

# **Designing and implementation of lives saving App. (Using APIs for GPS system)**

**Final Year Project**

**Session 2019-2023**

A project submitted in partial fulfillment of the degree

**of BS in Computer Science**



**Department of Computer Science**

**Faculty of Computer Science & Information Technology**

**Superior University, Lahore**

**Spring 2023**

Type (Nature of project)	<input checked="" type="checkbox"/> Development <input type="checkbox"/> Research <input type="checkbox"/> R&D			
Area of specialization				
FYP ID	FYP-BCSM-F22-078			
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\*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

### Plagiarism Free Certificate

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## ]lives saving app

### Change Record

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M Adil Zahid Hafiz Umer Usman Nazir Bawja	1.1		Chapter#2	
M Adil Zahid Hafiz Umer Usman Nazir Bawja	1.2		Chapter#3	
M Adil Zahid Hafiz Umer Usman Nazir Bawja	1.3		Chapter#4	
M Adil Zahid Hafiz Umer Usman Nazir Bawja	1.4		Chapter#5	

## APPROVAL

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## **Dedication**

We, Muhammad Adil Zahid, Hafiz Umer and Usman Nazir bajwa students of **BS(Hons)** in the subject of **Computer Science** session **2019-2023**, hereby declare that the matter printed in this thesis titled, **Lives Saving app: An Ambulance service andriod application.** is our own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research Institution etc in Pakistan or abroad.

## **Acknowledgements**

I am very appreciative of my supervisor, who has Mr. Awais for his motivational and valuable suggestion throughout the BS(CS) Program. We also extend thanks to other Faculty member for their cooperation during my program.

Finally, we would like to thank my friends for their cooperation to complete this project.

## **Executive Summary**

Our idea is about an lives saving android application with some features related to ambulances. User will be able to book ambulance like uber to took the patient to the hospital on time and driver will to locate the location where the accident cause and have to map location from where the person who contact or book an ambulance. As we know now a days a lot of causalities in road accident occur due to late arrival of ambulance. And most of the time low mobile signals and any other contacting at help line issue, and ambulance driver faces a lot of difficulties to track the exact location to the accident area and patient causes causalities to avoid that kind of issue we design this easy to use application which helps us to prevent these kind of issue by GPS system to locate ambulance and ambulance driver to patient exact location easily and ambulance will be on time and saves lives which are most important.

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# Chapter 1

## Introduction

## Chapter 1: Introduction

In the today's busy life almost every one is facing some accidents. According to a research 36,000 people lost their precious lives in the road accidents last year and the number is increasing day by day. At the time of accidents, most of the victims have not some awareness of what to do next. The aim of this project is to develop an application that comprises various features of dealing with such accidents and to provide a quick way of connecting to the ambulances and hospitals.

### 1.1. Background

We are in 21st Century where everything which is growing expanding at a fast pace either it is traffic or human population. With this increase in population and traffic, the number of road side accidents and deaths are also mounting up day by day. We are developing an application by using which you can contact an ambulance instantly to rescue the accident victims are using this application of ours and one can easily contact an ambulance and can keep track of ambulance route. Ambulance on collecting the victim will locate the nearest hospital and send a report of victims condition so that doctors will be ready for the treatment in advance.

### 1.2. Motivations and Challenges

As we are aware of messy traffic situation of subcontinent and many other underdeveloped countries. And chances of accidents are too increasing rapidly. Which means there is a deficiency of some reliable ambulance service which is easy to access for people. Delayed calling for an ambulance and waiting for it can cause some serious problems for patients. So to overcome the problem we thought of an idea and model of a service that can be accessible in seconds and user can keep trackof the ambulance.

### 1.3. Goals and Objectives

Our goal is to make such an application in which ambulances can be accessible to the victims quickly and there cannot be any delay in responses from ambulance services. In this way more

lives can be saved as there are so many people who lose their lives just because of the delayed ambulance calls as these are most common case of road deaths.

#### **1.4. Literature Review/Existing Solutions**

Ambus - India's exclusive Ambulance Booking App

Choose from a variety of options - Oxygen, Ventilator, Paramedics and Body Freezer. India's first and exclusive platform which gets you best quotes before you could book an ambulance. Select the best Ambulance provider at the economical price. But there is no such application in Pakistan that is provide these type of features.

#### **1.5. Gap Analysis**

In Pakistan currently we don't have digital ambulance service that have a mobile application for that serious issue. Pakistan have one of the biggest ambulance services in the world but digitizing them is a big concern. So we are going to provide an opportunity for those services to make it more reliable and close the distance between the victims and ambulance.

#### **1.6. Proposed Solution**

We are in 21st Century where everything which is growing expanding at a fast pace either it is traffic or human population. With this increase in population and traffic, the number of road side accidents and deaths are also mounting up day by day. So we need a solution of that in proper way.

#### **1.7. Project Plan**

We are flowing a simple plan to developing this project. Frist we analysis the user requirements than finds the basic and necessity wants of the system. Than make solutions for the desire requirements. Implements the first practical trials of the software. Complete the evolution process of the software. Make updates in the system a then finalize the complete final system.

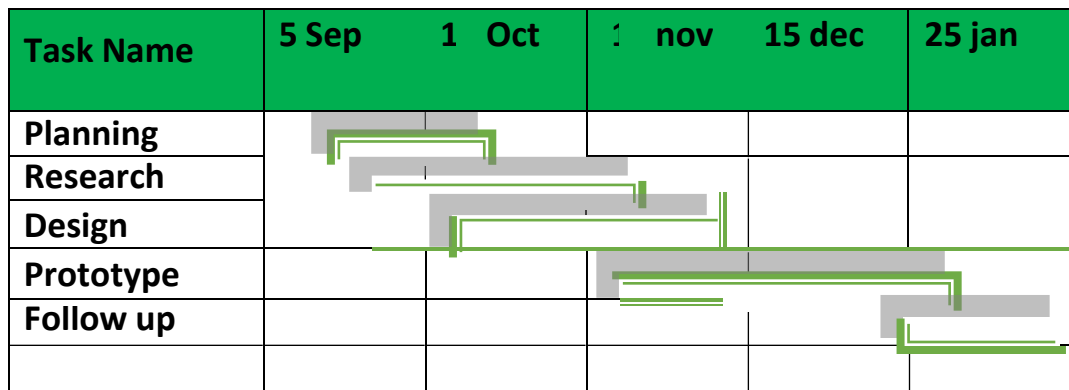
## 1.7.1. Work Breakdown Structure

Sno	Deliverable	Activity#	Achieving the deliverable through activity	Duration (No. of days)	Team Member(s) Responsive to Their Role (s)
1	Requirement Analysis	1.1	Problem Statements	7 Days	Muhammad Adil Zahid
		1.2	Requirement Gathering	20 Days	All
		1.3	Analysis	18 Days	Muhammad Adil Zahid
		1.4	Project Scope	4 Days	Hafiz Umer & Usman nazir bajwa
2	Project Plannin	2.1	WBS	7 Days	All
		2.2	Roles & Responsibilities	6 Days	All
		2.3	Gantt Chart	1 Days	Hafiz Umer
					All
3	Documenta t ion	3.2	Functional & NonFunctional Requirements	7 Days	Usman bajwa
		3.3	Use Case Diagram	7 Days	M Adil zahid
		3.4	Class Diagram	2 Days	ALL
		3.5	Activity Diagram	2 Days	Hafiz umer & Usman bajwa
		3.6	Sequence Diagram	4 Days	Hafiz umer & Usman bajwa
		3.7	Operational Contract	2 Days	ALL

### 1.7.2. Roles & Responsibility Matrix

2.	Sno	Deliverable	Achieving the deliverable through activity	Duration (# of Days)	Team Member(s) Responsive to Their Role
	1	Planning	Develop Requirements, Research	4 months	ALL members
	2	Implementation	Develop front-end and backend of web-app	4 months	All Members

### 1.7.3 Gantt Chart



# Chapter 2

## **Software Requirement Specifications**

## **Chapter 2: Software Requirement Specifications**

### **2.1 Introduction**

#### **2.1.1 Purpose**

The purpose of this document is to present a detailed description of the System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do. When an accident takes place at any place the first priority is to rescue it as soon as possible. Most of the time many deaths happen due to late treatment and ambulance could not reach on time. Due to this issue we are developing an application by using which you can contact an ambulance instantly to rescue the accident victims. In this android application, phone numbers of all the ambulance services will be given along with their current location so that you can contact the nearest ambulance.

Then ambulance on collecting the victim will locate the nearest hospital.

#### **3.1.1. Document Conventions**

Documentation rules are followed in order to create this android application.

#### **3.1.2. Intended Audience and Reading Suggestions**

The documents are intended to the supervisor for the purpose of the complete description of the Website of E-Store. The document contains complete development description of the website. The sequence which we set to read this document is starting from the first chapter to the second chapter.

#### **3.1.3. Product Scope**

This application will have scope in market because there is no such application in Pakistan currently.

#### **3.1.4. References**

Educative Course(android studio)

## 3.2. Overall Description

### 3.2.1. Product Perspective

This software is unique feature in sense of that this is android application like uber but in health care sector and developing for user. The software will be different itself from the others software because it is linked withIt may be used as the replacement of the existing software. The major interfaces of the software are three: One of them is that user interface , second, driverinterface and then have a system interface.

### 3.2.2. User Classes and Characteristics

- User can sign-up or login in the application
- Driver can also able to access the application with login or make its account by sign up in the application.
- User able to book an ambulance
- Driver can able to accept or reject the user request
- User & diver are able to see the location of each other.
- In future, user and driver able to chat to each other.

### 3.2.3. Operating Environment

#### 4. *Hardware requirements*

##### **SERVER:**

Processor	:	Core i7
Speed	:	1.7 GHz
Memory Capacity	:	4 GB
Hard Disk Capacity	:	118 GB
Monitor Make	:	HP Elitebook

##### **Client:**

Processor	:	Core i7
Speed	:	1.7 GHz
Memory Capacity	:	4 GB
Hard Disk Capacity	:	20 GB
Monitor Make	:	DELL

#### **4.1.1. Design and Implementation Constraints**

The Android application will be controlled by many constraints and limitations. Many constraints are implemented on it.

- 10 thousand customers and one thousand drivers in the system
- 1 thousand active customers and 100 thousand active drivers per day
- 500 rides per day
- All active drivers notify their current location every 10 seconds
- System contacts drivers in real time when customer puts in a ride request

#### **4.1.2. Assumptions and Dependencies**

The requirement phase terminates with the production of the validate document. Producing the SRS document is the basic goal of this phase.

The SRS phase consists of two basic activities:

##### **1) Problem/Requirement Analysis:**

We find out the problem and requirement analysis that required us to make the android application.

##### **2) Requirement Specification:**

Here, the focus is on specifying what has been found giving analysis such as representation, specification languages and tools, and checking the specifications are addressed during this activity.

## **4.2. External Interface Requirements**

### **4.2.1. User Interfaces**

Following user interfaces will be there in our android application

- Log In/Register
- Home
- Search
- Contact
- Search hospitalLog

in/Register

On installing the android application, user is required to sign in by entering the

phone number or new user should register by entering his phone number and CNIC.

Home By clicking the home button, user can see his information accessed by our application and his history of using our application. User can change his phone number as well. Search After signing in the user details the nearest ambulance by allowing our application to access his/her location in the search bar. Contact After searching the nearest ambulance, user can request one of them by clicking the icon of ambulance. Search hospital The driver after approaching the patient, can search the nearest

hospital.

### **4.2.2. Hardware Interfaces**

Any user who want to use our application, should have an android phone. Software Interfaces User's android phone should have OS kitkat4.0 or higher to use our application. it should also support internet connectivity so that he can use different features of our application.it should also have GPS service in order to avail ambulance search.

### **4.2.3. Software Interfaces**

- Modern Technologies: The application is designed in such a manner that it will evolve/update itself according to the up-to-date changes in the technologies which will be solid and safe for the application.
- GPS(Global Positioning System): In the future , GPS system for tracking should be implemented in the application.

*Using Smartphone coordinate to find the location: The application should be using the smartphone coordinates system to find the address of the user*

### **4.2.4. Communications Interfaces**

The user and ambulance driver's application will use HTTP protocol to communicate with each other.

The only protocol used in our application is HTTP.

## **4.3. System Features**

logging in/sign up

User can log in and sign up on the app. When a user want to use the app firstly user

will sign up through mobile number and a password will be set. If the user already sign up then user will only log in through mobile number and password.

### **Description and Priority**

First of all a user or ambulance driver must login or sign up in order to access the services provided by our android application. It is the first and foremost task a user should perform, without which he can't access our application.

### **Stimulus/Response Sequences**

When user downloads and open our application he will be asked to register by clicking on register button. If he already have an account then he will simply login using his phone number. In case of registration the application will send one time password to the entered phone number in order to verify the authenticity. If any error occurs during registration process, relevant error message will be displayed.

### **Functional Requirements**

**Req1.** User will register using his mobile number and CNIC.

**Req2.** Existing user will login using his mobile number already registered with our application.

## **Accessing user location**

### **Description and Priority**

This comes at second priority after signing in. after sign in a different view will be visible to the user in which he will enter his location.

### **Stimulus/Response Sequences**

In this view user will enter his location either manually or Google map itself fetch location when user presses the option "my location".

### **Functional Requirements**

**Req1.** The user will turn on his GPS so that our application can access his location.

## Select Ambulance

### Description and Priority

After turning on the location service application will show all the ambulances in the near vicinity and then user can choose one of them.

### Stimulus/Response Sequences

Our application will show all the available ambulances stationed in the near vicinity using the GPS. Thus user will choose one of those ambulances.

### Functional Requirements

**Req1.** The user can view ambulances near him.

**Req2.** the user can select one of the nearest ambulance.

## Enter Hospital

Description and Priority

Driver can search the nearest hospital after approaching the patient at site, so that he can save the lives.

## 4.4. Nonfunctional Requirements

### 4.4.1. Performance Requirements

- Efficient response time: The time of processing or loading the application is very short. User has not to wait for more than 5 seconds .
- Usage perspective: Keeping the user's usage view in mind, the application is designed to provide services to more than 200 users at time.

### 4.4.2. Safety Requirements

The safety of the system is ensured by providing the system services all the time and it will be safe in order to any sort of system crash.

### 4.4.3. Security Requirements

Keeping in mind , the users important data the application is designed to be secure from any kind of illegal activity like from hackers and others personnel.

#### **4.4.4. Usability Requirements**

- :Easy to use: In order to use the application, the user does not need to learn any special or technical skills to use the application.
- Efficient design: the design of the application should be efficiently and easy to understand by the users so that they can use it easily and efficiently.

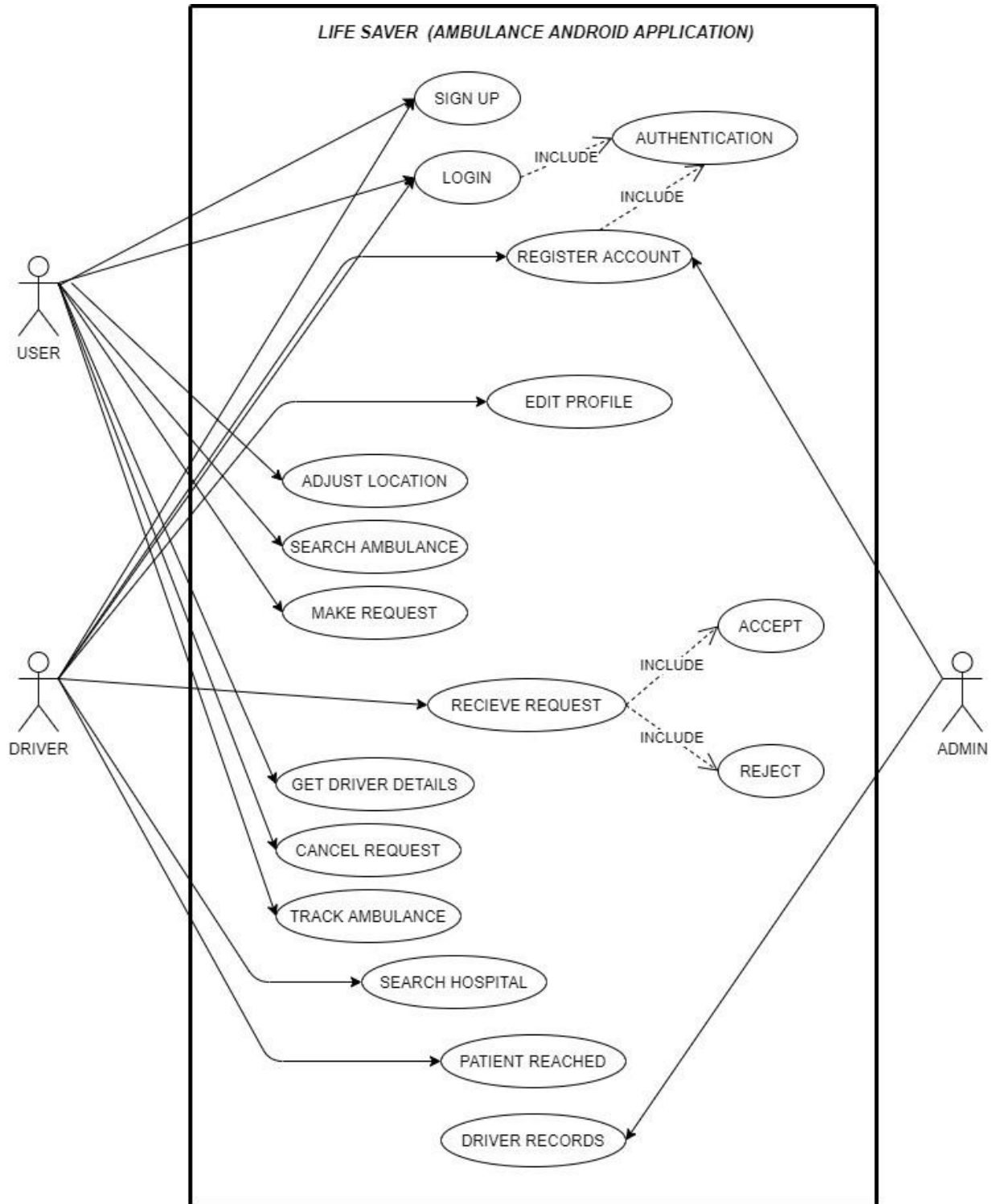
# Chapter 3

## Use Case Analysis

## Chapter 3: Use Case Analysis

This Use Case Diagram for an Websites is a behavioral diagram summarizing android Application activities and user information. It depicts a graphical representation of the behavioral structure of the system. The diagram also includes processes and users or actors. It describes the overall workflow of the e-commerce website using defined symbols. The use case diagram in software engineering depicts an example of adaptive uber ambulance behavior. It encapsulates the functionality of the project by incorporating use cases, actors, and their interactions.

3.1. Use Case Model:



### 3.1. Use Cases Description

**Table 3.1: Summarized view of LTL and CTL**

<b>System</b>	Life Saver
<b>Name</b>	Sign Up
<b>Actors</b>	1.User 2. Driver
<b>Other Stakeholders</b>	System
<b>Description</b>	User and Driver are the persons who wants to create an account in Order to use the application
<b>Main Success Scenario</b>	1.User creates new account by providing valid username and password and all the other information. 2. system stores user's data
<b>Alternative</b>	Already have an account but forgot password
<b>Pre Condition</b>	User and driver does not have an account already
<b>Post Condition</b>	Account is created
<b>Assumptions</b>	User has to provide valid Information
<b>Special requirements</b>	User enters unique name and password

**Table 3.2:**

<b>System</b>	Life Saver
<b>Name</b>	Log in
<b>Actors</b>	1.User 2. Driver 3.Admin
<b>Other Stakeholders</b>	System

<b>Description</b>	User , Driver and the admin are three actors who can logged in by their existing account.
<b>Main Success Scenario</b>	1.User creates signs in by providing valid username and password . 2. System validates user's data
<b>Alternative</b>	Already have an account but forgot password
<b>Pre Condition</b>	User and driver must have an account already
<b>Post Condition</b>	User is logged in
<b>Assumptions</b>	User has to provide valid information 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.3:**

<b>System</b>	Life Saver
<b>Name</b>	Sign up
<b>Actors</b>	Driver
<b>Other Stakeholders</b>	System
<b>Description</b>	Driver is the person who wants to create an account in order to register the ambulance service.
<b>Main Success Scenario</b>	1.Driver signs in by providing valid username and password. 2. He registers an account.
<b>Alternative</b>	Already have an account but forgot password
<b>Pre Condition</b>	Driver does not have an account already
<b>Post Condition</b>	Account is registered

<b>Assumptions</b>	User has to provide valid information 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.4:**

<b>System</b>	Life Saver
<b>Name</b>	Create Account
<b>Actors</b>	Driver
<b>Other Stakeholders</b>	System
<b>Description</b>	Driver wants to edit his/her existing profile.
<b>Main Success Scenario</b>	1.Driver signs in by providing valid username and password. 2. He clicks edit profile button.
<b>Alternative</b>	Already have an account but forgot password
<b>Pre Condition</b>	Driver is logged in
<b>Post Condition</b>	Profile is edited
<b>Assumptions</b>	User has to sign in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.5:**

<b>System</b>	Life Saver
<b>Name</b>	Adjust location
<b>Actors</b>	User
<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to adjust his/ her location.

<b>Main Success Scenario</b>	1.User signs in by providing valid username and password. 2. He clicks adjust location button.
<b>Alternative</b>	Already have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	Location is adjusted
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.6:**

<b>System</b>	Life Saver
<b>Name</b>	Search ambulance
<b>Actors</b>	User
<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to search all nearby ambulances.
<b>Main Success Scenario</b>	1.User logs in by providing valid username and password. 2. He clicks search ambulance button.
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	Information is provided
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.7:**

<b>System</b>	Life Saver
<b>Name</b>	Make request
<b>Actors</b>	User
<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to request an ambulance service.
<b>Main Success Scenario</b>	1.User logs in by providing valid username and password. 2. He clicks Make request button.
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	Request has been made.
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.8:**

<b>System</b>	Life Saver
<b>Name</b>	Recieve request
<b>Actors</b>	Driver
<b>Other Stakeholders</b>	System
<b>Description</b>	Driver recieves request from user. He accepts or rejects depending upon the stituation.
<b>Main Success Scenario</b>	1. Driver logs in by providing valid username and password. 2. He recieves a request. 3. He acts accordingly

<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	Driver is logged in
<b>Post Condition</b>	Request has been accepted or rejected.
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.9:**

<b>System</b>	Life Saver
<b>Name</b>	Get driver Details
<b>Actors</b>	User
<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to know the details about the ambulance driver
<b>Main Success Scenario</b>	1. User logs in by providing valid username and password. 2. He clicks get driver details button
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	Information was provided
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.10:**

<b>System</b>	Life Saver
<b>Name</b>	Cancel request
<b>Actors</b>	User

<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to cancel the request.
<b>Main Success Scenario</b>	1. User logs in by providing valid username and password. 2. He clicks cancel request details button
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	Request cancelled
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.11:**

<b>System</b>	Life Saver
<b>Name</b>	Track ambulance
<b>Actors</b>	User
<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to track the ambulance coming to his/ her location.
<b>Main Success Scenario</b>	1. User logs in by providing valid username and password. 2. He clicks track ambulance details button
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	information was provided
<b>Assumptions</b>	User has to log in. 2. Internet not stable

<b>Special requirements</b>	User has an internet connection 2. User must have an account
-----------------------------	---

**Table 3.12:**

<b>System</b>	Life Saver
<b>Name</b>	Search hospital
<b>Actors</b>	Driver
<b>Other Stakeholders</b>	System
<b>Description</b>	User wants to search all nearby hospitals.
<b>Main Success Scenario</b>	1. User logs in by providing valid username and password. 2. He clicks search hospital button
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	information was provided
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.13:**

<b>System</b>	Life Saver
<b>Name</b>	Patient reached
<b>Actors</b>	Admin
<b>Other Stakeholders</b>	System
<b>Description</b>	Driver wants to tell that the patient has reached to the hospital.
<b>Main Success Scenario</b>	1. User logs in by providing valid username and password. 2. He clicks patient reached button

<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	information was provided
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

**Table 3.14:**

<b>System</b>	Life Saver
<b>Name</b>	Driver records
<b>Actors</b>	Admin
<b>Other Stakeholders</b>	System
<b>Description</b>	Admin wants to check all the driver records.
<b>Main Success Scenario</b>	1. Admin logs in by providing valid username and password. 2. He clicks driver records button
<b>Alternative</b>	Have an account but forgot password
<b>Pre Condition</b>	User is logged in
<b>Post Condition</b>	information was provided
<b>Assumptions</b>	User has to log in. 2. Internet not stable
<b>Special requirements</b>	User has an internet connection 2. User must have an account

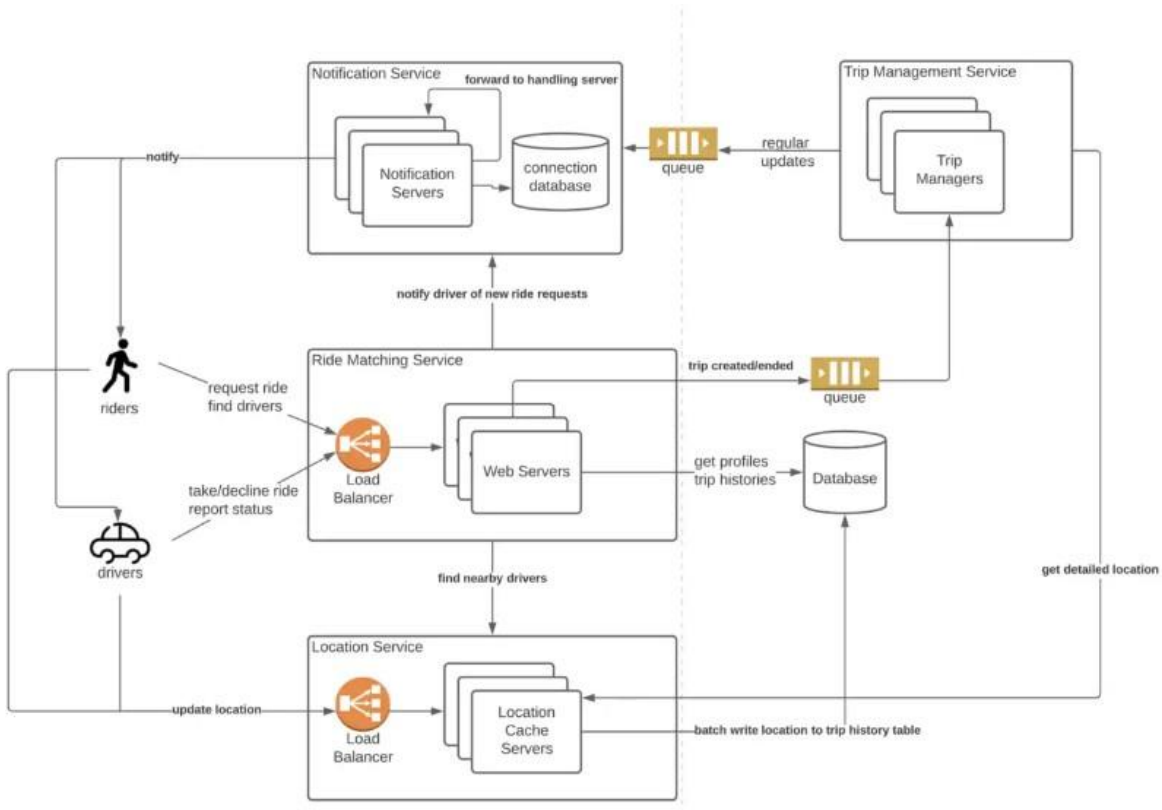
# Chapter 4

## **System Design**

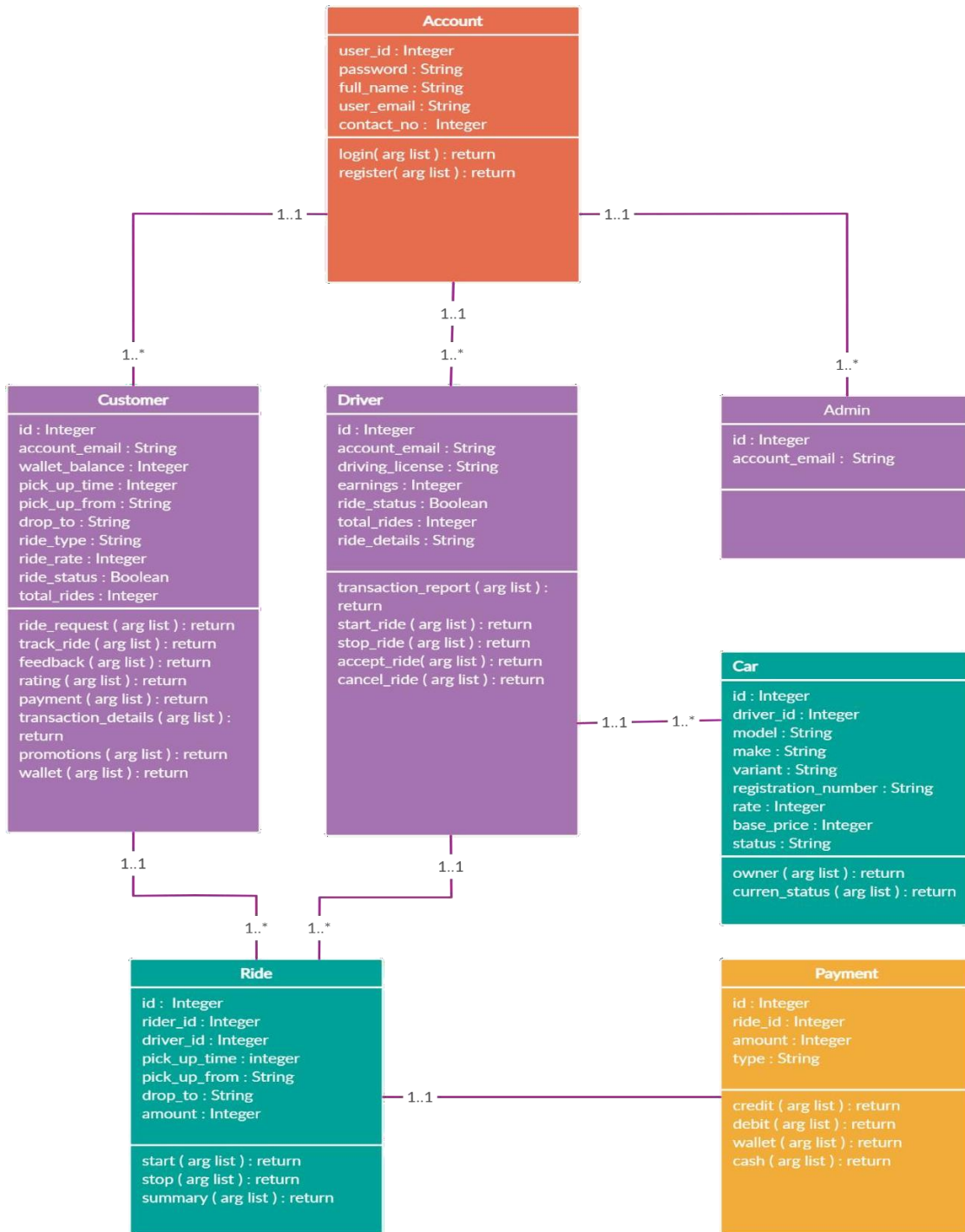
## Chapter 4: System Design

In the system design we describes the all the pre evolution of the requirements of the software and defines the software in such that is implementable in future. In general we define the basic outline of the software system and then carry on these basic designs as the practical implementation of the system.

### 4.1. Architecture Diagram



## 4.2. Domain Model



### 4.3. Entity Relationship Diagram with data dictionary

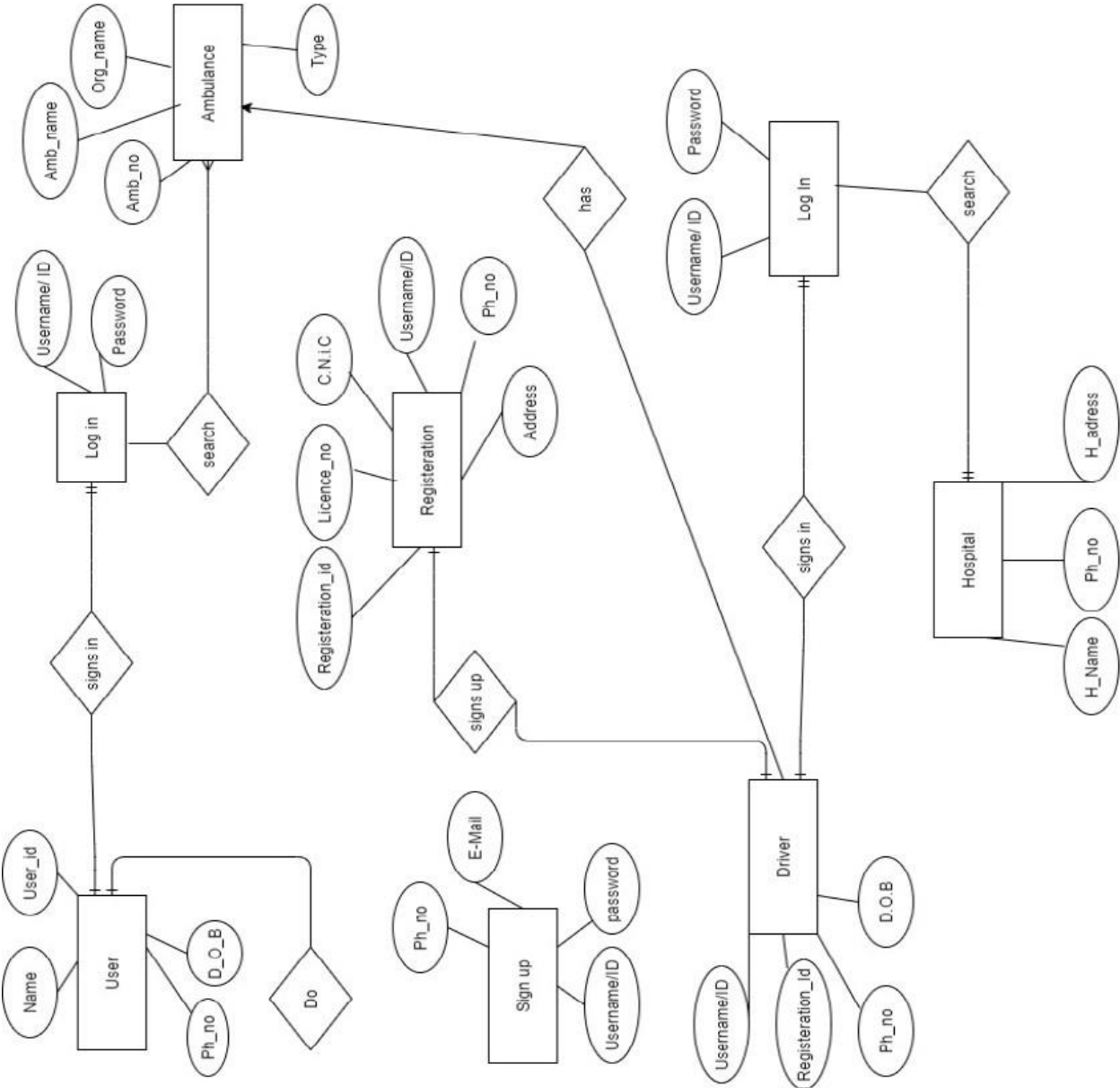
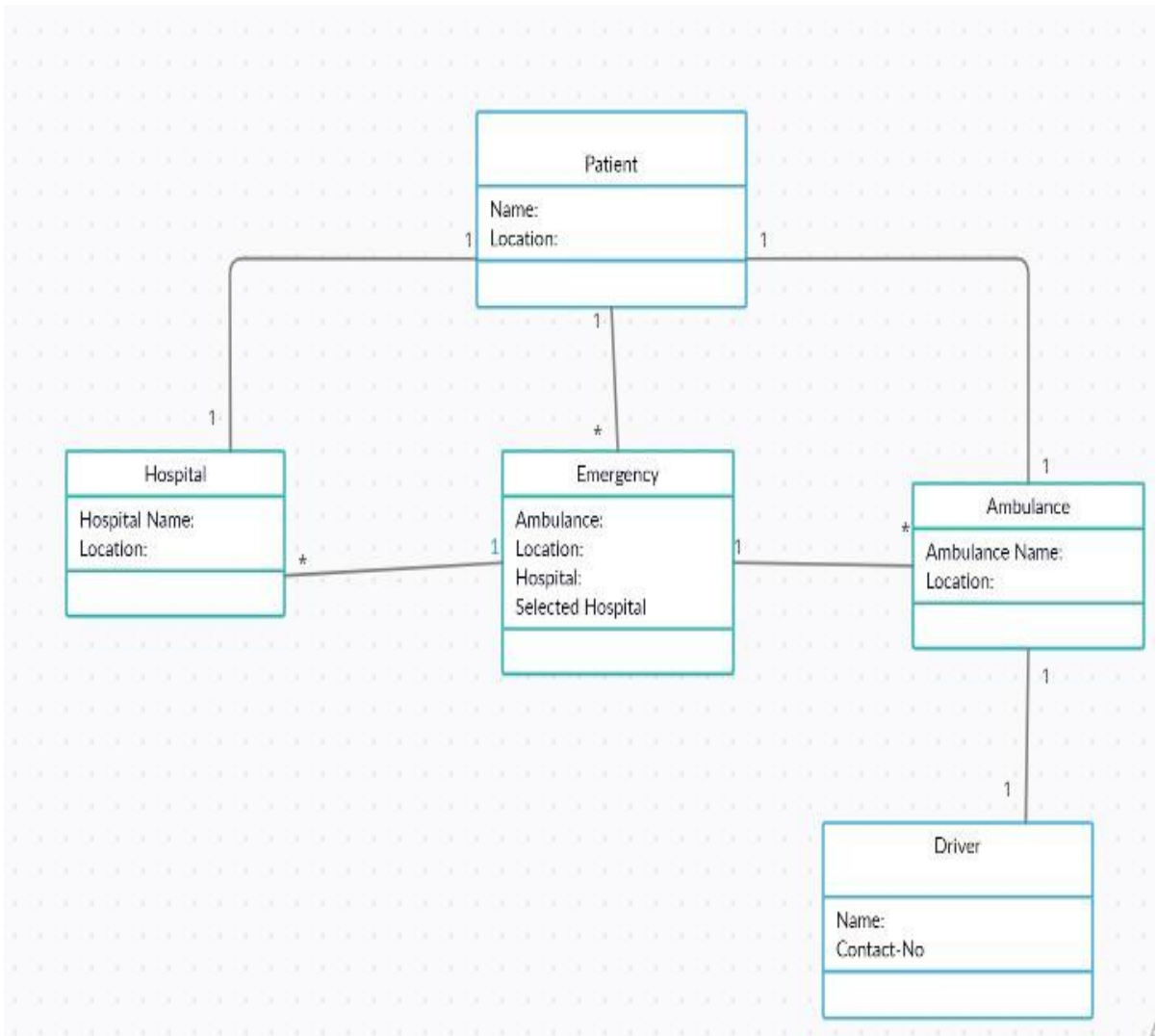


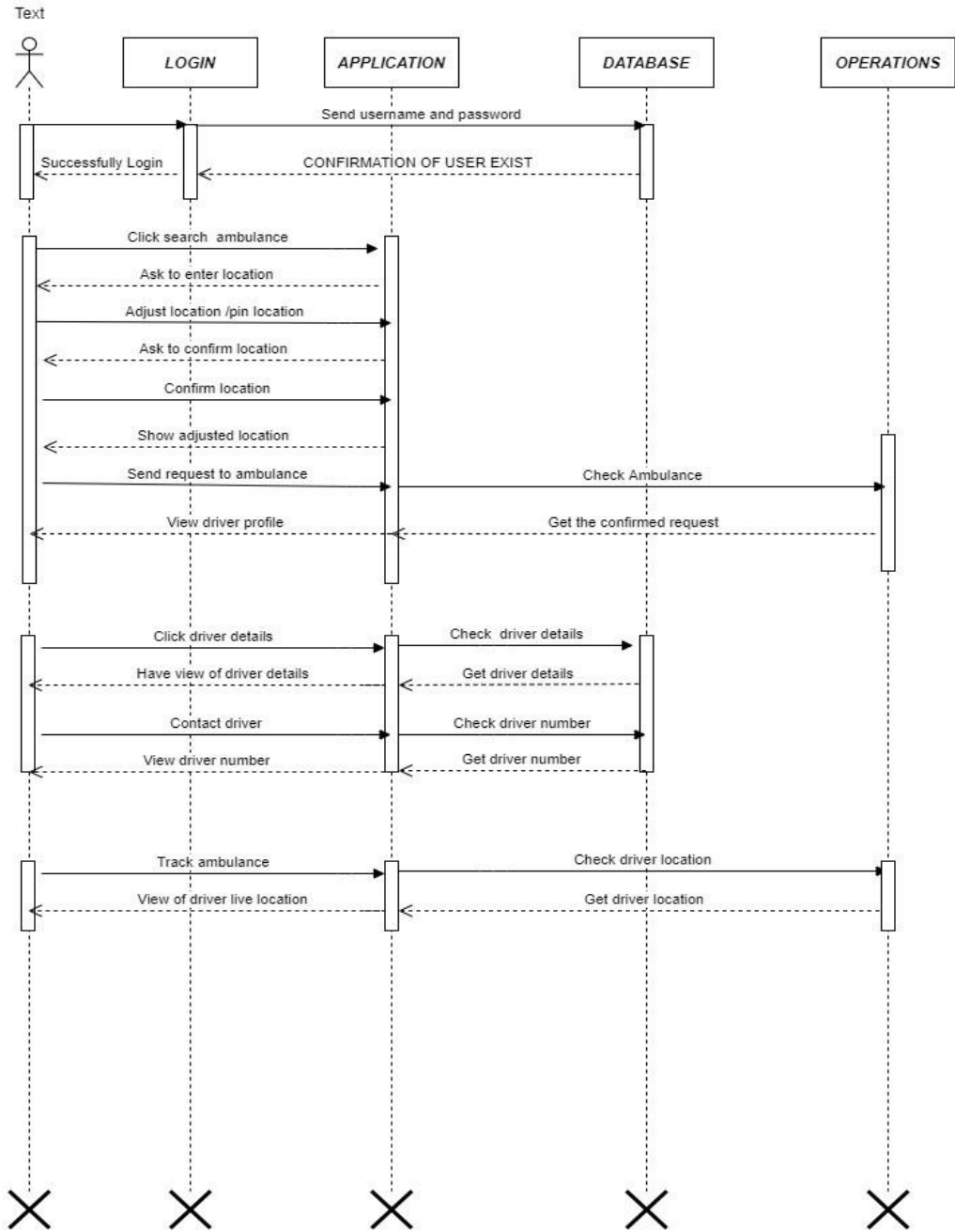
Figure 3.1: Entity Relationship Diagram

### 4.4. Class Diagram

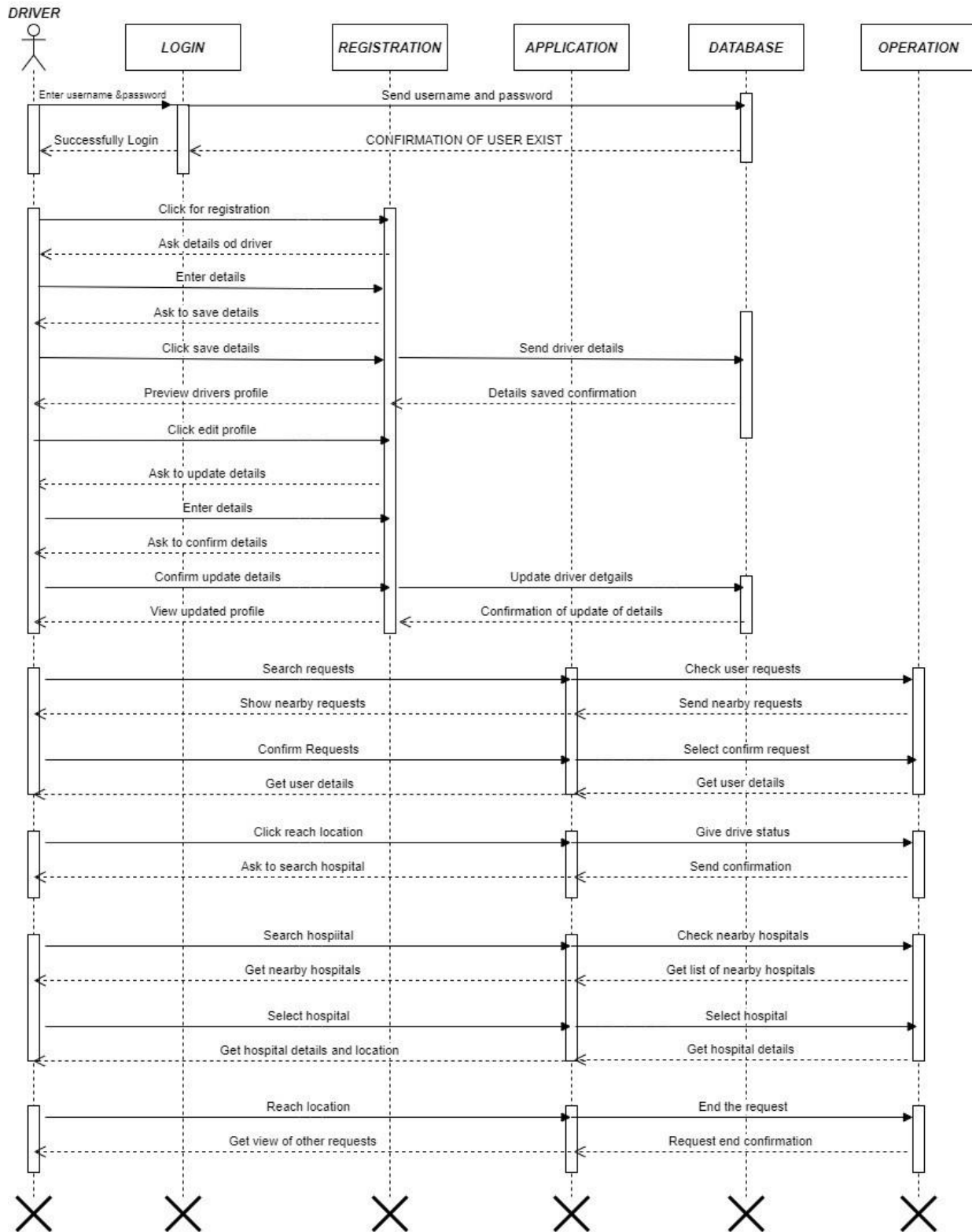


### 4.5. Sequence / Collaboration Diagram

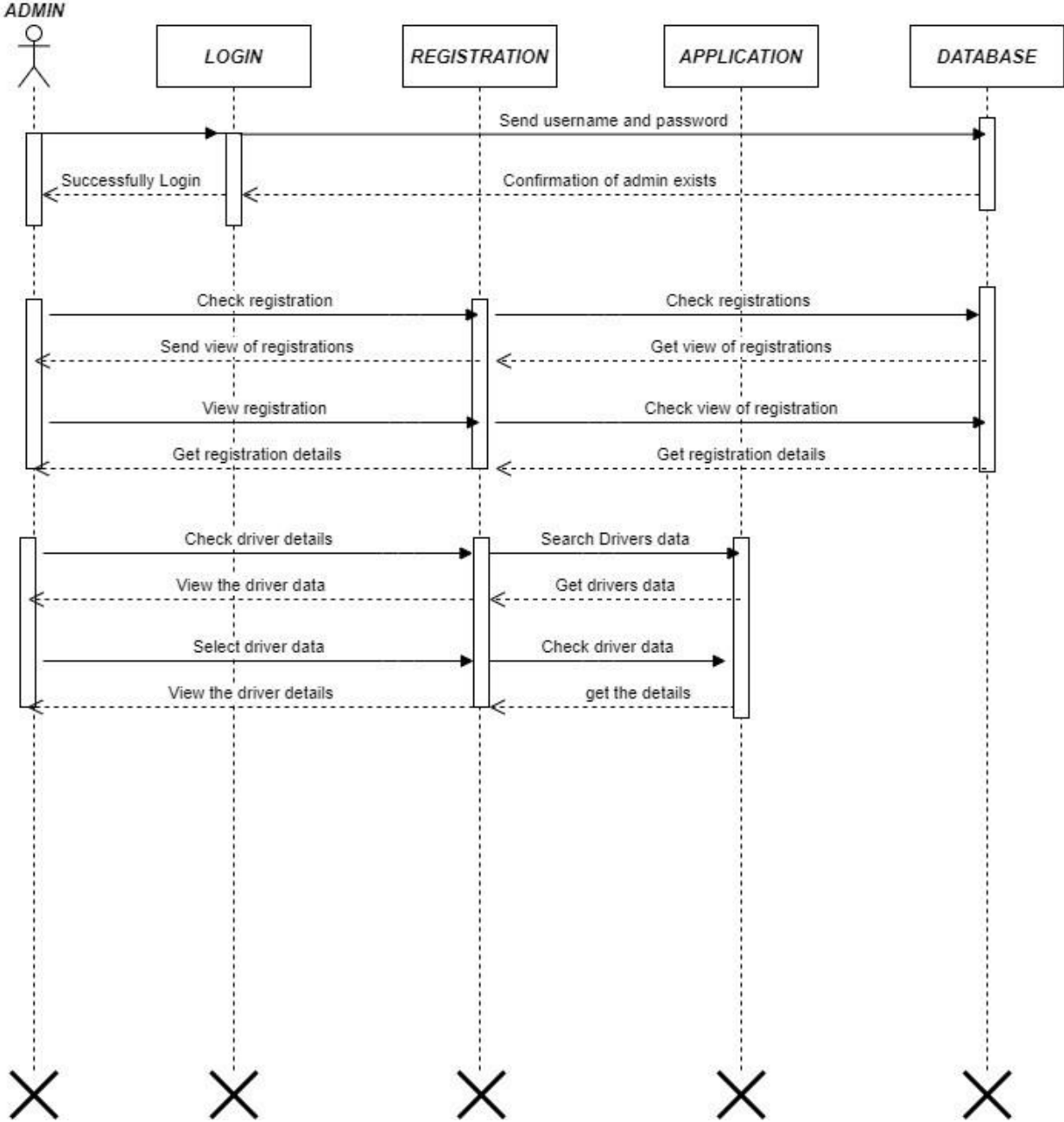
#### 4.5.1 User Sequence Diagram



### 4.5.2 Driver Sequence Diagram



### 4.5.3 Admin Sequence Diagram

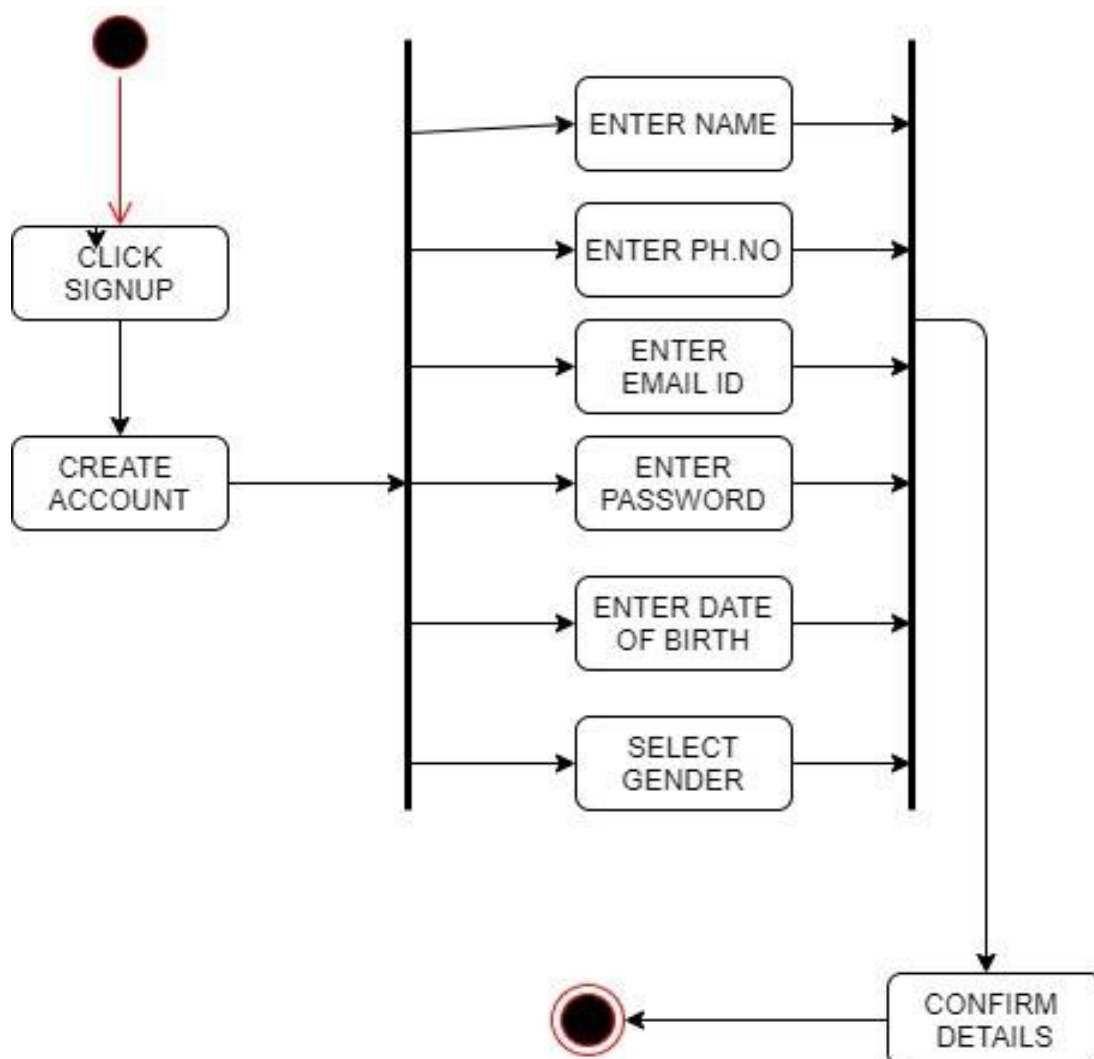


## 4.6. Operation contracts

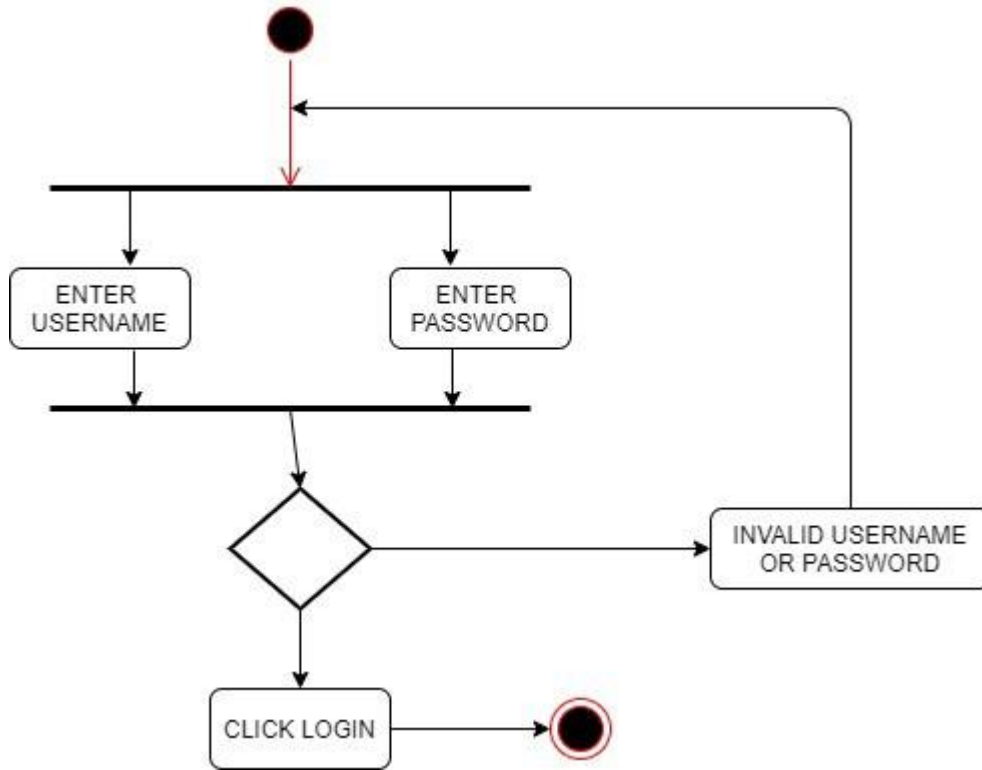
For lives saving app refers to the agreement between the company and its driver partners outlining the terms and conditions of their working relationship. This contract typically covers issues such as driver requirements, vehicle requirements, insurance policies, and compensation for the driver. The specifics of an operation contract for Uber may vary depending on the specific city or country in which the driver is operating

## 4.7. Activity Diagram

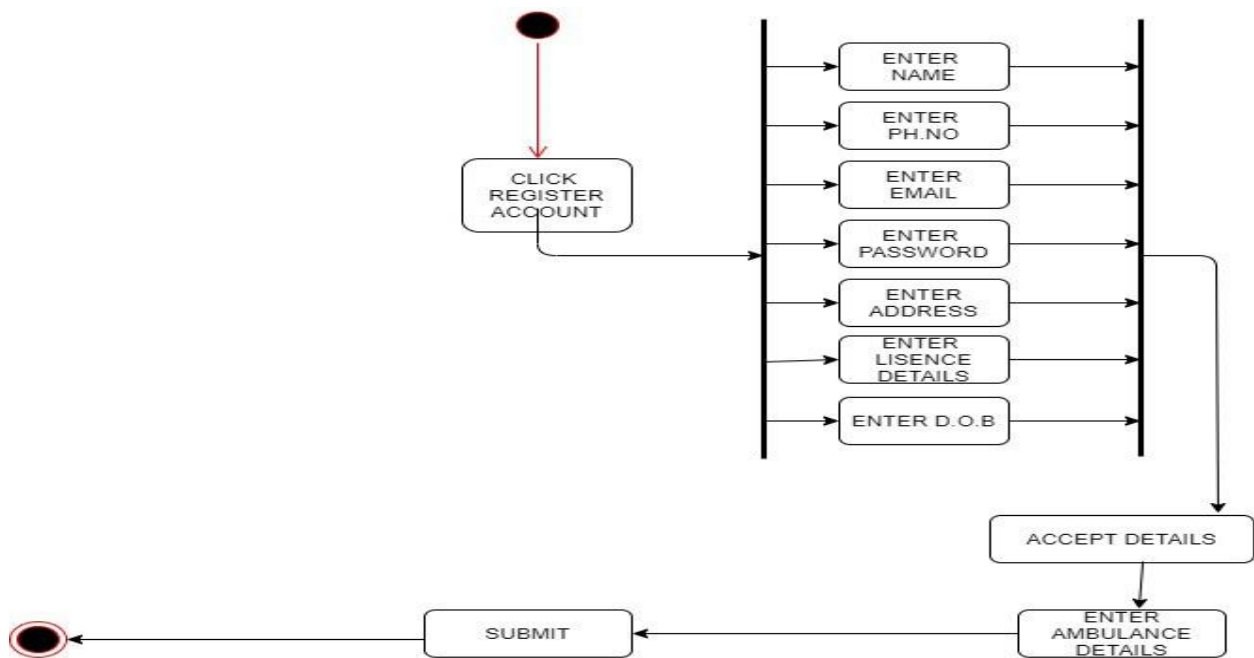
### 4.7.1 Sign up Activity Diagram



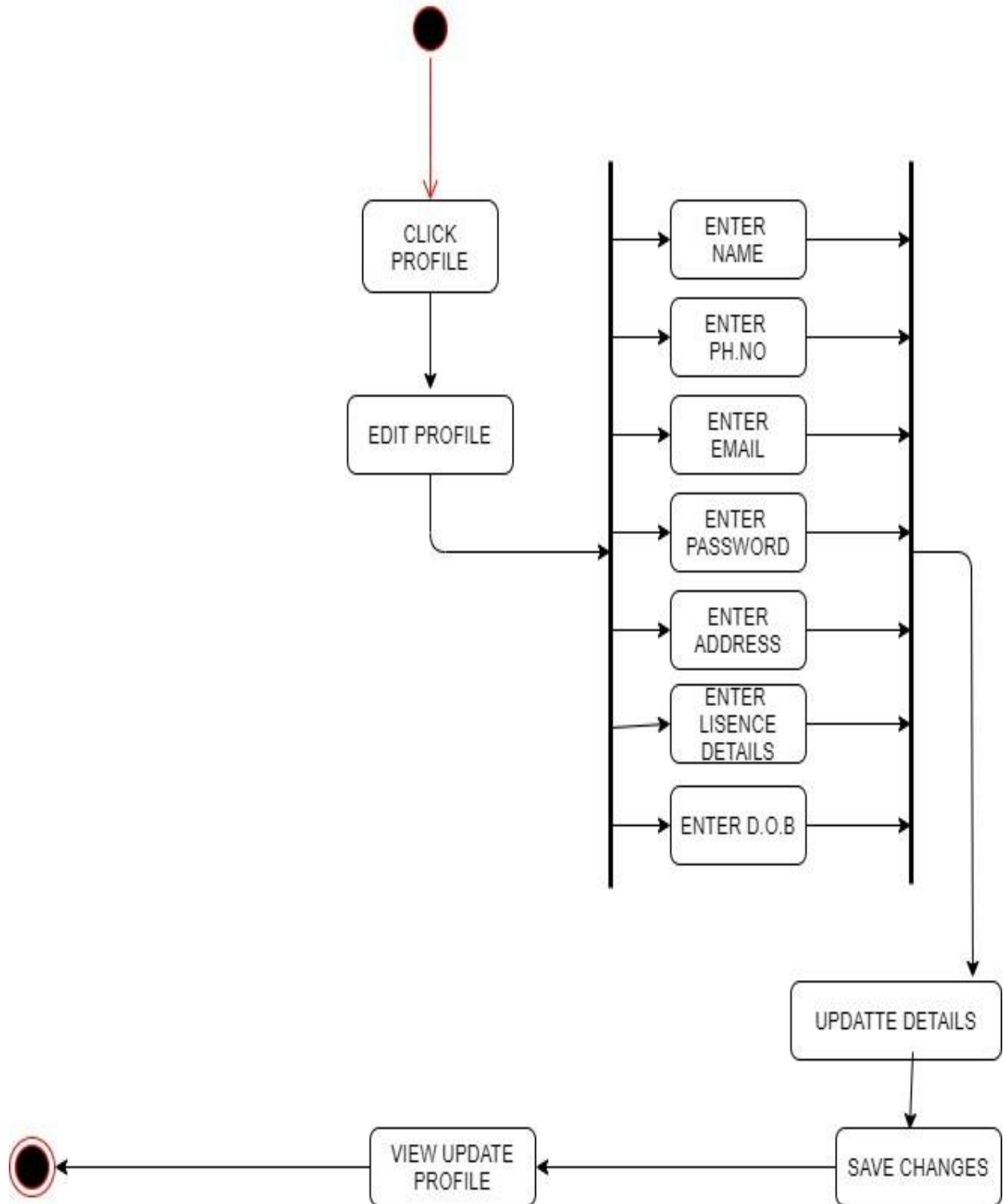
### 4.7.2 Log In Activity Diagram



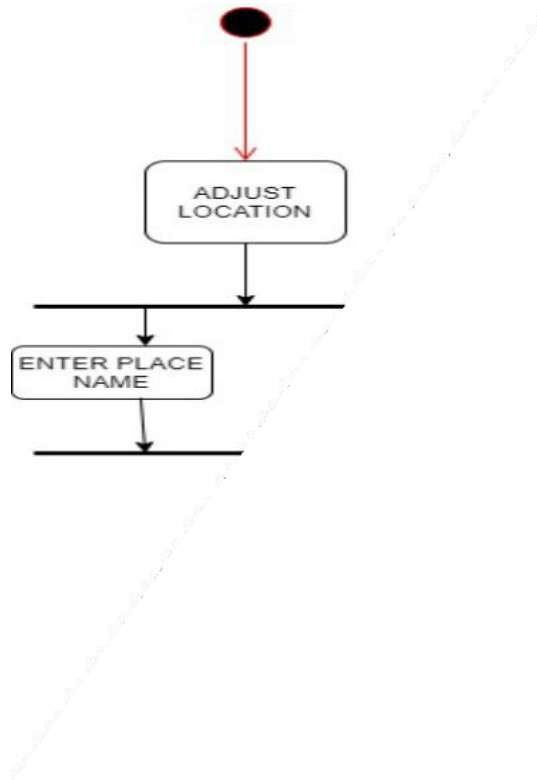
### 4.7.3 Registration Activity Diagram



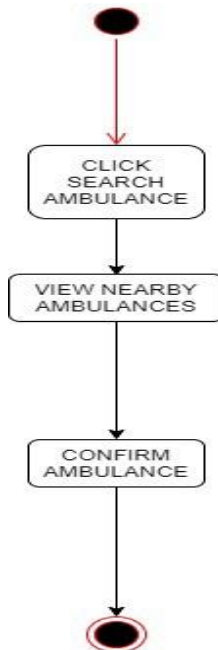
### 4.7.4 Edit Profile activity Diagram



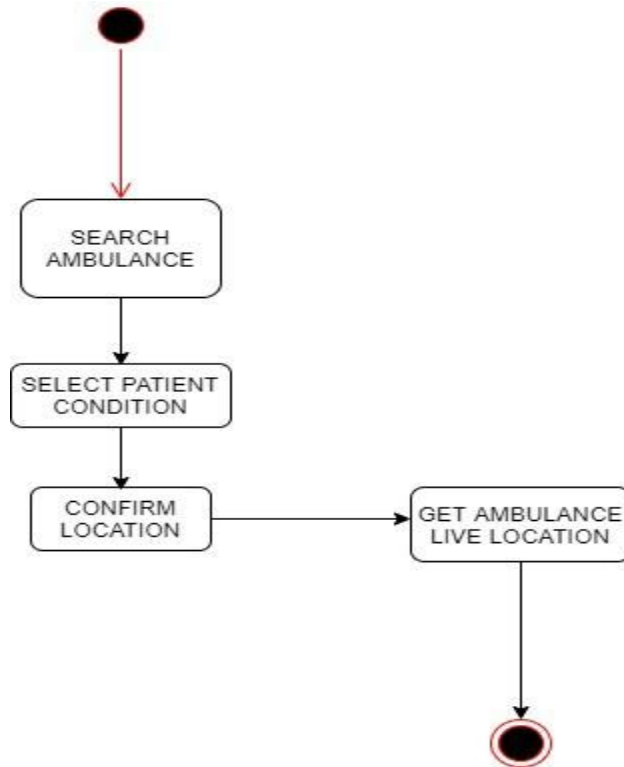
### 4.7.5 Adjust Location activity Diagram



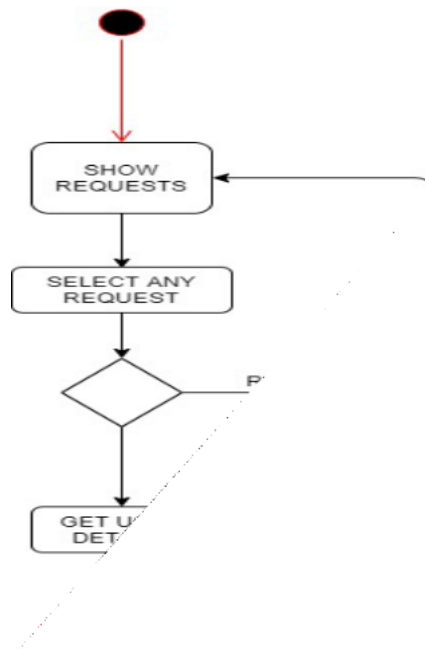
### 4.7.6 Search ambulance Activity Diagram



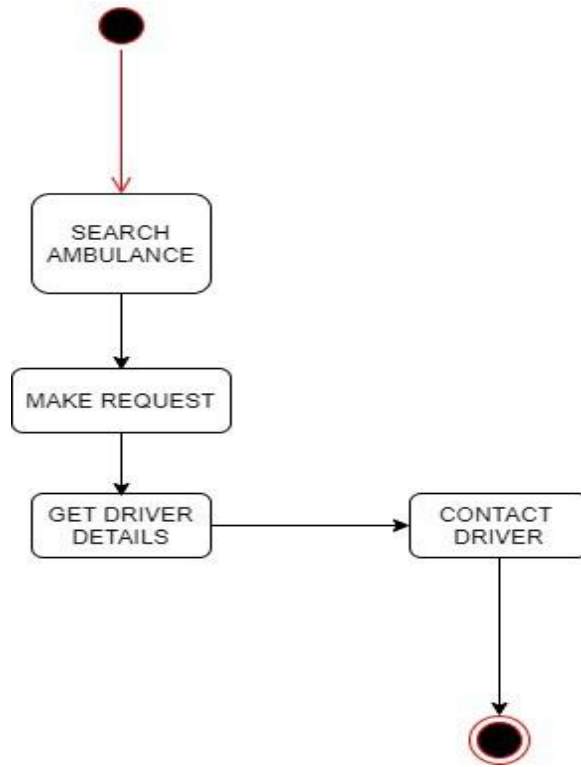
### 4.7.7 Make request Activity Diagram



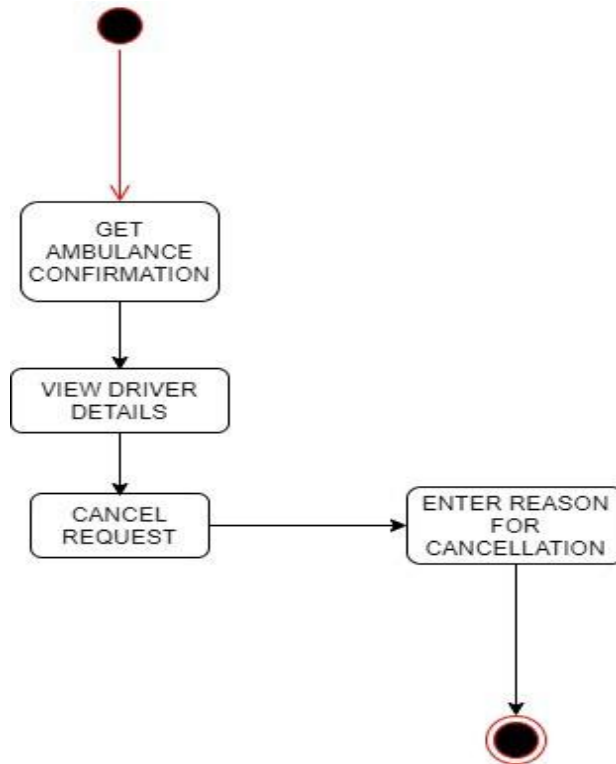
### 4.7.8 Receive request activity Diagram



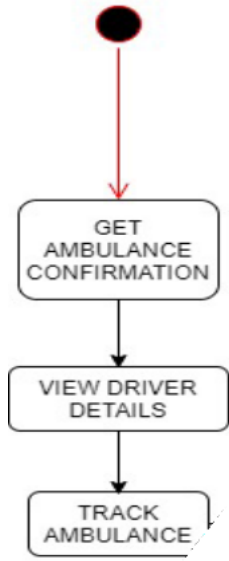
#### 4.7.9 Get driver details Activity diagram



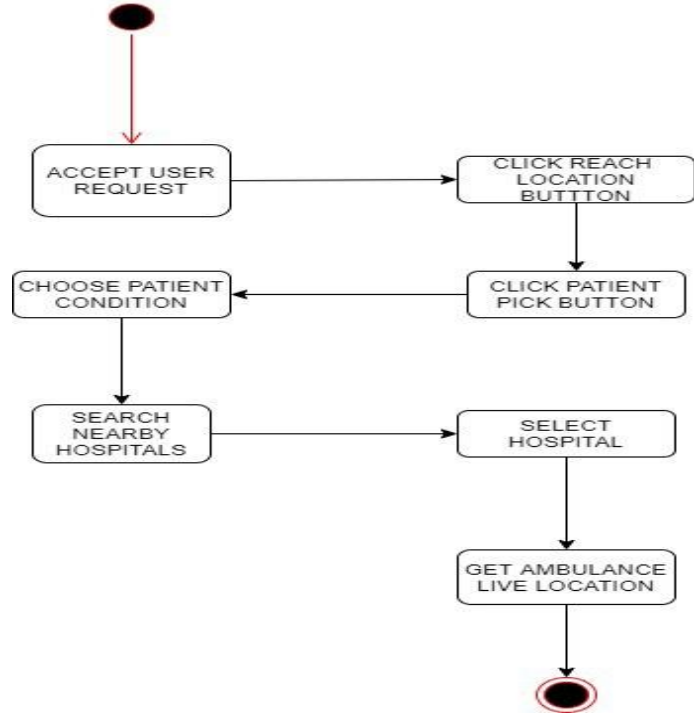
#### 4.7.10 Cancel request Activity Diagram



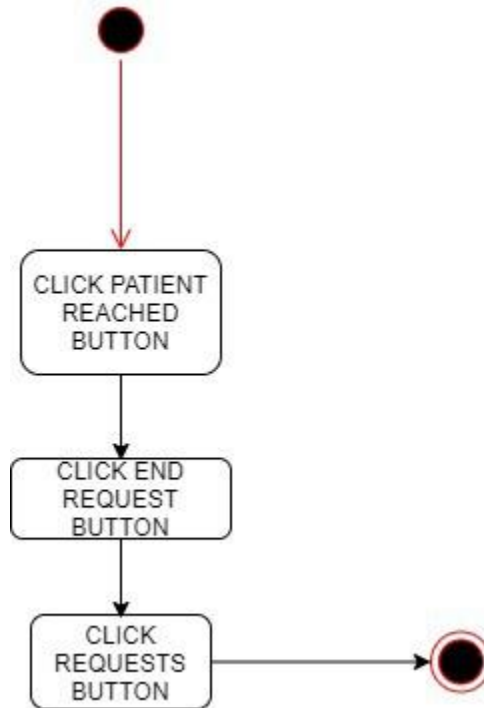
### 4.7.11 Track ambulance Activity Diagram



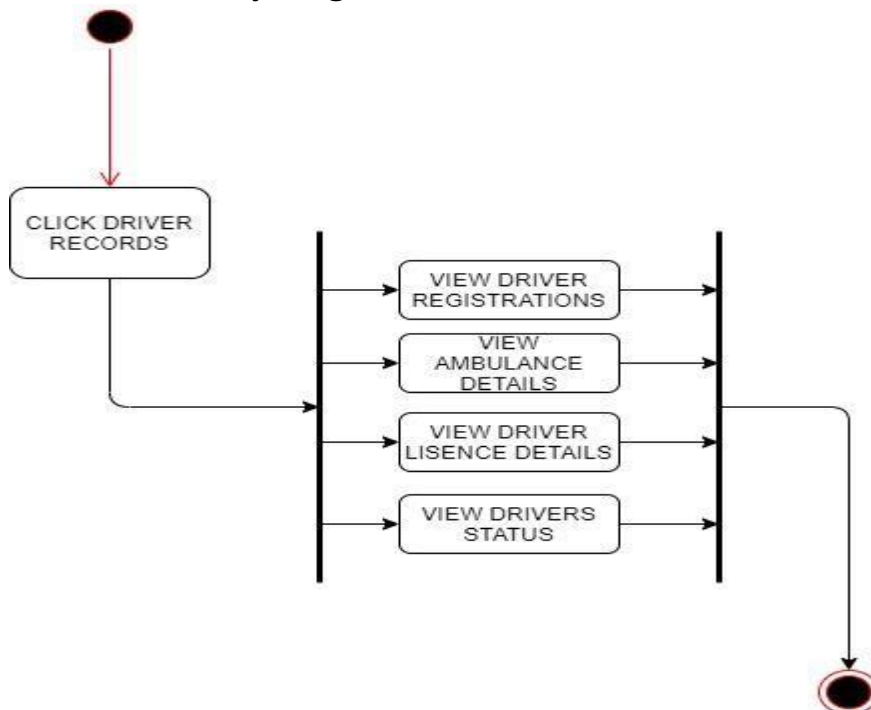
### 4.7.12 Search hospital activity Diagram



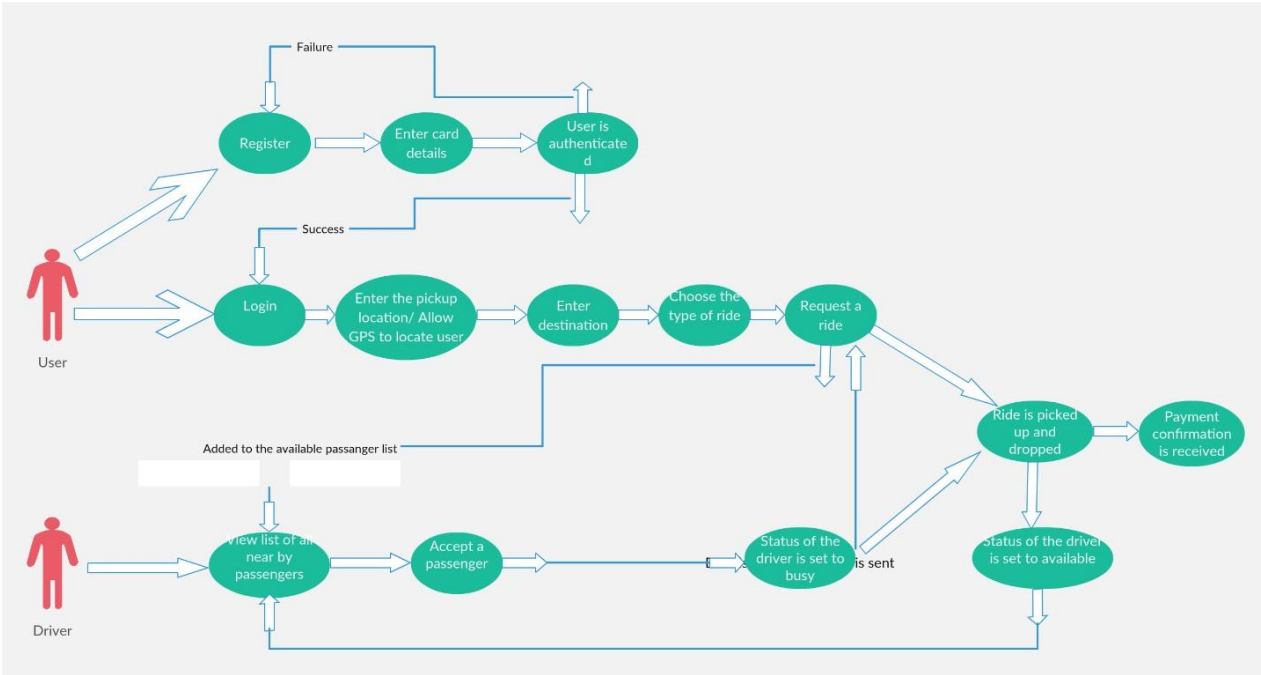
### 4.7.13 Patient reached Activity diagram



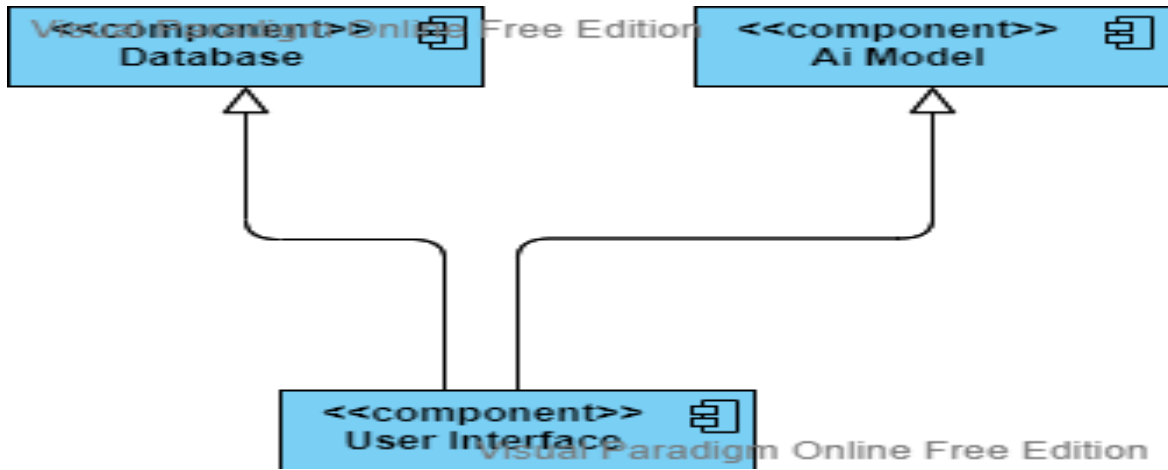
### 4.7.14 Driver records Activity Diagram



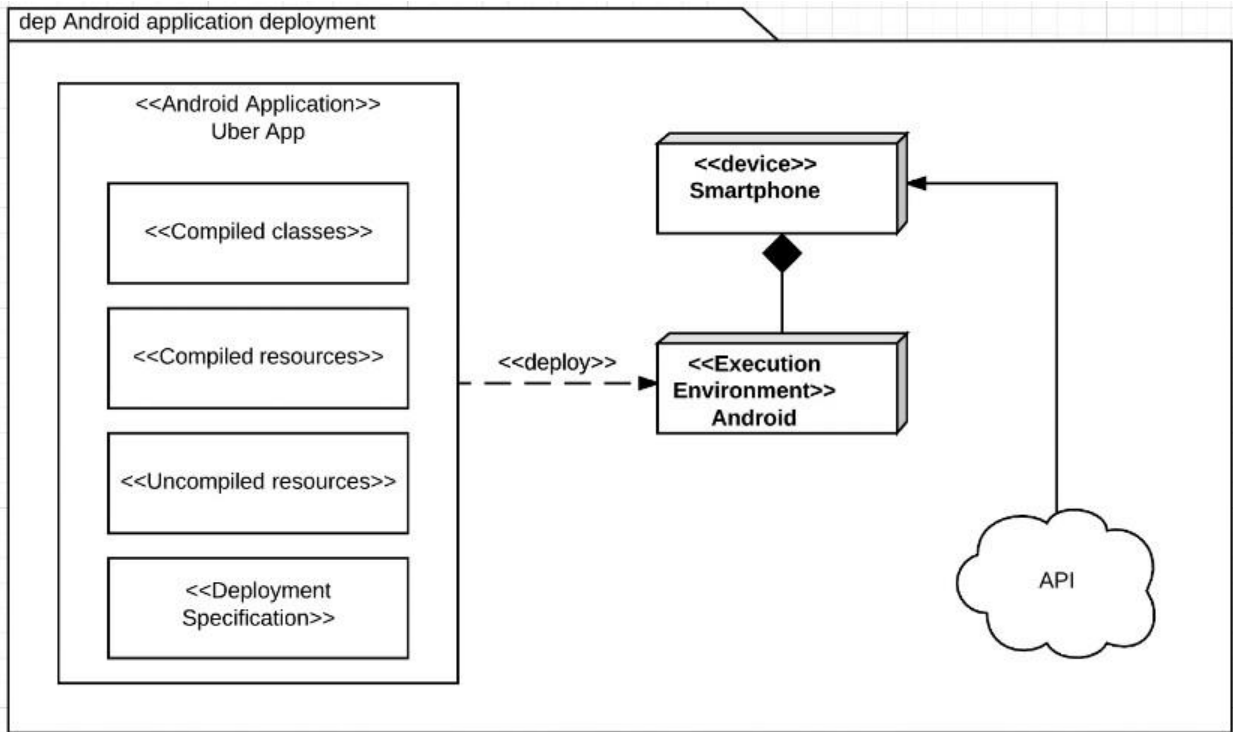
### 4.8. State Transition Diagram



## 4.9. Component Diagram

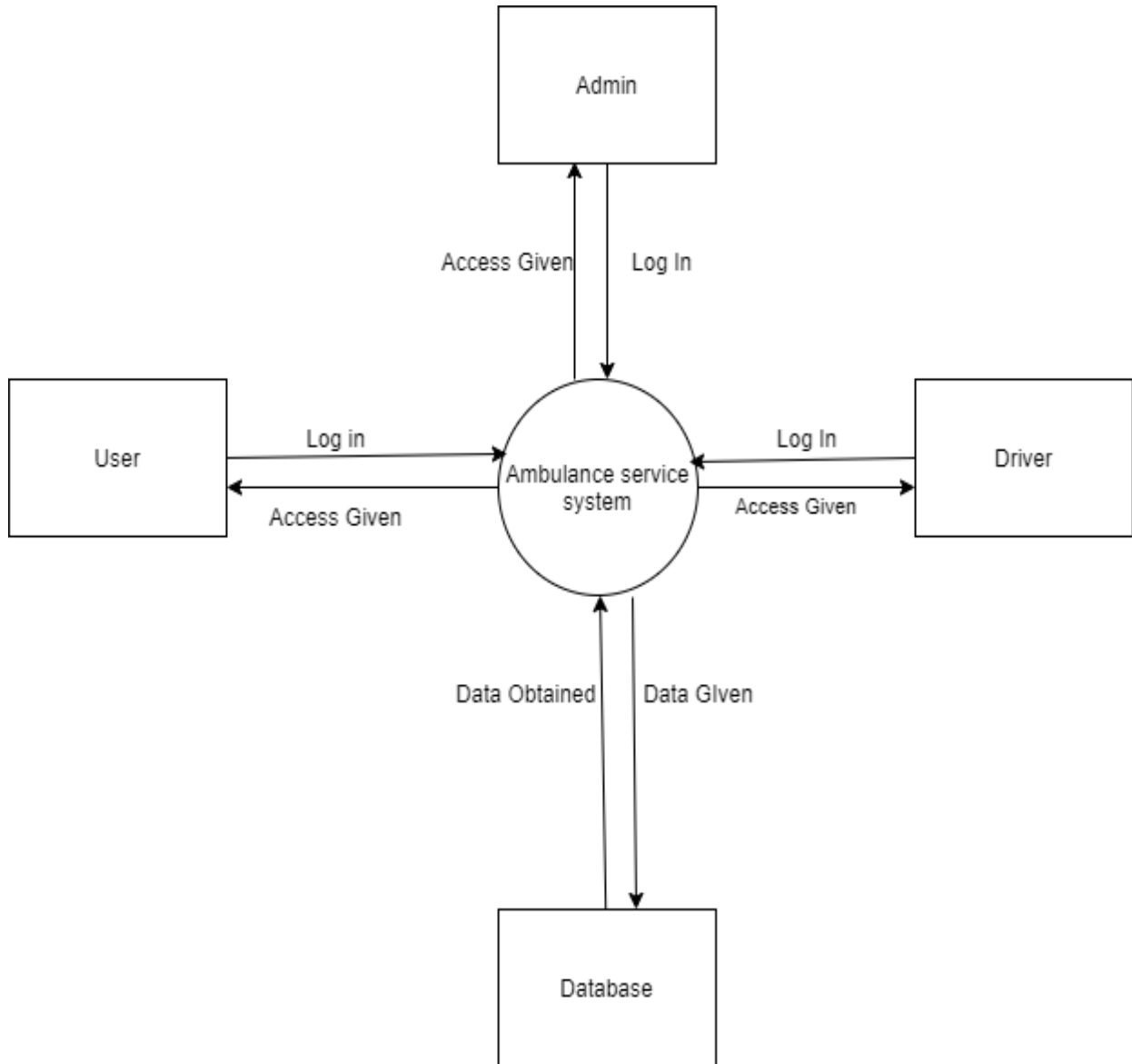


### 4.10. Deployment Diagram



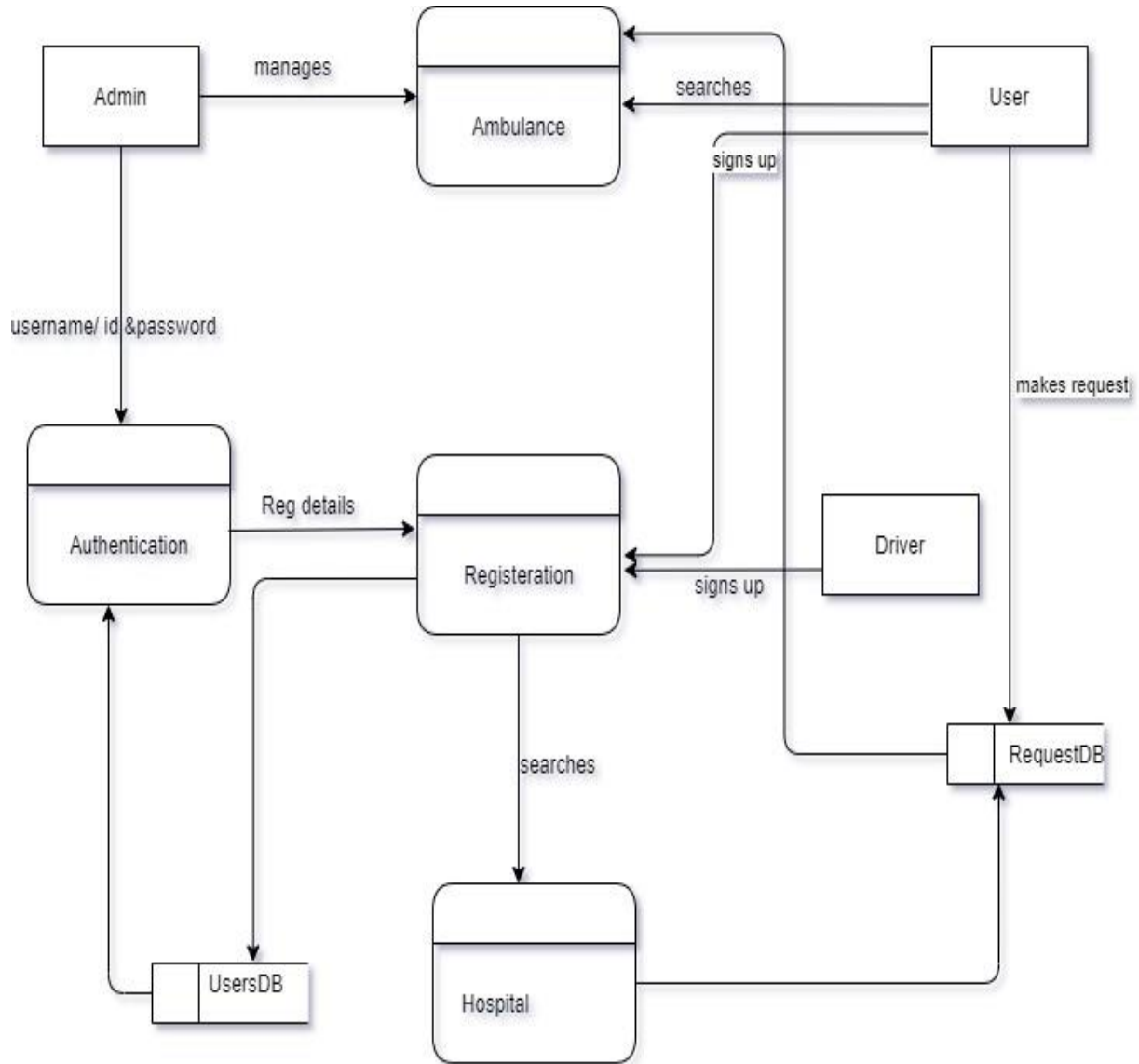
## 4.11. Data Flow diagram

### 4.11.1 Data flow diagram level 0



Data Flow Diagram Level 0

### 4.11.2 Data flow diagram level 1



# Chapter 5

## Implementation

## Chapter 5: Implementation

This chapter includes the practical implementation of the software which we are developing for the purpose of management of the Lives saving android application system. This chapter will cover all the programming implementation of the projects and describe about the tools and techniques are using for the development of the software.

### 5.1. Important Flow Control/Pseudo codes

- User and Driver can login to the system
- User can book or contact to the nearest ambulance and driver able to accept and reject the request of user.
- User and driver able to sign up for new account.
- User and driver can able to see each other location like in google map.
  - User and driver can logout the system.

### 5.2. Components, Libraries, Web Services and stubs

In this phase we analyse the whole software tools of the project. Some tools used in this project are:

- Android Studio
- Java
- Google Maps
- Firebase

### 5.3. Deployment Environment

In development phase we use python language in android studio. We use different platforms like google map, geofire, \_rebase. Android studio for the development of the application. Java is used for the development used in android studio. Geofire and \_rebase is used for the location and storage respectively.

## 5.4. Tools and Techniques

For the development of the application we will use tool and technology. We will use software technology and for running the application we will use mobile phone *as a* hardware , from where application is run.

### > Tools:

We will use these tools for developing the application

- Android Studio
- Java
- Firebase database

#### 1. Android Studio:

The interface and the development environment used in this application is android studio that was built on JetBrains' IntelliJ idea software and developed for Google android development. We will use android studio for developing the application.

#### 2. Java:

Java is a programming language that is used for developing the applications on android studio. So we will use Java for the development for our application. Java is open source language and it can be easily installed on any application.

#### 3. Firebase Database:

Firebase is a database that we used in the android studio as a database for storing the data of the android studio. It is mobile and web application development platform also that was designed by \_rebase. We will use Firebase as a database platform for store the data of the application.

#### 4. GeoFire/ GPS tracking:

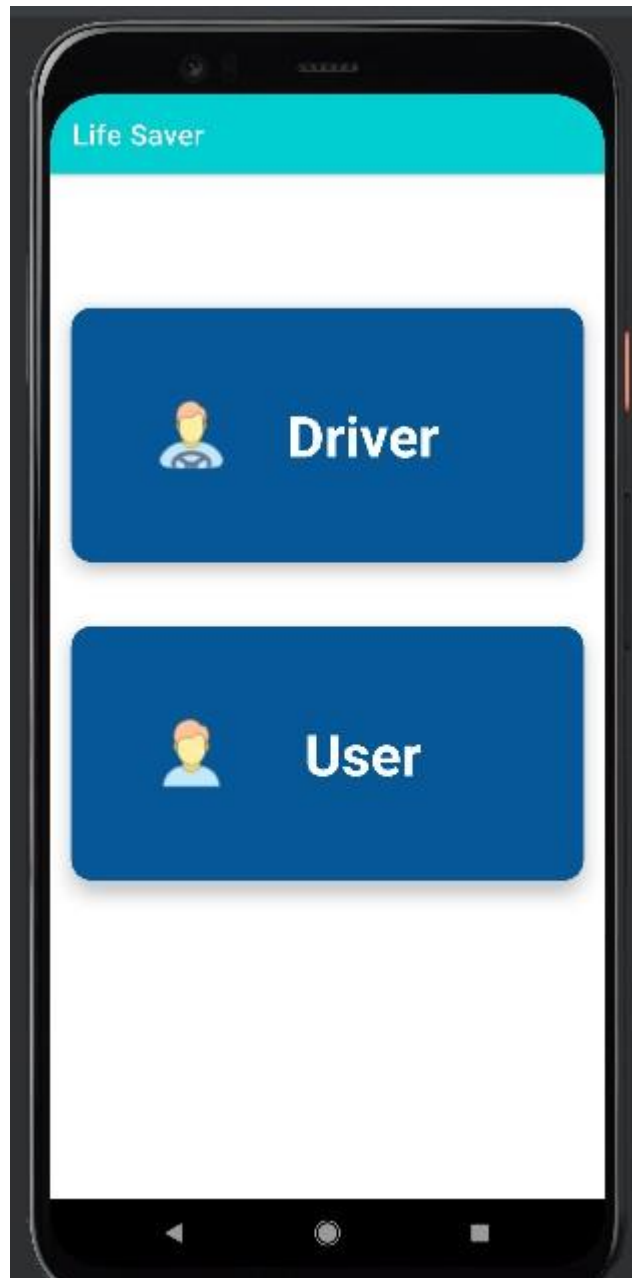
Geofire is a an open source JavaScript library that allow you to store the set of items that should base based on the geographic location. Google maps are another application. Google maps are used to find the shortest location to the destination. So we will use Geofire for live tracking of the ambulance and integrate Google maps for the find the shortest distance towards the hospital that we will be very helpful and easy for the user.

## Application interfaces:

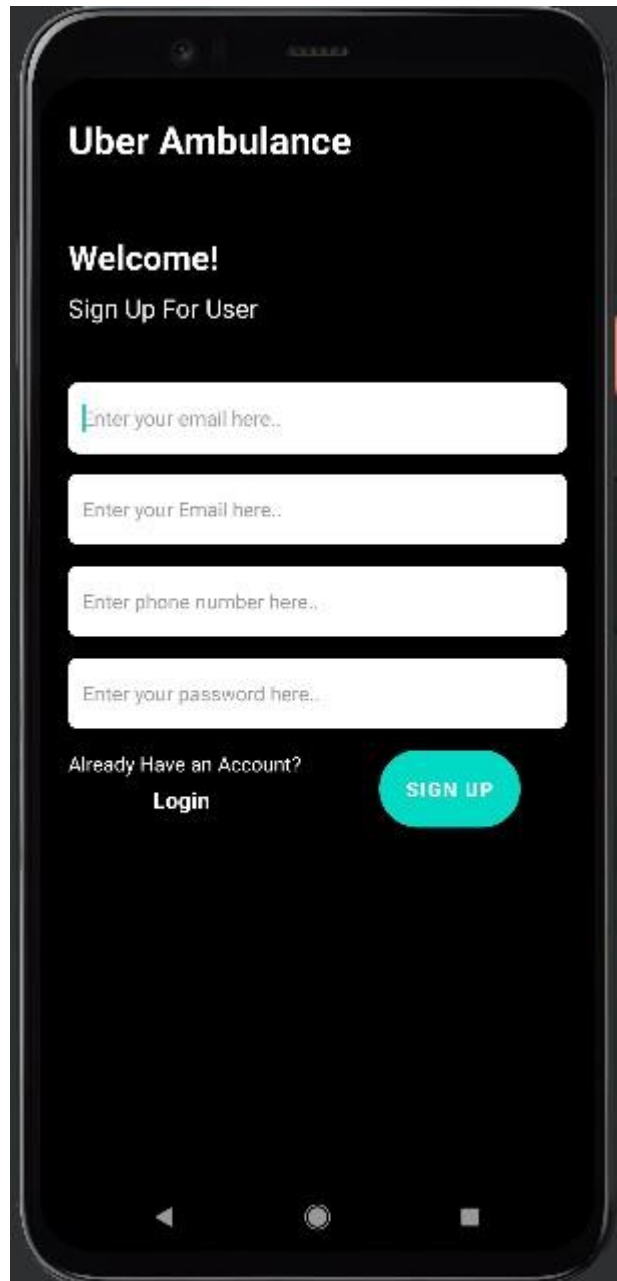
Splash Screen:



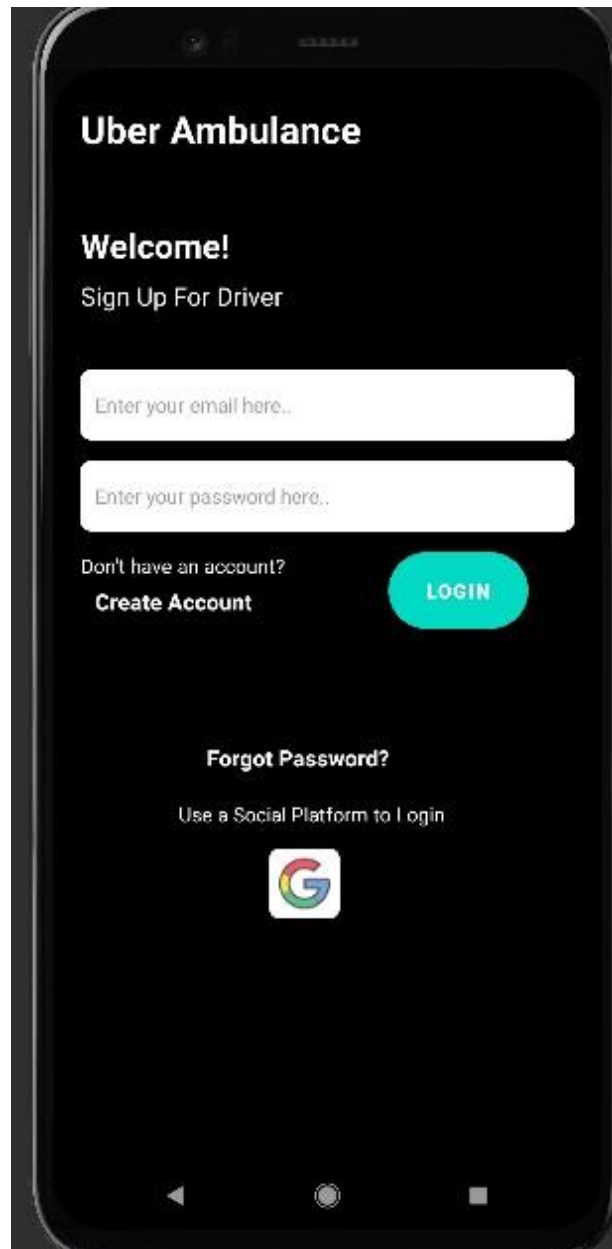
## Main Screen



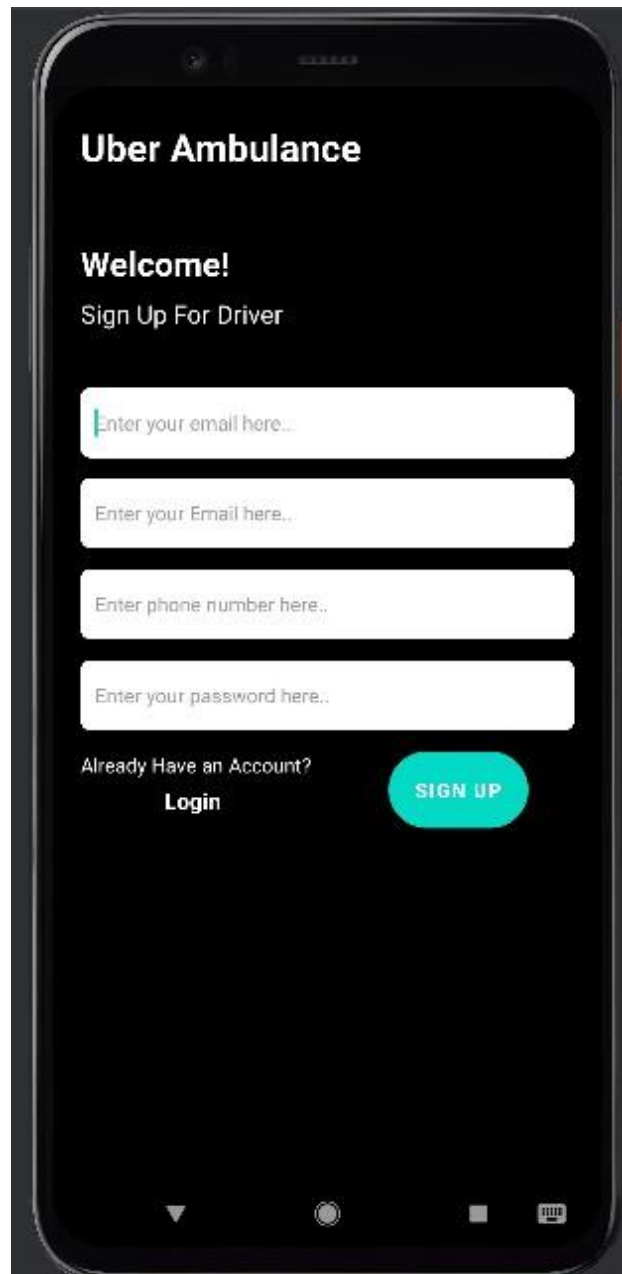
User Sign up:



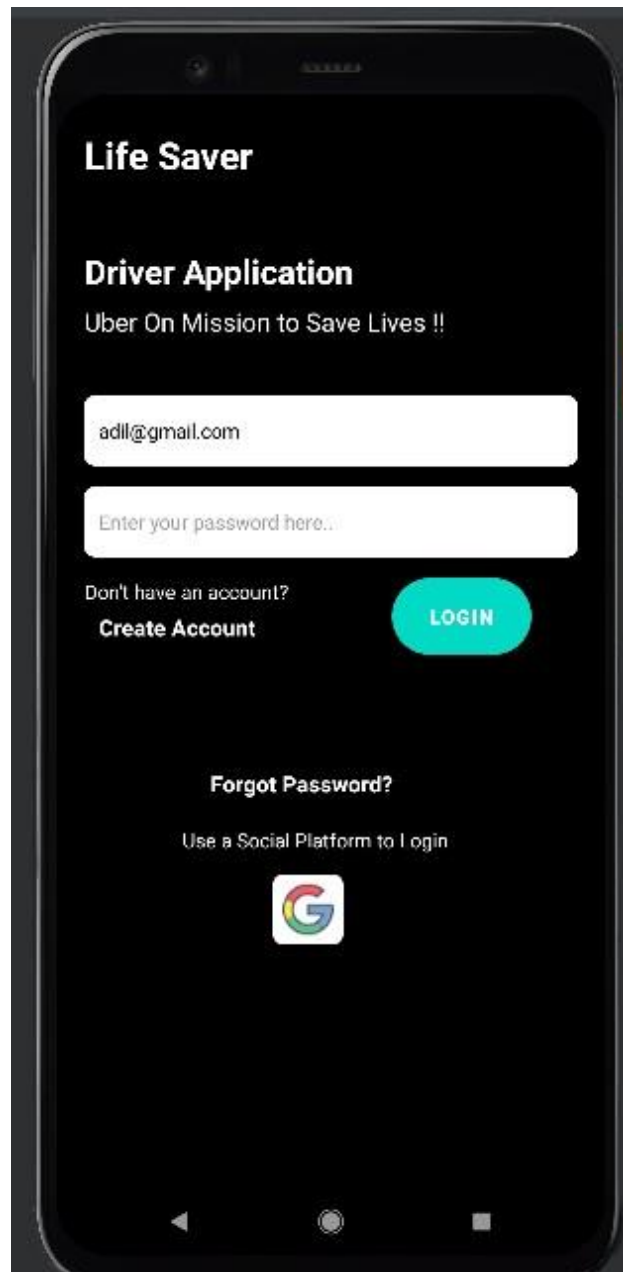
## User Login



Driver Sign Up:



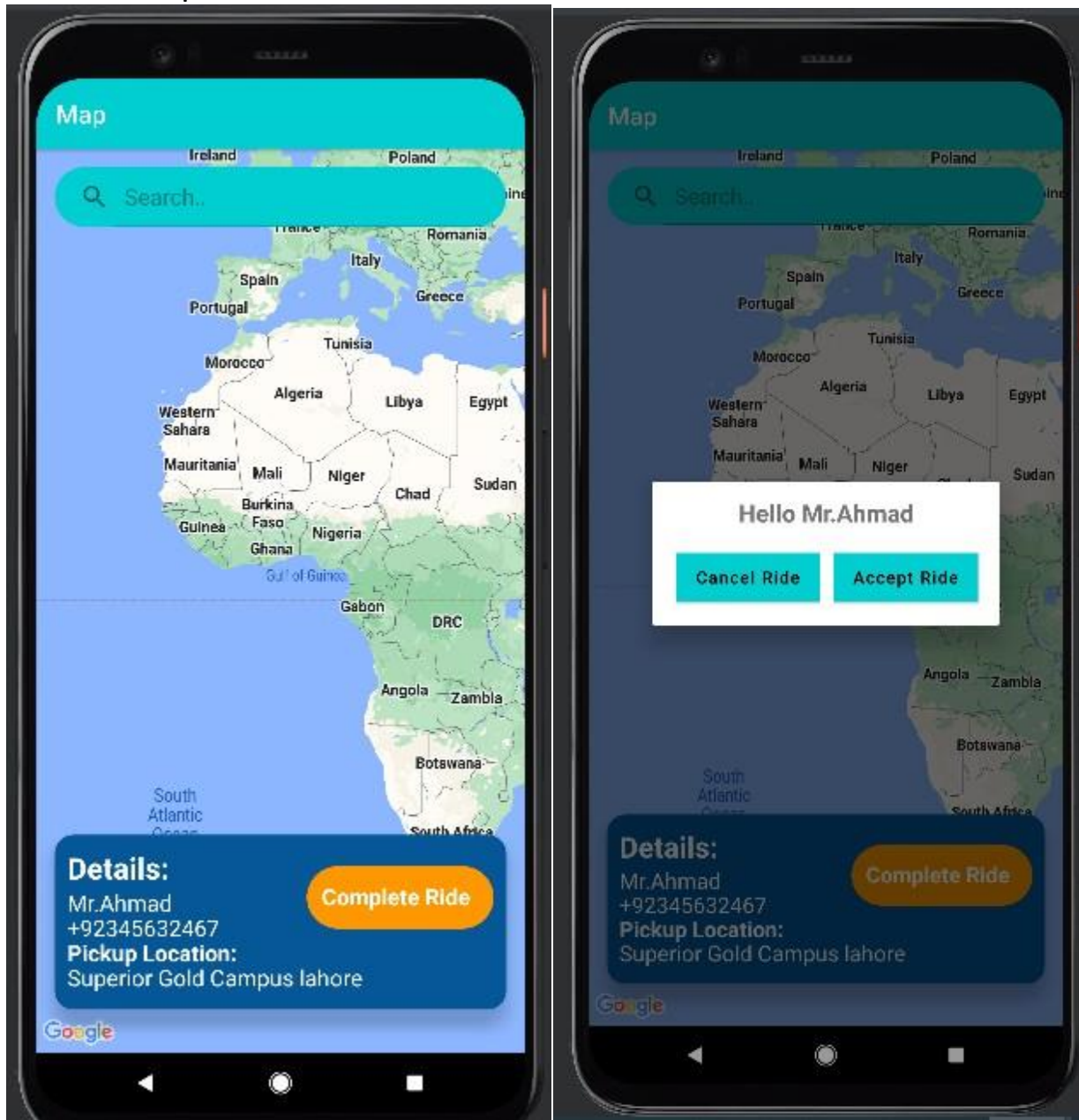
## Driver Login



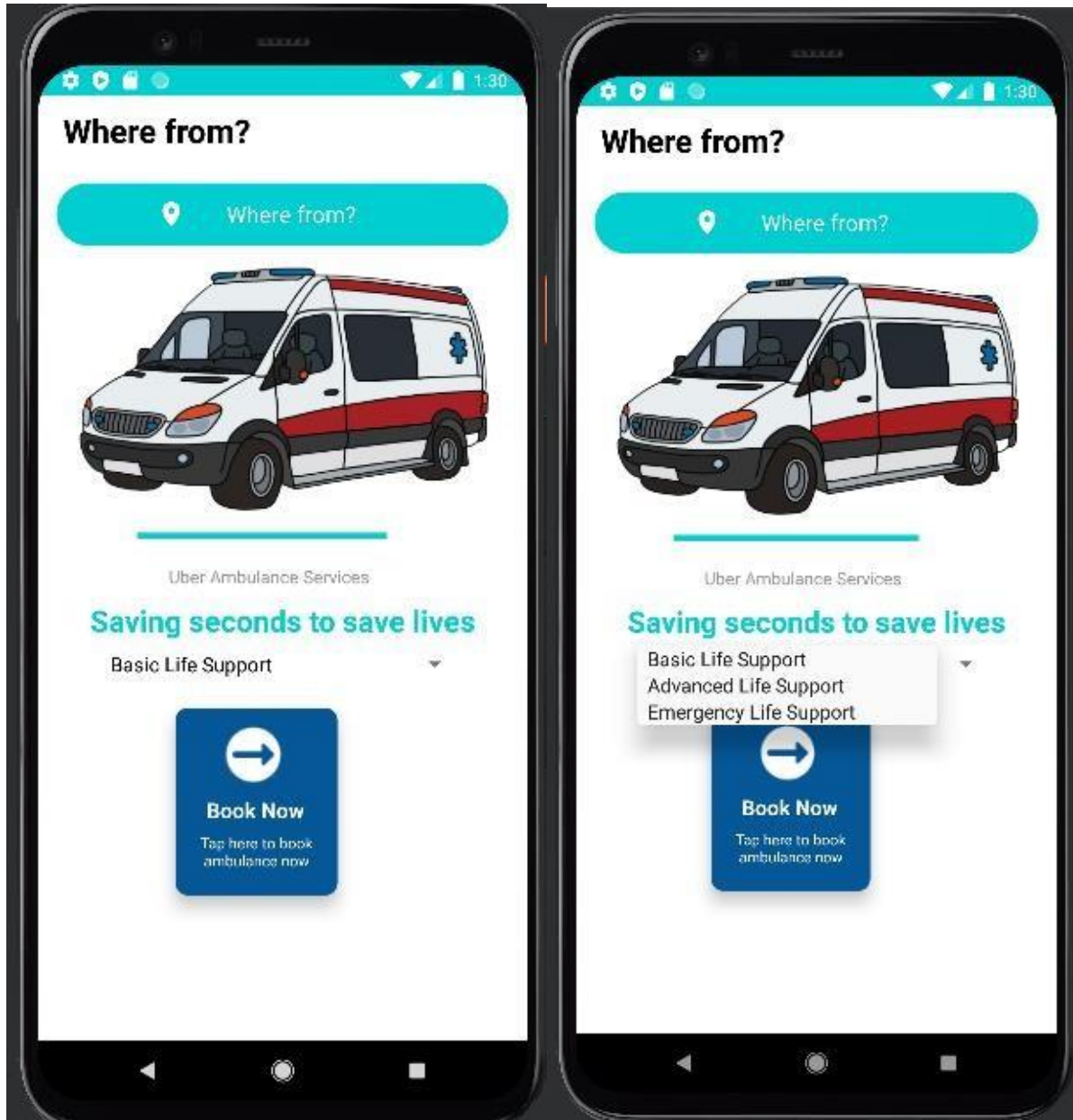
## User's Map



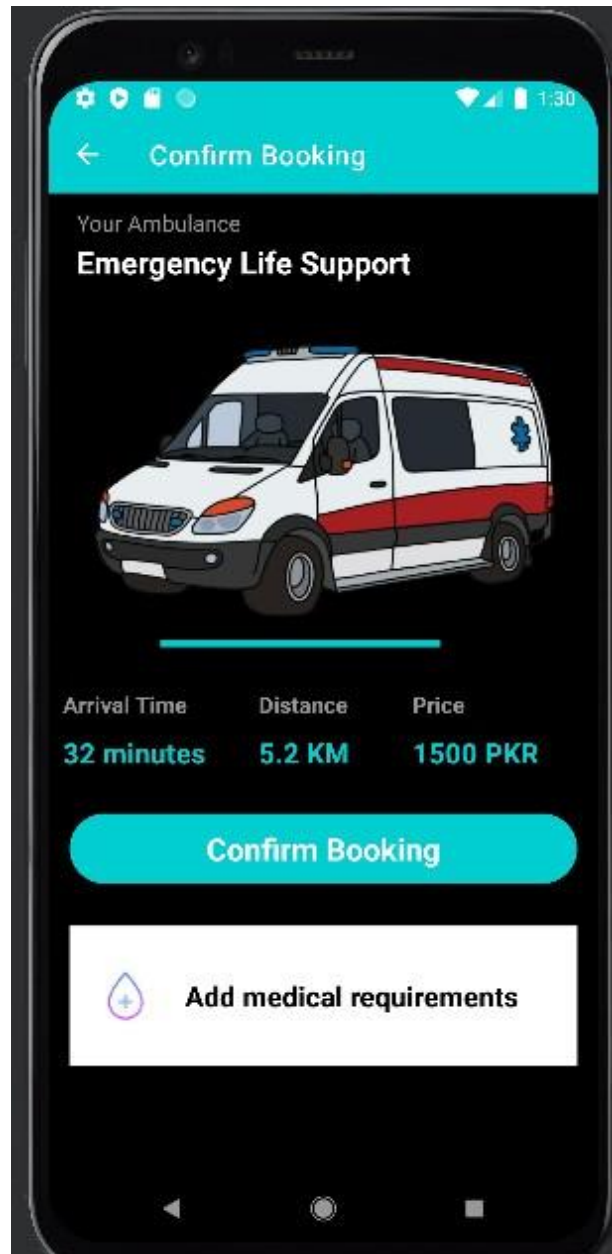
Driver's Map:



Book an Ambulance:



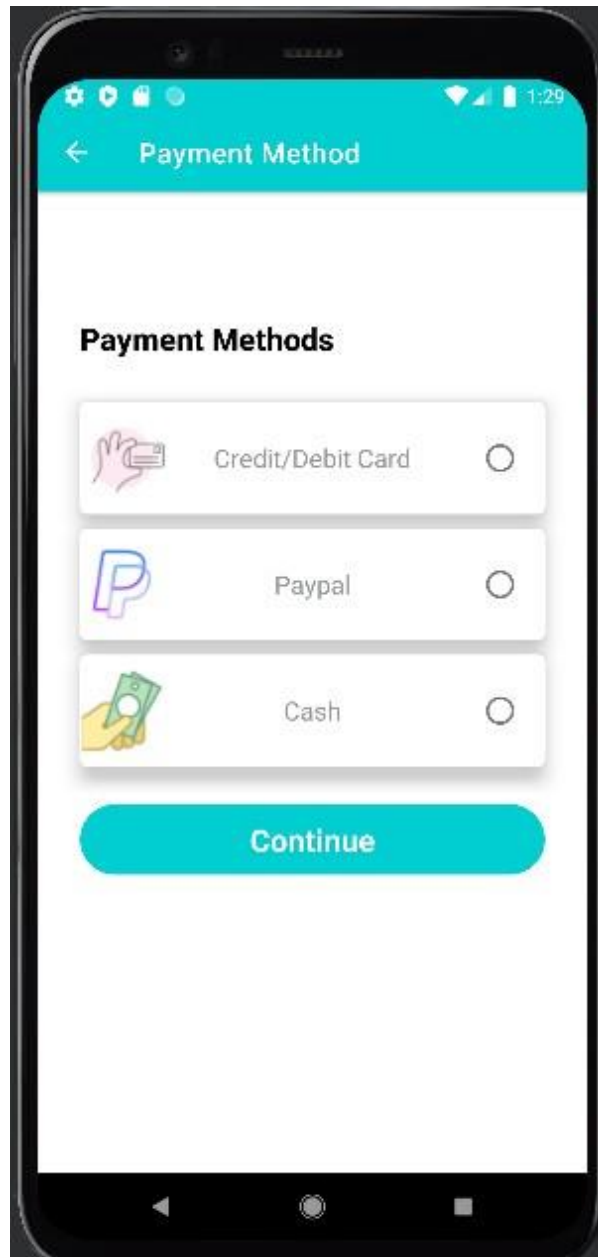
Confirm Booking:



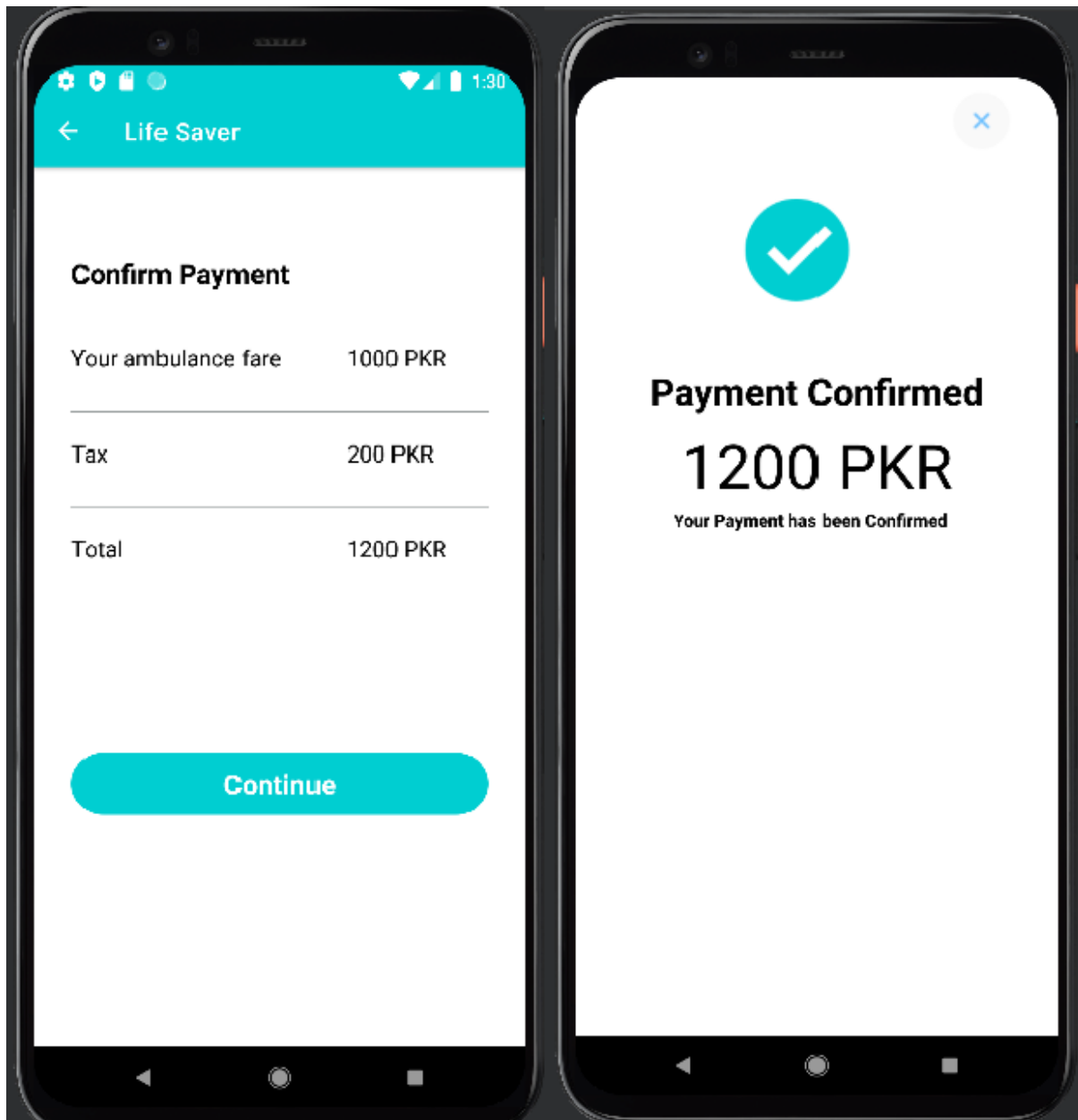
Track An Abmulance:



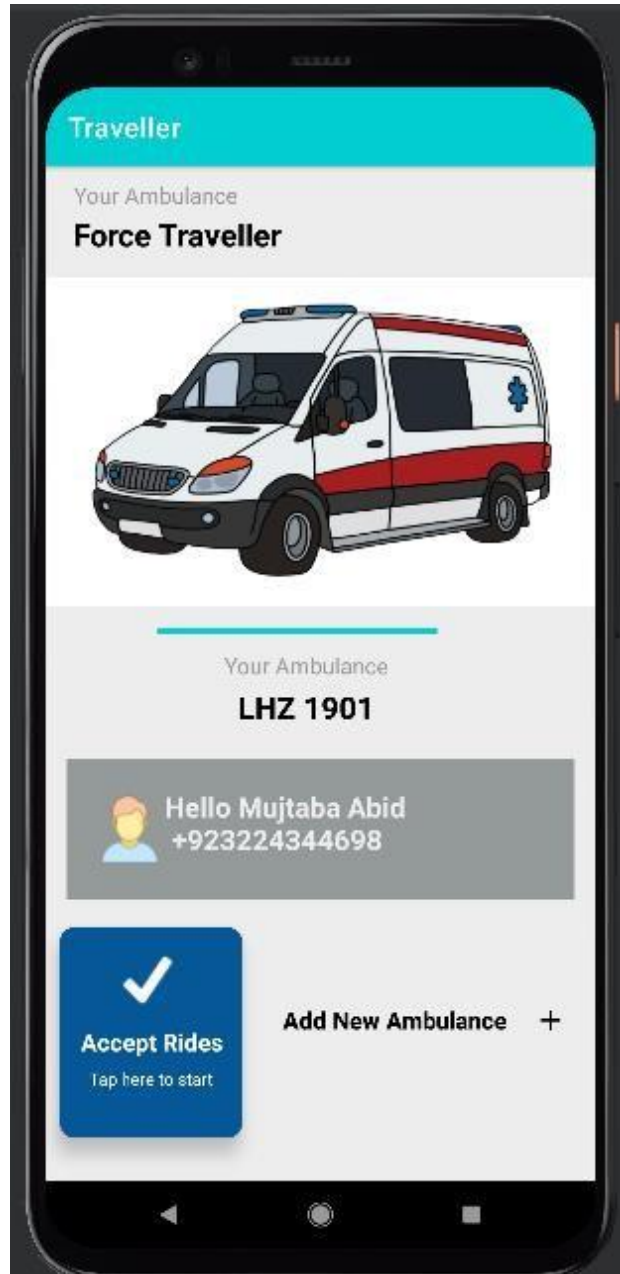
Confirm Payment Options:



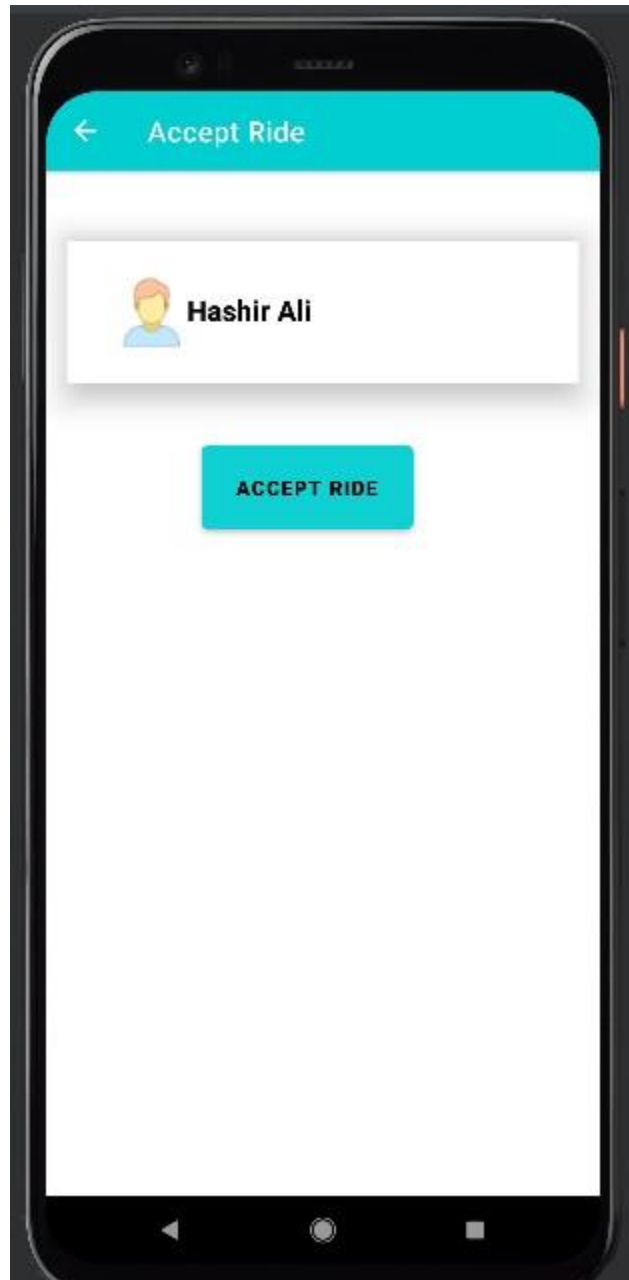
**Confirm Payment:**



**Driver Interface:**



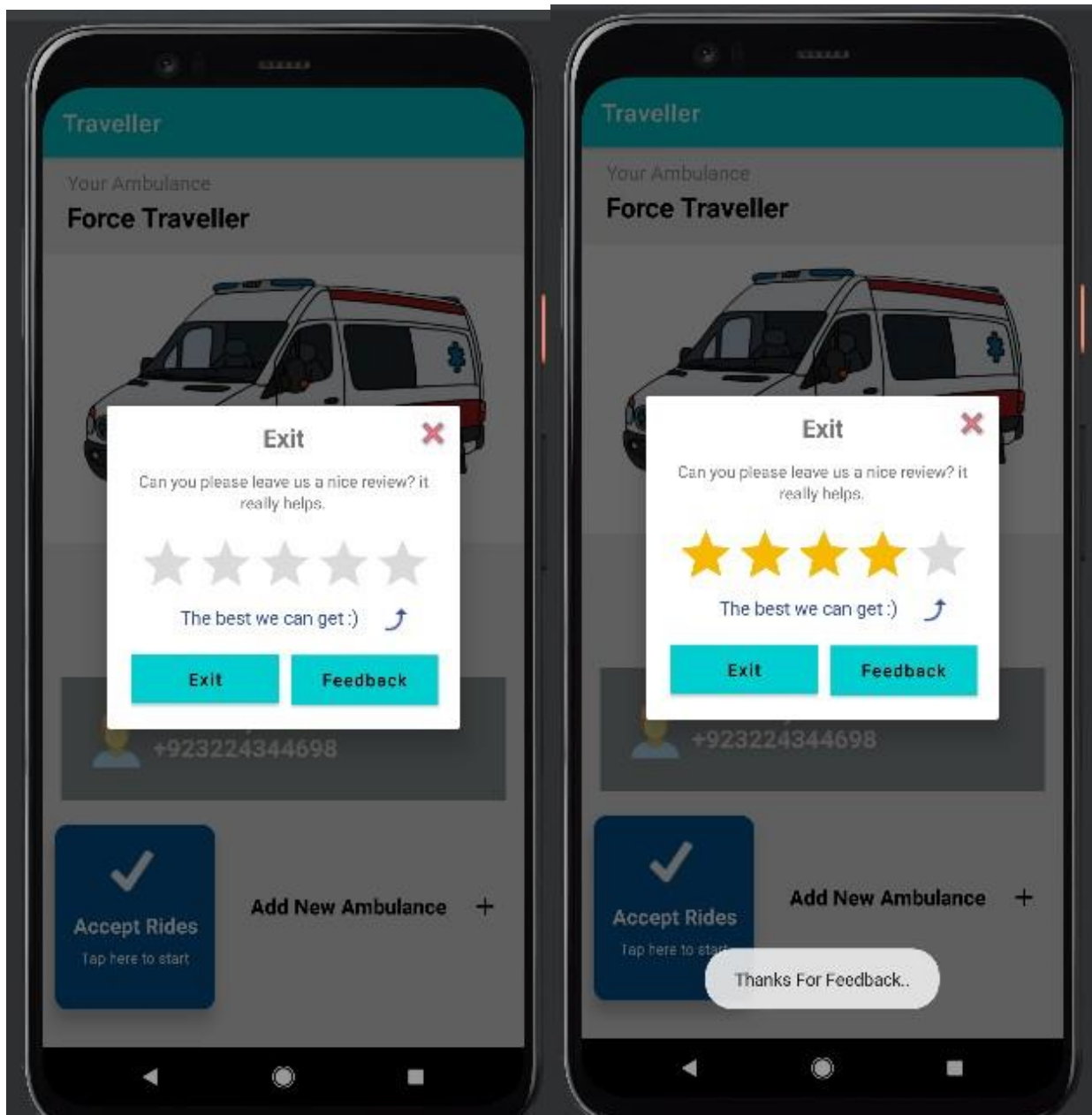
**Accept Rides:**



**Add Ambulance:**

The screenshot displays a mobile application interface for adding an ambulance. At the top, there is a teal header bar with a back arrow and the text "Add Ambulance". Below the header, the title "Add Ambulance" is centered. A simple line-art icon of a person's head and shoulders is positioned in the center. Underneath the icon are three light gray input fields with rounded corners, each containing a placeholder text: "Enter Ambulance Registration Number", "Enter Ambulance Model Name", and "Enter Phone Number". At the bottom of the form is a large, rounded teal button with the text "ADD AMBULANCE" in white, uppercase letters. The entire interface is framed by a black border representing the phone's screen.

Feedback form:



# Chapter 6

## Testing and Evaluation

## Chapter 6: Testing and Evaluation:

Application testing is the process of checking whether the developed application is working according to the objective and requirement. All testing is to be conducted in accordance to the rest conditions specified earlier. This will ensure that the test coverage meets the requirements and that test is done in a systematic manner.

The main purpose of testing an information system is to find the errors and correct them.

The scope of systems testing should include both manual and computerized operations.

### 6.1. Use Case Testing:

- Verify that all the specified fields are present on the registration page.
- Verify the page has both conform and cancel buttons at the end.
- Verify that clicking register button after entering all the required fields, register the data to the server.
- Verify that clicking cancels button after entering all the required fields, cancels the submit request, and reset all the fields.
- Verify that whenever possible validation should take place at client side
- Verify that not filling the fields and clicking the submit button will lead to validation error.
- Check validation on the email fields (only valid dates and valid email Ids should be allowed to login in the application with valid password).
- Main screen of Driver and User side both have login and Register buttons on it.

### 6.2. Equivalence partitioning:

Equivalence partitioning is also known as "equivalence class partitioning". In this method, data from the input domain is broken down into different classes of equivalence data - which are generally referred to as "valid" and "invalid". Input to a software or system is divided into groups that are supposed to exhibit similar behavior. In this way, it reduces the number of test cases to a finite list of testable test cases covering the maximum capacity.

### **6.3. Boundary value analysis:**

BVA is another Black Box Test Design Technique, which is used to find the errors at boundaries of input domain (tests the behavior of a program at the input boundaries) rather than finding those errors in the center of input. So, the basic idea in boundary value testing is to select input variable values at their: minimum, just above the minimum, just below the minimum, a nominal value, just below the maximum, maximum and just above the maximum. That is, for each range, there are two boundaries, the lower boundary (start of the range) and the upper boundary (end of the range) and the boundaries are the beginning and end of each valid partition. We should design test cases which exercise the program functionality at the boundaries, and with values just inside and outside the boundaries. Boundary value analysis is also a part of stress and negative testing.

### **6.4. Data flow testing:**

Data Flow Testing is a type of structural testing. It is a method that is used to find the test paths of a program according to the locations of definitions and uses of variables in the program. It has nothing to do with data flow diagrams.

It is concerned with:

1. Statements where variables receive values,
2. Statements where these values are used or referenced.

## **6.5. Unit testing**

The unit testing is performed to test the validity of the individual units. This is done in the coding phase with the interactive testing. Thus, it itself constitutes a majority of functionality test for each logical unit.

## **6.6. Integration testing**

When all the development of all the units or modules is completed and integrity test phase is started. In this phase the interface between the modules are tested. This phase basically verifies whether inter-modules exchange of information and events are as per required system behavior.

## **6.7. Performance testing**

Performance testing of e-commerce applications performs overall testing of the software, determining if it is functioning properly or if the loading time taken by the pages is perfect. Other than that, it also checks about the billing, shopping guide part as well.

## **6.8. Stress Testing:**

Load testing is an effective way to measure your application's performance against various parameters when user traffic is high. Load testing is performed by simulating a large number of virtual users performing various actions on your application. User actions are controlled by creating simple user scripts in the load test environment. Load tests provide useful information about memory usage, CPU usage, disk I/O, load balancers, page issues, etc.

An Android application (life saver) has more chances of going down under high traffic due to the need of ambulance service is for everyone. For example like uber we do not need uber every time to travel but almost all of us have uber in mobile for emergency and need.

# **Chapter 7**

## **Summary, Conclusion and Future Enhancements**

## **Chapter 7: Summary, Conclusion & Future Enhancements**

### **7.1. Project Summary**

Our idea is about an lives saving android application with some features related to ambulances. User will be able to book ambulance like uber to took the patient to the hospital on time and driver will to locate the location where the accident cause and have to map location from where the person who contact or book an ambulance. As we know now a days a lot of causalities in road accident occur due to late arrival of ambulance. And most of the time low mobile signals and any other contacting at help line issue, and ambulance driver faces a lot of difficulties to track the exact location to the accident area and patient causes causalities to avoid that kind of issue we design this easy to use application which helps us to prevent these kind of issue by GPS system to locate ambulance and ambulance driver to patient exact location easily and ambulance will be on time and saves lives which are most important.

### **7.2. Achievements and Improvements:**

An uber like application is difficult to build with limited resources although we tried our best to make an ambulance service Android application that allow to helps us in saving the lives. We achieved to make an application that has two phases one is for user(patient, person) and the other one is for drivers where driver gets help by accepting request and using map to track the exact location. Improvements are required in many ways that there should be more modules in it like search engine, like uber look and feel like application.

### **7.3. Critical Review :**

The nature and future of android application is considered. Four areas of the new economy and its effects on retailers are explained; first the extent to which the emergence of new electronic channels to market has led to distinctive means of businesses differentiation, secondly how business-to-business companies use electronic channels to improve their supply chain, thirdly how companies are dealing with organizational changes, and lastly the future of electronic-commerce is considered.

## 7.4: Future Enhancements/Recommendations

In future we have a goal to make our this android application in IOS and for near future this application can be improve by many ways like we will perform request and accept concept in it but for future we can add different kind of module or activity in it that leadsour application to grow.

We can add in user activities like improve payment method that will be actual payment process connected to the bank account or we will add provide server technique to accept multiple request or take this application to INTERNATINAL level like uber, Indrive.

# Reference and Bibliography

## Reference and Bibliography

- [1] [https://blog.wsol.com/5-things-to-consider-when-developing-an-Uber-application.](https://blog.wsol.com/5-things-to-consider-when-developing-an-Uber-application)
- [2] <https://github.com/biznomy/ambDriverApp>
- [3] ChatGPT , openAi
- [4] <https://www.youtube.com/watch?v=5epDCibTTEo&list=PLMVu3arCmkR5v5lauGekzD1HEZKS0e11c>
- [5] <https://www.youtube.com/watch?v=7HbQx0lwRww&list=PLxabZQCAe5fgXx8cn2iK0tt0VFJrf5bOd>

Reference and Bibliography