drawer: UI tool, which displays the main navigation menu.
- Dialogs: Small window, which pops up to prompt the user to take a decision of, enter a field.

4.5 Security

While signing up on the application the user needs to enter a secure OTP which is then stored into the database. Storing of plain OTPs is not secured. because anyone who views the user table in the database will know the real OTP of the users. In order to encrypt data, slower encryption algorithms are To overcome this security issue, hashing is used. Hashing refers to storing the cryptographic hash of a

- otp_hash()is used to hash a given string using the strongest algorithm currently available.

  Syntax: string otp_hash($string,$algo,$options)

used as fast and less complex algorithms are more vulnerable to attacks. otp in a database, instead of the otp itself. returns the algorithm, cost and salt as part of the returned hash

It has the following parameters:

$string: It expects the string to be hashed.

$algo: It expects an integer value that corresponds to the algorithm which is to be used.

$options: It is an optional parameter that expects an array of advanced options.

- There are 3 algorithms available:

OTP_DEFAULT: This is the most recommended algorithm in PHP. It uses MD5 algorithm currently. It is designed to change over time as newer and stronger algorithms are added to PHP.

Test Test Case ID: TC2.1						
Test Case Description: Positive test case for User Signup/ Registration						
Test Priority: High	**Pre-requisite:** NA		**Post requisite:** Account validation by admin			
Test Execution Steps:						
S.No	**Action**	**Inputs**	**Expected Output**	**Actual Output**	**Test Result**	**Test Comments**
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home screen	Home screen	Pass	Successful app launch
2	Go to Signup Page	Click on Signup	Signup form page	Signup form page	Pass	Sign up page appeared

3	Enter all the correct personal details and click on Signup button	Full name: Chandan Mobile No.:9920131902 OTP: 123456 Confirm OTP: 123456	Proceed to login page	Proceed to login page	Pass	Successfully signed up

OTP_BCRYPT: This algorithm uses the CRYPT_BLOWFISH algorithm and generates a crypt() equivalent hash.

OTP_ARGON2I: Uses the Argon2 Hashing Algorithm

- OTP_verify() verifies whether the given OTP matches the hash stored in database.

  Syntax: bool OTP_verify(string $OTP, string $hash)

The MD5 hashing algorithm is a one-way cryptographic function that accepts a message of any length as input and returns as output a fixed-length digest value to be used for authenticating the original message. The MD5 message digest hashing algorithm processes data in 512-bit blocks, broken down into 16 words composed of 32 bits each. The output from MD5 is a 128-bit message digest value.

4.6 Test Case Design

A test case is a type of documentation which specifies the input values, expected outputs and the conditions required for the execution of the tests. The following are the test cases for EMERGENCY ALERT:

4.6.3 Test Case 2.1

Test Case ID: TC2.2		
Test Case Description: Negative Test Case for User Signup		
Test Priority: High	**Pre-requisite:** NA	**Post requisite:** Account validation by admin
Test Execution Steps:		

S.No	Action	Inputs	Expected Output	Actual Output	Test Result	Test Comments
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home Screen	Home Screen	Pass	Successful app launch
2	Go to Signup Page	Click on Signup	Signup form page	Signup form page	Pass	Signup page appeared
3	Leave all fields blank and click on signup	None	Please fill all the fields	Please fill all fields	Pass	Invalid Signup attempt stopped
4	Enter incorrect Mobile No. address and valid details in all other fields and click on signup	Full Name: Chandan Mobile No.: abcabc OTP: 123456 Confirm OTP: D123456 Unique id: 001	Please enter a valid Mobile No. id	Please enter a valid Mobile No. Id	Pass	Invalid Signup attempt stopped
5	Enter a OTP less than 6 characters and valid details in other fields and click on signup	Full Name: Chandan Mobile No.: 9920131902 OTP: abc Confirm OTP: abc	OTP must be minimum 6 characters	OTP must be minimum 6 characters	Pass	Invalid signup attempt stopped
6	Enter different OTPs in OTP and confirm OTP fields and click signup	Full Name: YadavChandan Mobile No.: 9920131902 OTP: 123456 Confirm OTP: abcdef	OTP and confirm OTP should be same	OTP and confirm OTP should be same	Pass	Invalid signup attempt stopped

4.6.4 Test Case 2.2

Test Case ID: TC3.1						
Test Case Description: Positive test case for user login						
Test Priority: High	**Pre-requisite:** User Account Signup			**Post requisite:** NA		
Test Execution Steps:						
S.No	**Action**	**Inputs**	**Expected Output**	**Actual Output**	**Test Result**	**Test Comments**
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home screen	Home screen	Pass	Successful app launch
2	User login	Click on login option	Login page	Login page	Pass	Login page appeared
3	Enter correct phone/Mobile No., OTP and click login button	Phone: 9920131902 OTP: 123456	Login successful	Login successful	Pass	User logged in successfully
4	Forgot OTP	Click on forgot OTP link	Reset OTP link sent to Mobile No.	Reset OTP link sent to Mobile No.	Pass	OTP reset link received

4.6.5 Test Case 3.1

Test Case ID: TC3.2		
Test Case Description: Negative Test Case for User Login		
Test Priority: High	**Pre-requisite:** User Account Signup	**Post requisite:** NA
Test Execution Steps:		

S.No	Action	Inputs	Expected Output	Actual Output	Test Result	Test Comments
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home screen	Home screen	Pass	Successful app launch
2	User login	Click on login option	Login page	Login page	Pass	Login page appeared
3	Enter invalid Mobile No. and incorrect OTP and click on login button	Mobile No:9920131902 OTP: abcdef	Account does not exist. Please Sign Up	Account does not exist. Please Sign Up	Pass	Invalid login attempt stopped
4	Enter invalid Mobile No. and valid OTP and click the login button	Mobile No.: 9920131902 OTP: 123456	Please enter a valid Mobile No. id	Please enter a valid Mobile No. id	Pass	Invalid login attempt stopped
5	Enter a valid Mobile No. and incorrect OTP and click the login button	Mobile No./phone: 9920131902 OTP: abcdef	Invalid Mobile No. or OTP	Invalid Mobile No. or OTP	Pass	Invalid login attempt stopped
6	Leave blank Mobile No./phone and OTP, click on login	None	Please enter a valid Mobile No. id	Please enter a valid Mobile No. id	Pass	Invalid login attempt stopped

7	Leave blank Mobile No. and enter valid OTP, click on login	OTP: 123456	Please enter a valid Mobile No. id	Please enter a valid Mobile No. id	Pass	Invalid login attempt stopped
8	Enter valid Mobile No. and leave OTP field blank, click on login	Mobile No.: 9920131902	Please fill this error message focusing on OTP field	Please fill this error message focusing on OTP field	Pass	Invalid login attempt stopped

4.6.6 Test Case 3.2

Chapter 5

Implementation and Testing

5.1 IMPLEMENTATION APPROACHES

Tools and standards used for implementation:

The Emergency first needs to be hosted on the server. The web admin panel is used to manage content of Emergency App in real time. To setup web admin panel we need two things i.e. domain name and server. I have purchased domain name *(www.e-cafeteria.in)* and cPanel hosting both from Go Daddy. In Emergency web panel, I have used:

- **HTML**: Hyper Text Mark-up Language is used for describing the structure of web pages using mark-up and to render the content of the page.
- **CSS**: Cascading Style Sheets is the language used for describing the presentation of web pages, including colours, layout, and fonts. It adapts the presentation to different types of devices, such as large screens, small screens, or printers. CSS is the visual and aural layout, for multiple devices.
- **PHP**: The PHP Hypertext Pre-processor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases. A widely used open source general-purpose scripting language is especially suited for web development and can be embedded into HTML. What distinguishes PHP from client-side JavaScript is that the code is executed on the server, generating HTML, which is then sent to the client.
- **JavaScript**: A script is a program code that does not need pre-processing (e.g. compiling) before being run. JavaScript is executed by the browser when a page is downloaded, or in response to an event triggered by the user. Scripting makes web pages more dynamic.
- **JSON**: JSON stands for JavaScript Object Notation. It is a lightweight format for storing and transporting data and is often used when data is sent from a server to a web page. It is commonly used to read data from a web server, and display the data in a web page.
- **MySQL**: MySQL database server has been used for database management of Emergency, which is build-in database of cPanel. It is an open source RDBMS.
- **Android Studio**: It is the official integrated development environment (IDE) for Google's Android operating system, built on Jet Brains' IntelliJ IDEA software and designed specifically for Android development.

- **Java** : Java is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. Java is the programming language for the Android SDK.
- **XML**: stands for Extensible Mark-up Language. It is used to describe data. XML tags are not predefined in XML. We need to define our custom tags.

  Different XML Files used in Android:

  Layout XML Files: Layout xml files are used to define the actual UI of application.

  Manifest xml File (Mainfest.xml): This xml is used to define all the components of our application. It includes the names of application packages, activities, receivers, services and the permissions that application needs.

  Strings xml File (strings.xml): This xml file is used to replace the Hard-coded strings with a single string. We define all the strings in this xml file and then access them in our app (Activity or in Layout XML files) from this file.

  Styles xml File (styles.xml): This xml is used to define different styles and looks for the UI of application. We can define our custom themes and styles in this file.

  Drawable xml Files: These are those xml files that are used to provide various graphics to the elements or views of application.

  Colour xml File (colors.xml): This file is used to define the colour codes that we used in app.

- **Firebase**: Firebase Real-time Database is a cloud-hosted database. Data is stored as JSON and synchronized in real time to every connected client. It provides real time API that allows application data to be synchronized across clients and is stored on Firebase's cloud. It is accessible through REST API and JavaScript frameworks.
- **Firebase Cloud Messaging (FCM):** Formerly known as Google Cloud Messaging (GCM), Firebase Cloud Messaging (FCM) is a cross-platform solution for messages and notifications for Android, iOS, and web applications. The REST API uses the Server-Sent Events protocol, which is an API for creating HTTP connections for receiving push notifications from a server.

Design implementation plan :

A logical system is built which fulfils all the specified requirements. Design phase of software development deals with renovating the client's requirements into a logically working system. Typically, design is performed in the following two steps:

- **Primary Design Phase:** In this phase, the system is designed at block level. Different blocks are created for different functions emphasis is put on reducing the information flow.
- **Secondary Design Phase:** In the secondary phase the detailed design of every block is performed.

The general tasks involved in the design process are as follows:

- Design several blocks for whole system.
- Design smaller, compact and workable modules in each block.
- Design various database structures.
- Specify details of programs to achieve desired functionality.
- Design the form of inputs, and outputs of the system.
- Perform documentation of the design.
- System design review.

Design implementation methodology :

Three-tier architecture has been used for easier maintenance of the system. The reason for choosing Three-Tier Architectural Style is that we are developing a web panel application built on PHP/MySQL. PHP is a framework that is much closer to the Three-Tier Architectural Style because all requests are sent to the server from the client. The server is responsible for interpreting the request and then forwarding it to the database. The database sends the data back to the server which than formats that information and sends it to the client.

3-tier architecture consists of three layers:

- **Application or Presentation Layer** - The website application is called the presentation layer. It is the form where we design using the controls like textbox, labEmergency, command buttons etc.
- **Business Layer or Logical Layer** – The business layer is the class where we write the functions, which get the data from the application layer and passes through the data layer. In the three-tier architecture, we never let the data access layer to interact with the presentation layer. In this layer, we declare the variables corresponding to the fields of the database that can be required for the application and make the properties so that we can get or set the data using these properties into the variables. These properties are public so that we can access its values. The business layer also helps to move the logic to a central layer for maximum reusability. It has client application and server components.

Data Layer or Data Access Layer - The data layer is a separate component whose sole purpose is to serve up the data from the database and return it to the caller. This layer is also a class, which we use to get or set the data to the database back and forth. This layer interacts only with the database. We write the database queries or use stored procedures to access the data from the database or to perform any operation to the database.

Advantages of three-tier architecture:

- Reusability of functions
- Easy to update code

Disadvantages of three-tier architecture:

- Increased complexity
- Increased efforts
- Difficult to build three-tier architecture than two-tier architecture.

Software Development Life Cycle implementation methodology:

Iterative Waterfall Model has been used in designing the system and workflow. In our system, many of the modules are inter-related and they cannot be released in isolation, all the requirements are clearly stated before starting of the development phase. Therefore, we cannot use evolutionary modEmergency and incremental delivery model as modules cannot be deployed individually to customer. Iterative waterfall model is used to incorporate the necessary changes to the classical waterfall model to make it usable in practical software development project. It is almost same as the classical waterfall model except some changes are made to increase the efficiency of the software development. The iterative waterfall model provides feedback paths from every phase to its preceding phases, which is the main difference from the classical waterfall model. Feedback paths presented by the iterative waterfall model are shown

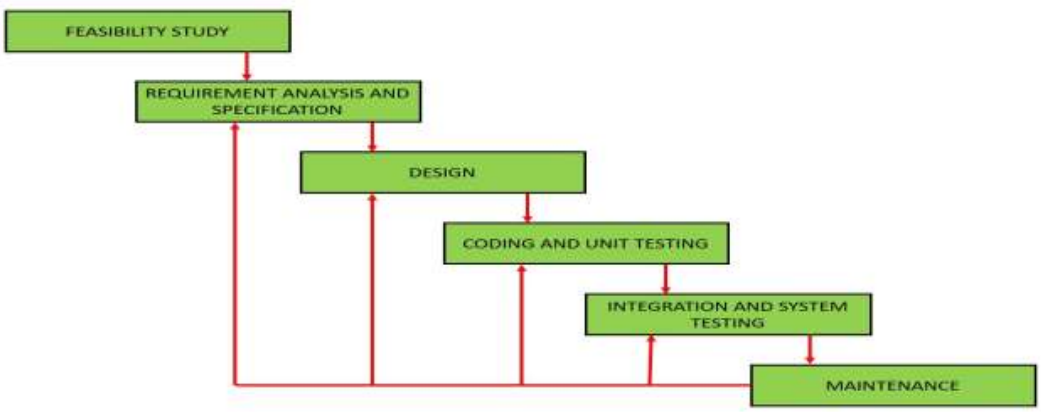


Fig 5.1.1 Iterative waterfall model

When errors are detected at some later phase, these feedback paths allow correcting errors committed by programmers during some phase. The feedback paths allow the phase to be reworked in which errors are committed and these changes are reflected in the later phases. However, there is no feedback path to the stage – feasibility study, because once a project has been taken, does not give up the project easily.

Advantages of Iterative Waterfall Model:

- Feedback Path**:** In the classical waterfall model, there are no feedback paths, so there is no mechanism for error correction. However, in iterative waterfall model, feedback path from one phase to its preceding phase allows correcting the errors that are committed and these changes are reflected in the later phases.
- Iterative waterfall model is very simple to understand
- It is easy to use and that is why it is one of the most widely used software development modEmergency.

Drawbacks of Iterative Waterfall Model:

- Difficult to incorporate change requests: The major drawback of the iterative waterfall model is that all the requirements must be clearly stated before starting of the development phase
- Incremental delivery is not supported: In the iterative waterfall model, the full software is completely developed and tested before delivery to the customer. There is no scope for any intermediate delivery. Therefore, customers have to wait long for getting the software.
- Overlapping of phases is not supported
- Limited customer interactions: Customer interaction occurs at the start of the project at the time of requirement gathering and at project completion at the time of software delivery.

5.2 CODING DETAILS

1. File Name: database helper.java

Explanation: Establishing database connection, setting up database username, database OTP, database name, server path, default image and time zone.

Coding:

```
public void Vehicle_Details() {
    Intent intent = new Intent(Hello.this, MainActivity.class);
    startActivity(intent);
}
```

```
public void ENTERDETAILS(){
    Intent intent=new Intent(Hello.this,ENTERDETAILS.class);
    startActivity(intent);
}



@Override
public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater menuInflater = getMenuInflater();
    menuInflater.inflate(R.menu.menu, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item)
{

    switch (item.getItemId()) {
        case R.id.m1:
            Toast.makeText(this, "Settings is Selected", Toast.LENGTH_SHORT).show();
            Intent myintent = new Intent(Hello.this,setting.class);
            startActivity(myintent);
            return true;
        case R.id.m2:
            Toast.makeText(this, "Feedback is Selected", Toast.LENGTH_SHORT).show();
            Intent myintent1 = new Intent(Hello.this,feedback.class);
            startActivity(myintent1);
            return true;
            default:
                return super.onOptionsItemSelected(item);
```

```
        }



    }
    public  void  b4 (View view){

        String phone = "";
        if(SharedPreference.contains("phone"))
            phone = SharedPreference.get("phone");



        Intent intent = new Intent(Intent.ACTION_CALL);
        intent.setData(Uri.parse("tel:" + phone ));
        if (ActivityCompat.checkSelfPermission(this,Manifest.permission.CALL_PHONE) !=
PackageManager.PERMISSION_GRANTED){
                return;
        }
        startActivity(intent);

    }



}
```

8. File name: activity_enterdetails.xml

Code:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
```

```
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:background="@drawable/startbg"
tools:context=".ENTERDETAILS">

<EditText
   android:id="@+id/t7"
   android:layout_width="352dp"
   android:layout_height="56dp"
   android:layout_alignParentStart="true"
   android:layout_alignParentTop="true"
   android:layout_centerHorizontal="true"
   android:layout_marginStart="20dp"
   android:layout_marginTop="496dp"
   android:background="@drawable/rectangle"
   android:ems="10"
   android:hint=" Vehicle Number"
   android:maxLength="10"
   android:inputType="textCapCharacters"
   android:textSize="24sp" />

<Button
   android:id="@+id/b1"
   android:layout_width="179dp"
   android:layout_height="62dp"
   android:layout_alignParentStart="true"
   android:layout_alignParentBottom="true"
   android:layout_centerHorizontal="true"
   android:layout_marginStart="109dp"
   android:layout_marginBottom="82dp"
   android:background="@drawable/button"
   android:onClick="b1"
```

```
        android:text="Submit"
        android:textSize="24sp"
        tools:ignore="OnClick" />

    <EditText
        android:id="@+id/t1"
        android:layout_width="352dp"
        android:layout_height="56dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="20dp"
        android:layout_marginTop="10dp"
        android:background="@drawable/rectangle"
        android:ems="10"
        android:hint=" Vehicle Name"
        android:inputType="textPersonName"
        android:textSize="24sp" />

    <EditText
        android:id="@+id/t2"
        android:layout_width="352dp"
        android:layout_height="56dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="18dp"
        android:layout_marginTop="89dp"
        android:background="@drawable/rectangle"
        android:ems="10"
        android:hint=" Owner Name"
        android:inputType="textPersonName"
        android:textSize="24sp" />
```

```
<EditText
    android:id="@+id/t6"
    android:layout_width="352dp"
    android:layout_height="56dp"
    android:layout_alignParentStart="true"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginStart="19dp"
    android:layout_marginTop="419dp"
    android:background="@drawable/rectangle"
    android:ems="10"
    android:hint=" Fuel Type"
    android:inputType="textPersonName"
    android:textSize="24sp" />

<EditText
    android:id="@+id/t3"
    android:layout_width="352dp"
    android:layout_height="56dp"
    android:layout_alignParentStart="true"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginStart="14dp"
    android:layout_marginTop="181dp"
    android:background="@drawable/rectangle"
    android:ems="10"
    android:hint=" Model Number"
    android:inputType="textPersonName"
    android:textSize="24sp" />

<EditText
    android:id="@+id/t4"
```

```
        android:layout_width="352dp"
        android:layout_height="56dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="15dp"
        android:layout_marginTop="257dp"
        android:background="@drawable/rectangle"
        android:ems="10"
        android:hint=" Vehicle Colour"
        android:inputType="textPersonName"
        android:textSize="24sp" />

    <EditText
        android:id="@+id/t5"
        android:layout_width="352dp"
        android:layout_height="56dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerInParent="true"
        android:layout_marginStart="17dp"
        android:layout_marginTop="337dp"
        android:background="@drawable/rectangle"
        android:ems="10"
        android:hint=" Mobile Number"
        android:maxLength="10"
        android:inputType="phone"
        android:textSize="24sp" />

</RelativeLayout>
```

5.2.1 Code Efficiency

Code efficiency is a comprehensive term used to describe the reliability, speed and programming methodology used in developing codes for an application. Code efficiency is directly related with algorithmic efficiency and the speed of runtime execution for software. It is the vital element in ensuring high performance.

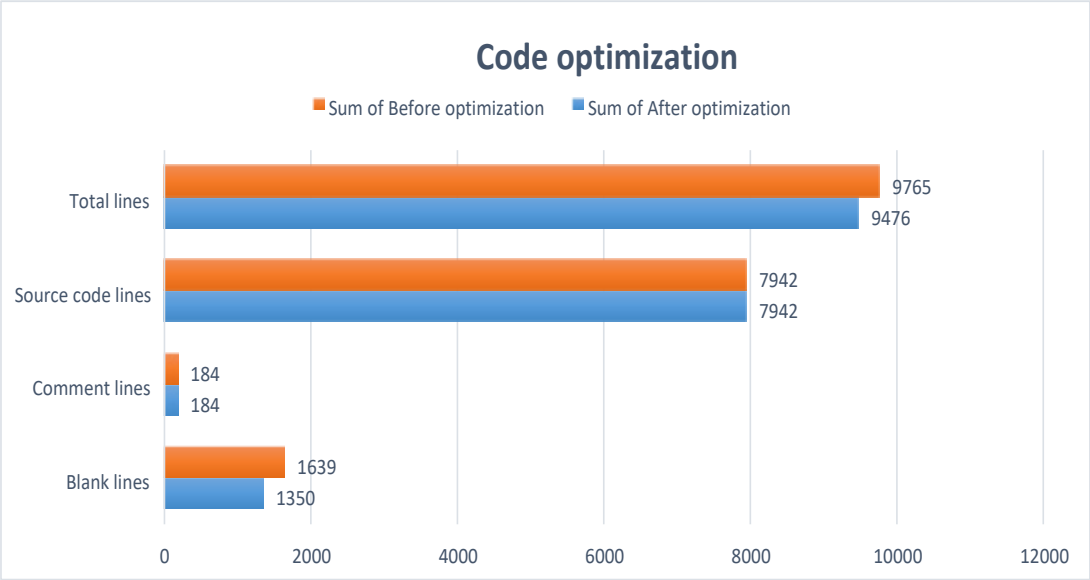
The code efficiency is attained by:

- Declaring all the variables and variable types specifically
- Using break statements
- Using loops and tightening loops
- Isolating common expressions
- Choosing right SQL style and queries
- Setting objects to NULL
- Using reusable code
- Developing simple and easy to understand code with less number of coding lines

Code optimization is a technique of code modification to improve code quality and efficiency. A program may be enhanced so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer input/output operations.

- Using Strings.xml file which enhances the reusability of the code
- Using XML language as it is easily readable by both human and machine, also it is scalable and easy to develop.
- Inlining small functions and small codes.
- Deleting unwanted records, variables and data.
- Using xml for designing layouts because xml is lightweight language hence it does not make layout heavy
- Using Gradle-based build support, android supporting refactoring and quick fixes.
- Lint tools to catch performance, usability, version compatibility and other problems
- Using ProGuard integration and app-signing capabilities
- Using Template-based wizards to create common Android designs and components
- Using Android Virtual Device (Emulator) to run and debug apps in the Android studio.
- Using Retrofit- It's easy and fast library to retrieve and upload the data(JSON or any other structured data) via a REST based web service. Retrofit is better alternative of other libraries in terms of performance, ease of use, extensibility and others. In Android, retrofit library is different from other network libraries because it gives us an easy to use platform through which we do not need to parse JSON responses as they are done by library itself.

5.2.1.1 Bar graph for code optimization



5.3 TESTING APPROACH

Testing is vital for the success of any software. Software testing is the process to evaluate a system to test whether it can meet the expectations and fulfil the requirements. It also ensures if the system is free from all the errors before releasing it in the market. Therefore, it is necessary to test the sotware in order to provide a high quality and reliable system to the customer.

Testing techniques:

- **White box testing:** "White box testing" (also known as clear, glass box or structural testing) is a testing technique which evaluates the code and the internal structure of a program. It involves looking at the structure of the code. Tests are conducted to ensure that the internal operations are performed according to the specification and all the internal components have been adequately exercised. All logical parts of the software are checked. Both the developers as well as testers use white box testing technique. It helps them to understand which line of code is actually executed and which is not. This may indicate that there is either a missing logic or a typo, which eventually can lead to some negative consequences.
- **Black box testing:** Black box testing, which is also known as behavioural, opaque-box, closed-box, specification-based or eye-to-eye testing, is a Software Testing method that analyses the functionality of a software/application without knowing much about the internal structure/design of the item that is being tested and compares the input value with the output value. It is used to

test the functionality of an application based on the requirement specification. Black box testing tests the input, the output and the external data. It checks whether the input data is correct and whether we are getting the desired output. Under Black box testing, we test the software from a user's point of view. We perform testing without seeing the internal system code.

- **Grey box testing:** Grey Box Testing is a software testing method, which is a combination of both White Box Testing and Black Box Testing method. It is a technique to test the software product or application with partial knowledge of the internal workings of an application. It provides combined benefits of both black box testing and white box testing both. It also reduces the overhead of long process of testing functional and non-functional types.

Implementation of test strategy for a particular project is known as "test approach" i.e. how testing would be carried out.

5.3.1 Unit Testing

Unit testing is a level of software testing where individual units/ components of a software are tested. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software. It usually has one or a few inputs and usually a single output. In procedural programming, a unit may be an individual program, function, procedure, etc. In object-oriented programming, the smallest unit is a method, which may belong to a base/ super class, abstract class or derived/ child class.

It is performed by using the White Box Testing method. It is the first level of software testing and is performed prior to Integration Testing.

The Test Approach for Unit testing is as follows:

- Preparation of the test cases.
- Preparation of the possible test data with all the validation checks.
- Complete code review of the module.

Test Case ID: TC1.1		
Test Case Description: Positive test case for User Signup/ Registration		
Test Priority: High	**Pre-requisite:** NA	**Post requisite:** Account validation by admin
Test Execution Steps:		

S.No	Action	Inputs	Expected Output	Actual Output	Test Result	Test Comments
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home screen	Home screen	Pass	Successful app launch
2	Go to Signup Page	Click on Signup	Signup form page	Signup form page	Pass	Sign up page appeared
3	Enter all the correct personal details and click on Signup button	Full name: Chandan Mobile No..9920131902 OTP: 123456 Confirm OTP: 123456	Proceed to login page	Proceed to login page	Pass	Successfully signed up

- Actual testing done manually.
- Modifications done for the errors found during testing.
- Preparation of the test result scripts.

Test Case 2.1

Test Case ID: TC2.2

Test Case Description: Negative Test Case for User Signup		
Test Priority: High	**Pre-requisite:** NA	**Post requisite:** Account validation by admin

Test Execution Steps:

S.No	Action	Inputs	Expected Output	Actual Output	Test Result	Test Comments
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home Screen	Home Screen	Pass	Successful app launch
2	Go to Signup Page	Click on Signup	Signup form page	Signup form page	Pass	Signup page appeared
3	Leave all fields blank and click on signup	None	Please fill all the fields	Please fill all fields	Pass	Invalid Signup attempt stopped
4	Enter incorrect Mobile No. address and valid details in all other fields and click on signup	Full Name: Chandan Mobile No.: abcabc OTP: 123456 Confirm OTP: D123456 Unique id: 001	Please enter a valid Mobile No. id	Please enter a valid Mobile No. Id	Pass	Invalid Signup attempt stopped
5	Enter a OTP less than 6 characters and valid details in other fields and click on signup	Full Name: Chandan Mobile No.: 9920131902 OTP: abc Confirm OTP: abc	OTP must be minimum 6 characters	OTP must be minimum 6 characters	Pass	Invalid signup attempt stopped

6	Enter different OTPs in OTP and confirm OTP fields and click signup	Full Name: YadavChandan Mobile No.: 9920131902 OTP: 123456 Confirm OTP: abcdef	OTP and confirm OTP should be same	OTP and confirm OTP should be same	Pass	Invalid signup attempt stopped

Test Case 2.2

Test Case ID: TC3.1						
Test Case Description: Positive test case for user login						
Test Priority: High	**Pre-requisite:** User Account Signup			**Post requisite:** NA		
Test Execution Steps:						
S.No	**Action**	**Inputs**	**Expected Output**	**Actual Output**	**Test Result**	**Test Comments**
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home screen	Home screen	Pass	Successful app launch
2	User login	Click on login option	Login page	Login page	Pass	Login page appeared
3	Enter correct phone/Mobile No., OTP and click login button	Mobile No.: 9920131902 OTP: 123456	Login successful	Login successful	Pass	User logged in successfully
4	Forgot OTP	Click on forgot OTP link	Reset OTP link sent to Mobile No.	Reset OTP link sent to Mobile No.	Pass	OTP reset link received

Test Case 3.1

Test Case ID: TC3.2						
Test Case Description: Negative Test Case for User Login						
Test Priority: High	**Pre-requisite:** User Account Signup			**Post requisite:** NA		
Test Execution Steps:						
S.No	**Action**	**Inputs**	**Expected Output**	**Actual Output**	**Test Result**	**Test Comments**
1	Launch EMERGENCY ALERT android application	Click on EMERGENCY ALERT app icon in the app menu	Home screen	Home screen	Pass	Successful app launch
2	User login	Click on login option	Login page	Login page	Pass	Login page appeared
3	Enter invalid Mobile No. and incorrect OTP and click on login button	Mobile No9920131902 OTP: abcdef	Account does not exist. Please Sign Up	Account does not exist. Please Sign Up	Pass	Invalid login attempt stopped
4	Enter invalid Mobile No. and valid OTP and click the login button	Mobile No.: 9920131902 OTP: 123456	Please enter a valid Mobile No. id	Please enter a valid Mobile No. id	Pass	Invalid login attempt stopped

5	Enter a valid Mobile No. and incorrect OTP and click the login button	Mobile No./phone: 9920131902 OTP: abcdef	Invalid Mobile No. or OTP	Invalid Mobile No. or OTP	Pass	Invalid login attempt stopped
6	Leave blank Mobile No./phone and OTP, click on login	None	Please enter a valid Mobile No. id	Please enter a valid Mobile No. id	Pass	Invalid login attempt stopped
7	Leave blank Mobile No. and enter valid OTP, click on login	OTP: 123456	Please enter a valid Mobile No. id	Please enter a valid Mobile No. id	Pass	Invalid login attempt stopped
8	Enter valid Mobile No. and leave OTP field blank, click on login	Mobile No.: 9920131902	Please fill this error message focusing on OTP field	Please fill this error message focusing on OTP field	Pass	Invalid login attempt stopped

Test case 3.2

The unit testing done included the testing of the following items:

- Functionality of the entire module/forms.
- Validations for user input.
- Checking of the coding standards to be maintained during coding.
- Testing the module with all the possible test data.
- Testing of the functionality involving all type of calculations etc.

Chapter 6
Results and Discussion

6.1 TEST REPORTS

Test report 6.1.1

Project Name:	Emergency
Test Type:	**Unit Testing**
Test Cases Passed:	**209**
Test Cases Failed:	**3**
Test Cases Executed:	**212**
Test Cases Not Executed:	**1**
Total Test Cases Planned:	**213**

Test report 6.1.2

Project Name:	Emergency
Test Type:	**Integrating Testing**
Test Cases Passed:	**54**
Test Cases Failed:	**01**
Test Cases Executed:	**55**
Test Cases Not Executed:	**0**
Total Test Cases Planned:	**55**

Test report 6.1.3

Project Name:	Emergency
Test Type:	**System Testing**
Test Cases Passed:	**49**
Test Cases Failed:	**0**
Test Cases Executed:	**49**
Test Cases Not Executed:	**1**
Total Test Cases Planned:	**50**

Test report 6.1.4

Project Name:	Emergency
Test Type:	**Beta Testing**
Test Cases Passed:	**03**
Test Cases Failed:	**0**
Test Cases Executed: Test Cases Not Executed:	**03** **0**
Total Test Cases Planned:	**03**

Test Results for Unit testing:

- Unit testing increased confidence in changing/ maintaining code.
- Codes have become more reusable. In order to make unit testing possible, codes need to be modular. This means that codes are easier to reuse.
- Unit tests are more reliable than 'developer tests'. Development is faster.
- The effort required to find and fix defects found during unit testing is very less in comparison to the effort required to fix defects found during system testing or acceptance testing.
- The cost of fixing a defect detected during unit testing is lesser in comparison to that of defects detected at higher levEmergency.
- Debugging is easy. When a test fails, only the latest changes need to be debugged.
- Codes have become more reliable.
- Errors and fixes occurred during unit testing – Signup toast, Account updation dialog box and toast, Mobile number validation function, Mobile No. validation, E-cafeteria image fixes. Test Results for Integration testing:
- Fault Localization is easier.
- Early prototype is obtained.
- Major design flaws found and fixed.
- Errors and fixes- Admin Profile dashboard is fixed. Test Results for System testing:
- Minor reduction of errors. Test Results for Beta testing:
- Reduced product failure risk via customer validation.
- Improved product quality via customer feedback

- Created goodwill with customers and increased customer satisfaction

6.2 USER DOCUMENTATION

User Manual For Emergency

1. Getting started with Emergency

2. Get register your member for help in emergency

3. Get register your vehicle number

4. Search vehicle information

5. Call in emergency

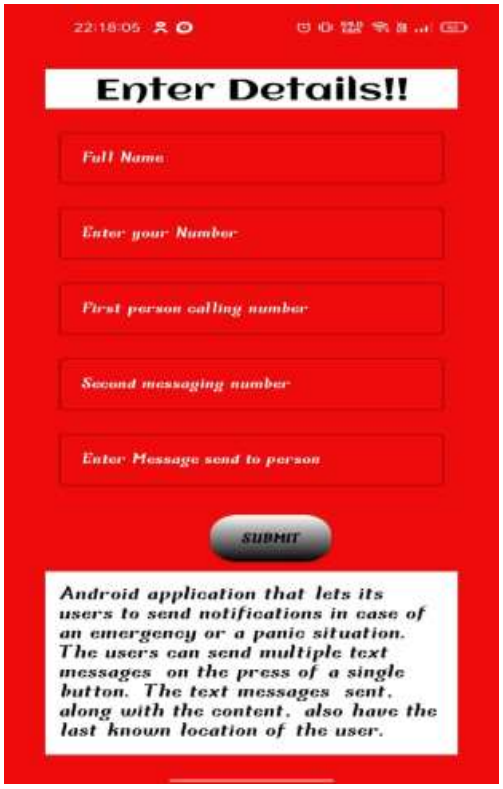
6.Send live location in emergency

7. Feedback and Rate App

1. Getting started with Emergency

EMERGENCY ALERT: A vehicle's license plate is commonly known as 'a number plate'. It is a metal plate which is attached to a vehicle and has the official registration number of a vehicle embossed on it. While it may seem like random numbering, the official license plate number in India consists of 4 different parts, each of which has a specific purpose. Number plates are placed at the front and back of the vehicle and help anyone to identify a vehicle. An early if we want the information of a car owner with the help of car number plate number there is a very long process to the information. First we have go to the police station to report the complain to get the information we have to give the number to the police and police give the number to the RTO office than RTO given the information or detail to the police. To solve such problems on a large scale, apps like RTO Vehicle Information, Vehicle Owner Information etc, have come in a picture. EMERGENCY ALERT application is very easy in this application we have to enter the number of car and search the number user get the full information of the car owner. EMERGENCY ALERT have tracking system user can tracking the car using the application. EMERGENCY ALERT also have a emergency service like police, hospital and relative. EMERGENCY ALERT send the message or call the user friends and provide the emergency service to the user. EMERGENCY ALERT have tracking system if user allow there friends to track him then they can track him otherwise they can't. . It provides fast, accurate, reliable and user friendly experience of using getting information and tracking system to the user

Step1 click on Emergency icon



2. Get register your member for help in emergency

Register number that will help you in emergency to give the call and location of your's with the help of Emergency application which give you a emergency help and provide you facility which is required for you in emergency

Step1 click on menu → go to setting →add number


22:16:56
HELP ME
To Send the message please click on the Button


4:56 PM
0.5KB/s
7039838915 India
hi I AM IN DANGER My location is http://maps.google.com/?q=26.253079,82.0136353
12:26 PM
help I AM IN DANGER My location is http://maps.google.com/?q=26.253079,82.0136353
help I AM IN DANGER My location is http://maps.google.com/?q=26.253079,82.0136353
MH04XX4546Your vehicle is register
Text message

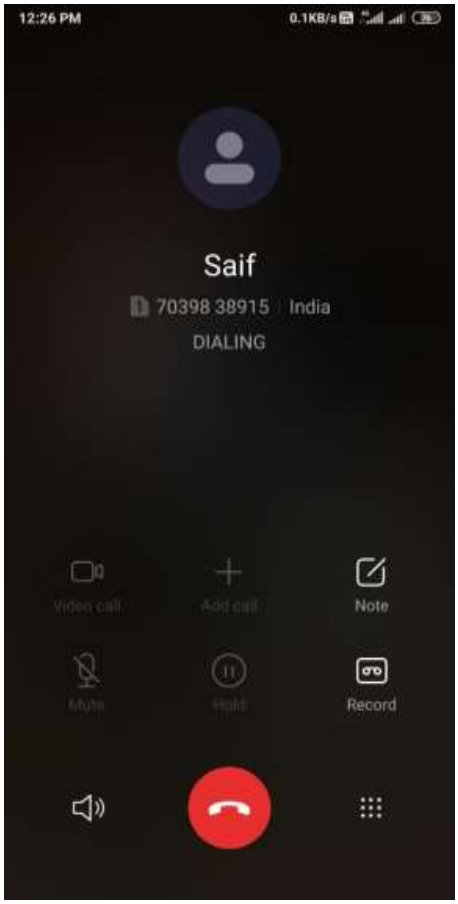

22:19:06
Emergency Alert!!
Help in danger
Home
Help Line
Near By
Profile
Edit
Feedback
Logout


22:17:19
Update Your Profile
EDIT YOUR PROFILE!!!
Full Name
Chandan Yadav
Enter Number of Person
+917081774903
Enter Number of Person 2
+9114111111
Message
Help me I am in danger
UPDATE

5. Call in emergency

if any incident is happen than Emergency application will call the ambulance and your register number which is register in the application

Step1 click on emergency icon

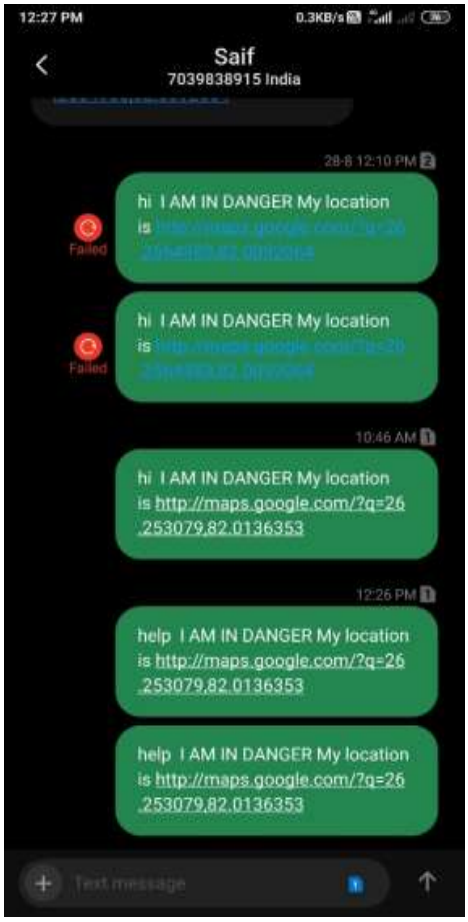


6.Send live location in emergency

if any incident is happen than Emergency application will give the live location of your to register number which is register in the application

Step1 click on SOS icon to send a live location


22:16:56
HELP ME
To Send the message please click on the Button

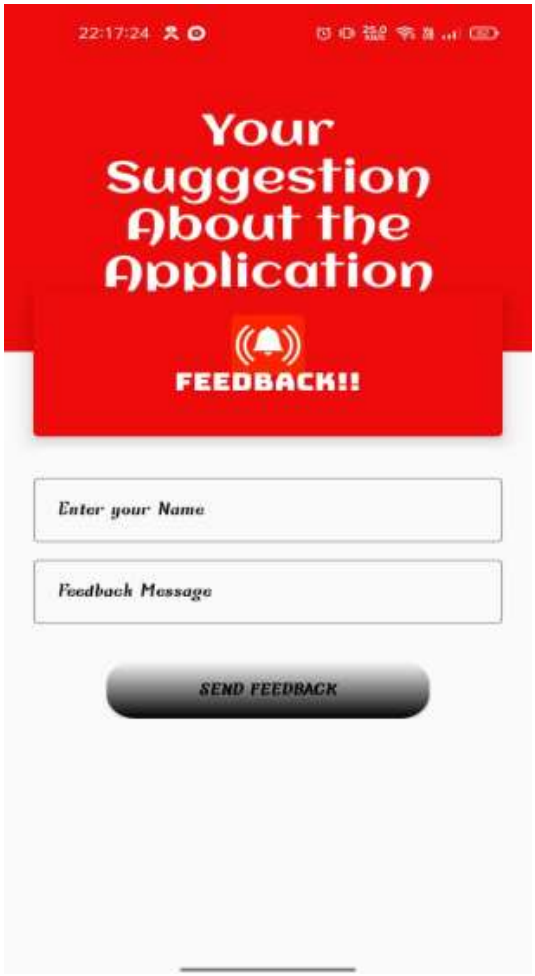

12:27 PM
0.3KB/s
Saif
7039838915 India
28-8 12:10 PM
hi I AM IN DANGER My location is
Failed
hi I AM IN DANGER My location is
Failed
10:46 AM
hi I AM IN DANGER My location is http://maps.google.com/?q=26.253079,82.0136353
12:26 PM
help I AM IN DANGER My location is http://maps.google.com/?q=26.253079,82.0136353
help I AM IN DANGER My location is http://maps.google.com/?q=26.253079,82.0136353
Text message


Search here
Bank of Baroda
Madina Masjid
Dhodhra
Johana
Lauhar Masjid
State Bank of India
Google
Unnamed location
Near Charauli, Uttar Pradesh 227808
Directions
Start
Save

7. Feedback and Rate App

EMERGENCY users are requested to give the feedback to app To give rating for Emergency, Go to Side Menu and click on Rate App

Step1 on menu bar and select the feedback option→fill the feedback and click on submit button



Chapter 7

Conclusions and Future Work

7.1 CONCLUSION

Technology is such a term, which can change the whole manoeuvre of a particular system. In today's world, we find that each field is based on the use of some kind of technology. Customer requirements are most essential while considering the hotel business. If we analyse the different types of user requirements, we will find that they are almost the same.. All of this is possible in Emergency. thus the advanced SOS application differs from the previously available Emergency applications with variety of exclusive features and options. The advantage in this application is its quick response of perfect help, its working without internet connection with easily usable GUI, and its ability to use without data connection. The app can be further upgraded by implementing shock response, mobile theft alert, and automatic emergency alert.

7.1.1 Significance of the system

EMERGENCY doesn't require any special hardware, downloads or updates. EMERGENCY is activated only when the user contacts Emergency Services. Location is computed on the handset and sent to Emergency Services. Location data is sent via Data SMS (per AML specifications) or HTTPS, which are both open, OS-agnostic protocols. EMERGENCY location is often more accurate and reliable than cell tower IDs

Location quality In many countries today, emergency call centers only receive cell-based location, with a location radius on the order of kilometers. In other countries, location during emergency calls is estimated using GPS, falling back to cell -- but GPS only works well in good satellite line-of-sight conditions (i.e., outdoors) but not so well indoors, underground or in urban canyons (city centers with tall buildings). With EMERGENCY, when a user contacts a configured emergency number from a handset, the device automatically activates EMERGENCY to send location information. This happens via a high accuracy location request that is registered with the Android Fused Location Provider. FLP allows us to derive a more accurate indoor or outdoor location as quickly as possible using a variety of sensors. We are always working to improve the quality of our location services, and while no one can guarantee completely accurate location data, in general, we have found that EMERGENCY can be significantly faster and more accurate than location obtained through cell towers and GPS alone during an emergency. Computes location: Data flow and quality Computing location EMERGENCY location information is sent only when the user contacts

emergency services. Location is computed locally on the handset and sent directly to an endpoint maintained by the EMERGENCY partner; Google does not get the emergency location.

7.2 LIMITATIONS OF THE SYSTEM

Though the software grants a broad range of options to its users, some intricate options could not be covered into it; because of logistic and partly due to lack of sophistication. Paucity of time was also major constraint, thus it was not possible to make the software fool proof and dynamic. Considerable efforts have been made to make the software easy to operate even for the people not related to the field of computers .The user is provided help at each step for his convenience in working with the software.

- SSL certificate encryption is not applied due to financial constraints
- Paytm payment method is not integrated due to blocking of Paytm account and KYC issues.
- Online live payment is not enabled in RazorPay due to GSTIN registration.
- Fine system, different dashboard for staff and sms authentication is not developed due to time constraints.
- Emergency android app is not published on Google Play Store due to Google Developer subscription charges and financial constraints

7.3 FUTURE SCOPE OF THE PROJECT

The project Emergency may help many people in case of any emergency. The current work on the Emergency app has a lot of essential features that would be used in case of an emergency situation like sending text messages , Mobile No.s and making calls to 911 from within the app on tap of a single button. An app for such a purpose has a lot of scope for enhancement. In the future the app may include features like A home screen widget that can be used as a triggering point to send panic notifications. A user would then not have to open the app to send these panic notifications. Initiating a call to a number set from within the application when the user presses the panic button. The app can also listen to incoming messages from the set contacts. If these message have a pre-defined text like “UPDATE LOCATION” the app can reply with a text message containing the current location or for some other text like “AUDIO” in which case the app can record a short audio and send it as an Mobile No. to the person. This is very helpful as you may have already pressed the panic button and may be in some trouble where you cannot reply. This way the person can track you constantly and also understand something about the nature of the emergency from the audio clip.Setting up a OTP to stop the application and help many people in future that’s a moto of the EMERGENCY ALERT.

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Glossary

[1] PHP- Personal Home Page / Hypertext Preprocessor

[2] MYSQL- My Structured Query Language

[3] HTML- Hyper Text Mark-up Language

[4] RFID- Radio Frequency Identification

[5] QR- Quick Response code

[6] WBS- Work Breakdown Structure

[7] PERT- Program Evaluation Review Technique

[8] CSS- Cascading Style Sheets

[9] JSON- JavaScript Object Notation

[10] XML- Extensible Mark-up Language

[11] IDE- Integrated Development Environment

[12] FCM- Firebase Cloud Messaging

[13] SDLC- Software Development Life Cycle