Software Requirements Specification

for

Android App for Ambulance Service

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

This document describes the requirements specification for ambulance service system. This document includes functional requirements, non-functional requirements of the system. The scenarios and the use case model of the ambulance service system are created as a part of requirements. When we talk about the new system "Crisis Medical" a mobile application system which provides a multitask in one click in your Smartphone. The main reason of this new system is to provide a good, fast and efficient service for people out there who need an emergency and urgent treatment service to the nearby hospitals. Emergency never happened by giving any hint. Observing such emergencies and to resolve them is a tough challenge. Emergency services are government agencies whose job it is to respond quickly to emergencies when they arise, including fire-fighters, police, and ambulance service. We need these services which ensure urgent stabilization of the situation and transport to definitive care. In this project, we have introduced an android application which provides an overview of ambulance services, and which can be accessible by everyone. In our proposed work, an android application used to call ambulance at the spot without wasting any time using GPS system. Ambulance driver can control the routes by checking GPS and can alert the desired hospital in advance for the availability of doctors and bed etc. We offer an android application that can be accessed from anywhere at any time. Our work presents the remote android application which can guide and inform the actual authority according to the needs of the users that they mentioned in the application, then this message is passed on to the authority and forced them to take the action immediately necessary for users in difficulty.

1.1 Purpose

The reason for this model ambulance service framework is to make the whole cycle be more proficient and more powerful, the net consequence of which is to save lives. An emergency ambulance service framework for the most part affects different individuals, very a lot of ideal correspondence, and easing up quick independent direction.
Convenient correspondence is a basic issue. Any data move that can be sped up can safe a day-to-day existence. Data should be drawn from the user and went into the framework by the administrator and moved to the driver. The dispatcher must locate the closest available emergency vehicle, determine availability, and dispatch that vehicle to the proper location. After the ambulance arrives at the proper location, if the subject must be taken to the hospital, an adequate hospital must be located, notified of the arriving new patient, and the shortest, fastest route mapped into the ambulance’s map system. Any breakdown in this fragile process can lead to a lost life by consuming excessive time in clearing up confusions or miscommunications. Misinformation can lead to the wrong decision in the rapidly paced environment.

Ambulance services, also called as ‘mini-hospitals’ or ‘mobile-hospitals’, can play a vital part in saving one’s life. In a life-death situation, each second counts for ambulance. As ambulances set out each day and night to serve the patients/victims and get them to nearest medical support, GPS tracking system can assist them with its live tracking and other multiple features and save many more lives. This system consists of the proper record of the ambulances and also tracks the ambulance and the hospitals nearby.

1.2 Document Conventions

- Convention for Main title
  - Font Face: Arial
  - Font Style: Bold
  - Font Size: 24
- Convention for Sub-title
  - Font Face: Times
  - Font Style: Bold
  - Font Size: 14
- Convention for Body
  - Font Face: Arial
  - Font Style: Normal
  - Font Size: 11

1.3 Intended Audience and Reading Suggestions

Our document is easy to understand for everyone whether it is a salesperson, developer or a customer. It is easy for all to understand and seek the goal of our proposed method ambulance service.
This document is intended for:
- Ambulance Drivers
- Hospital Staff
- Users
- Document Writers

1.4 Product Scope

1) With an increasing emphasis on promoting independent living today, having access to the nearest ambulance to you can provide much needed peace of mind in a worst case scenario.
2) To improve quality of healthcare services and provide a platform to help users to find health solutions that are convenient and useful enough to continue for a longer time.
3) To integrate city emergency ambulance transportation for patients and partner ambulance drivers onto a platform that is convenient, transparent and provides immediate emergency service fulfillment

1.5 References

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- Official GreatCall Website.(2013, January). [Online]. Available: http://www.greatcall.com
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2. Overall Description

2.1 Product Perspective

1) This is a web-based application which helps the user to find the nearby ambulance and the nearby hospital based on their location.
2) It helps the user to book the ambulance or call it to the place of emergency so that the patient can be taken to the hospital on time.
3) The user can completely track the ambulance based on their location. This system will help the common people in day-to-day life as there are many accidents on the road, patients suffering from cardiac arrest, etc.
4) This system aims at providing better ambulance facilities to the patients and help save lives.

2.2 Product Functions

With an increasing emphasis on promoting independent living today, having access to the nearest ambulance to you can provide much needed peace of mind in a worst case scenario. To improve the quality of healthcare services and provide a platform to help users to find health solutions that are convenient and useful enough to continue for a longer time. To integrate city emergency ambulance transportation for patients and partner ambulance drivers onto a platform that is convenient, transparent and provides immediate emergency service fulfillment.

2.3 User Classes and Characteristics

- Patients - To conveniently find ambulances near them.
- Hospitals - The hospital can take subsequent necessary measures and be prepared with the required equipment or medicines, by determining the accurate time required for an ambulance to reach the hospital.
- Ambulance drivers - To locate users and drive them to the selected hospital

2.4 Operating Environment

This project is an application developed in React Native.

- Hardware - The hardware this project requires is any Android Mobile.
- Software - This project will require any Android version above 5.0.

2.5 Design and Implementation Constraints

- This project always requires internet connection.
- GPS Location can be inaccurate sometimes
- Battery might drain out
- Limited data about ambulances and hospitals are stored in the database

2.6 User Documentation

The tutorials referred while making the project –

- https://developer.android.com/codelabs/build-your-first-android-app
- https://www.educative.io/blog/how-to-develop-an-android-app
- https://www.netsolutions.com/insights/android-app-development-tutorial-learn-basic-concepts
- https://getbootstrap.com/docs/4.5/getting-started/introduction/
- https://www.toptal.com/android/making-an-android-app-lessons-learned
- https://code.tutsplus.com/tutorials/creating-your-first-android-app--cms-34497
- https://guides.codepath.com/android/Understanding-the-Android-Application-Class
- https://developer.ibm.com/tutorials/develop-android-applications-with-android-studio/

2.7 Assumptions and Dependencies

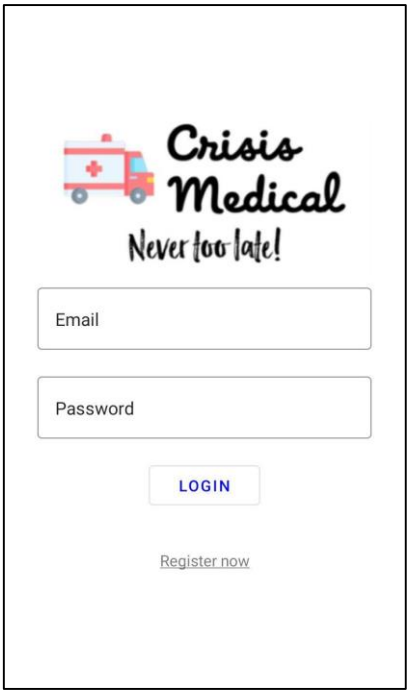
- The operator and the dispatcher are assumed to be the same person in this system.
- Creating an exception will solve the problem when an ambulance cannot be found. It will be diverted to the third party who will take care of the situation.
- This application for Department of Ambulance Service System, and there are no subscriptions, membership fees. Department of Ambulance Dispatch System would appreciate the cooperation in reporting discrepancies and to not misuse or damage any of the functionality, information, or contents of this internal use service web page. No external/external party may make an offer to sell or buy this website on behalf of a third party.

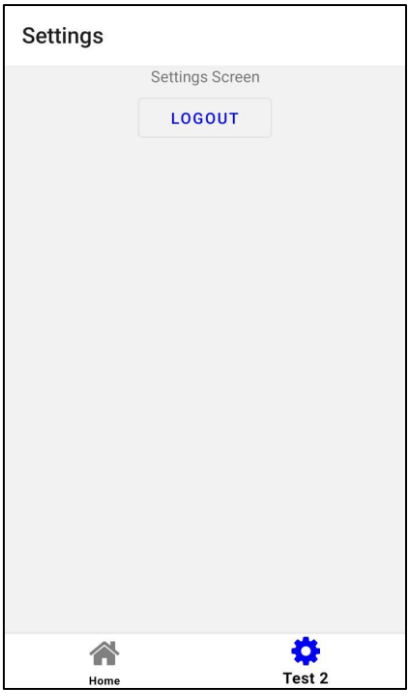
3. External Interface Requirements

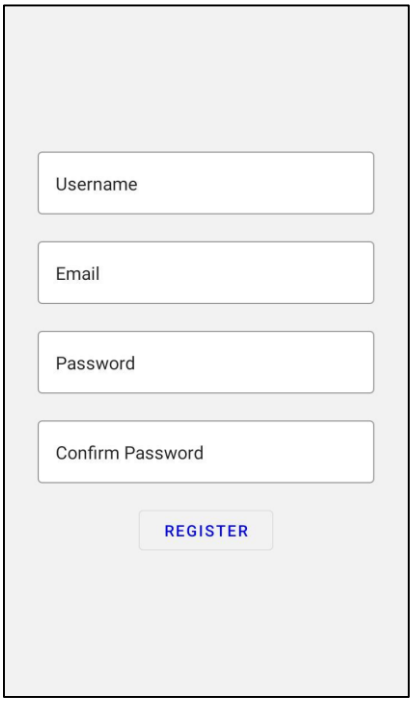
3.1 User Interfaces

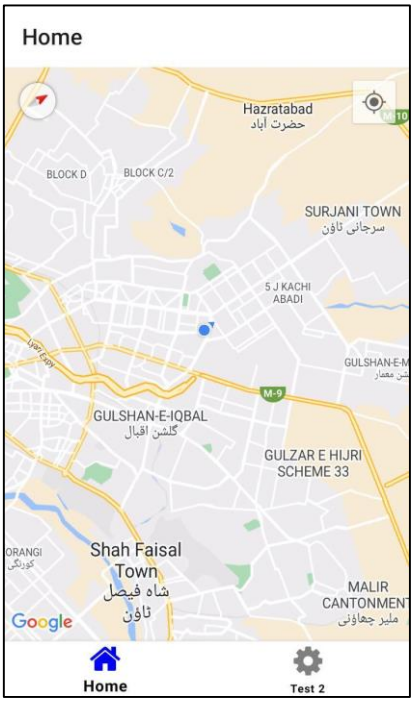
In this application we have multiple user interfaces which include:

- Client interface
  - Login
  - Ambulance booking
  - Map
  - Billing and rating
  - Chat
- Hospital Staff Interface
  - Login
  - Alert screen
- Driver interface
  - Login
  - Booking screen
  - Map
  - Hospitals list
  - Chat
  - Billing









3.2 Hardware Interfaces

- The Hardware used is a good android phone or a tablet with good internet connectivity as required for hosting the application and successfully running the application for user.
- Android based screen panel will be installed in ambulance with internet.
- A tablet will be installed in hospital with android system and internet connectivity.

3.3 Software Interfaces

- For this project we are using MongoDB as database.
- To build this app we are using react native.
- Android version above 5.0 is required to run this application.

3.4 Communications Interfaces

This application can be used by users with different phones and different android versions. This application can run in almost all the android version and works efficiently.
For communication of driver and user chat box will be built in the application so they don't need to get out from the app.

4. System Features

Below mentioned are the features provided by the smart android system:

4.1 Sign Up/ Login

For the first time every actor need to register in their respective field.
Once the user registered themselves in the application then they just need username and password to get access to the application.

4.2 Assign the Nearest Ambulance

With an increasing emphasis on promoting independent living today, having access to the nearest ambulance to you can provide much needed peace of mind in a worst case scenario. Fast and secured services provided by nearest ambulance.

4.3 Accessible anytime

As ambulances set out each day and night to serve the patients/victims and get them to nearest medical support, GPS tracking system can assist them with its live tracking and other multiple features, and save many more lives.

4.4 Live tracking of ambulances using Geolocation

The user can completely track the ambulance based on their location. This system will help the common people in day to day life as there are many accidents on the road, patients suffering from cardiac arrest, etc.

4.5 Generate Alert

Driver generate alert about the medical conditions of the patient and send it to the hospital so they can make the arrangements for the treatment, before patient arrives.

4.6 Billing

Billing will be generated at the end of the booking to the kilometers and other factors like time and traffic situations.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

This system aims at providing better ambulance facilities to the patients and help save live, hence the administration should be working at top priority. Therefore, it is expected that all the equipment used to implement said prototype should be in fully functioning state and no faulty equipment should be used.

5.2 Safety Requirements

Patients must get ambulance service as soon as possible if there is any emergency case. GPS Should work properly and patients can hire their Nearest ambulance.

5.3 Security Requirements

Third parties must be unaware of services between driver and patients, care should be taken that all the equipment used are genuine and no knock off equipment should be used so that the deployment of the project is successful.

5.4 Software Quality Attributes

Availability: All time services must be provided to the patients. Patient must get quick services from the hospital.
Portability: System must be ready for deployment in different areas where safety precautions must be measured.

5.5 Business Rules

A business rule is anything that captures and implements business policies and practices. A rule can enforce business policy, decide, or infer new data from existing data. This includes the rules and regulations that the system users should abide by. This includes the cost of the project and discount offer provided. The user should avoid illegal rules and protocols. Neither admin nor member should cross the rules and regulations.

6. Other Requirements

Other requirements include constant internet always connect and database connection.

Appendix A: Glossary

GPS (Global Positioning System): Satellite Navigation is based on a global network of satellites that transmit radio signals from medium earth orbit. Users of Satellite Navigation are most familiar with the 31 Global Positioning System (GPS) satellites developed and operated by the United States.

API (Application Programmable Interface): An application programming interface (API) is a way for two or more computer programs to communicate with each other.

UI (User Interface): *User interface (UI)* design is the process designers use to build interfaces in software or computerized devices, focusing on looks or style.

DB (Database): A database (DB) is information that is set up for easy access, management and updating.

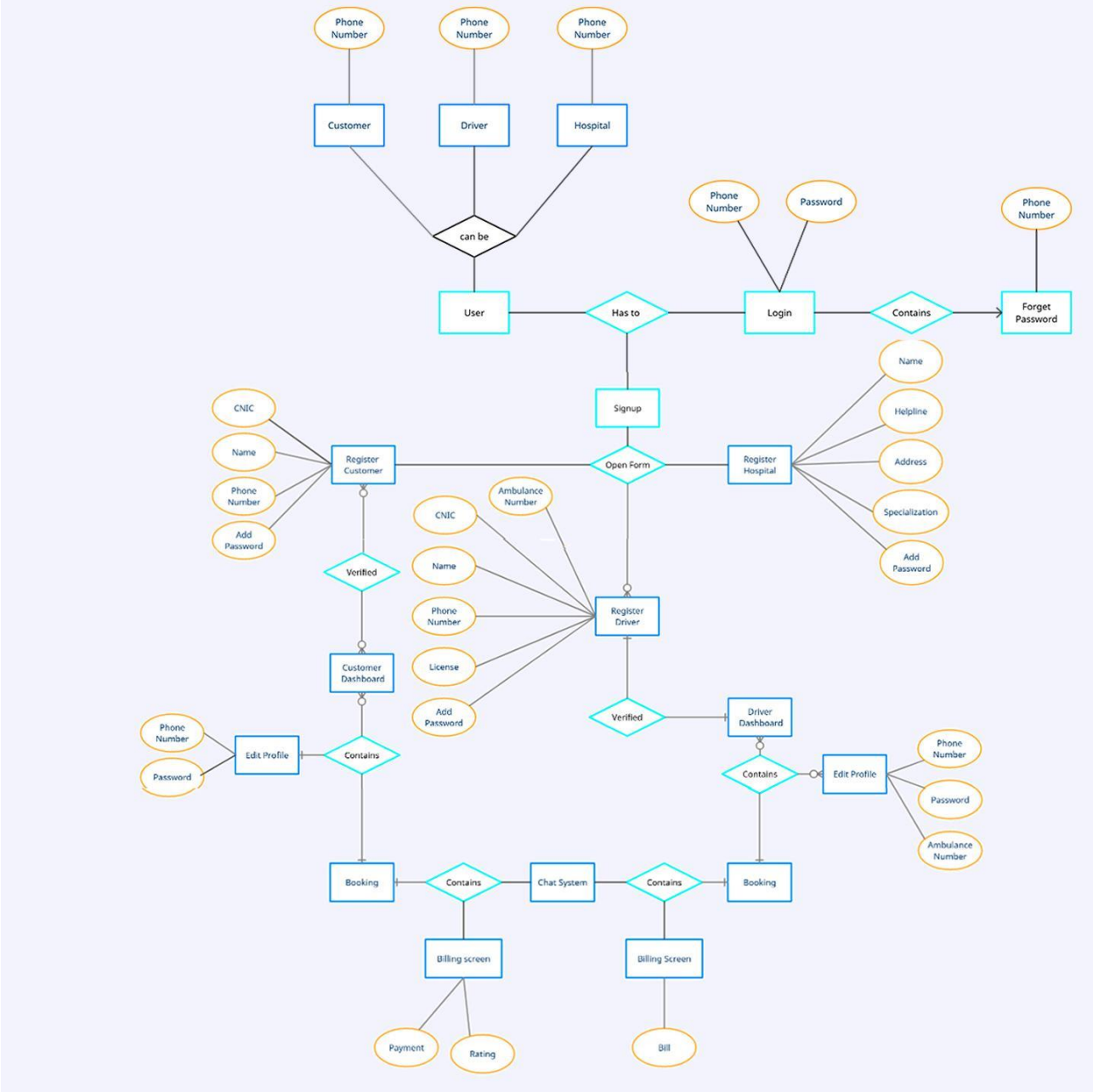
Adequate: Sufficient for a specific need or requirement. adequate time, an amount of money adequate to supply their needs, also good enough of a quality that is good or acceptable**.**

Definitive: It usually describes something that is final, authoritative, or conclusive.

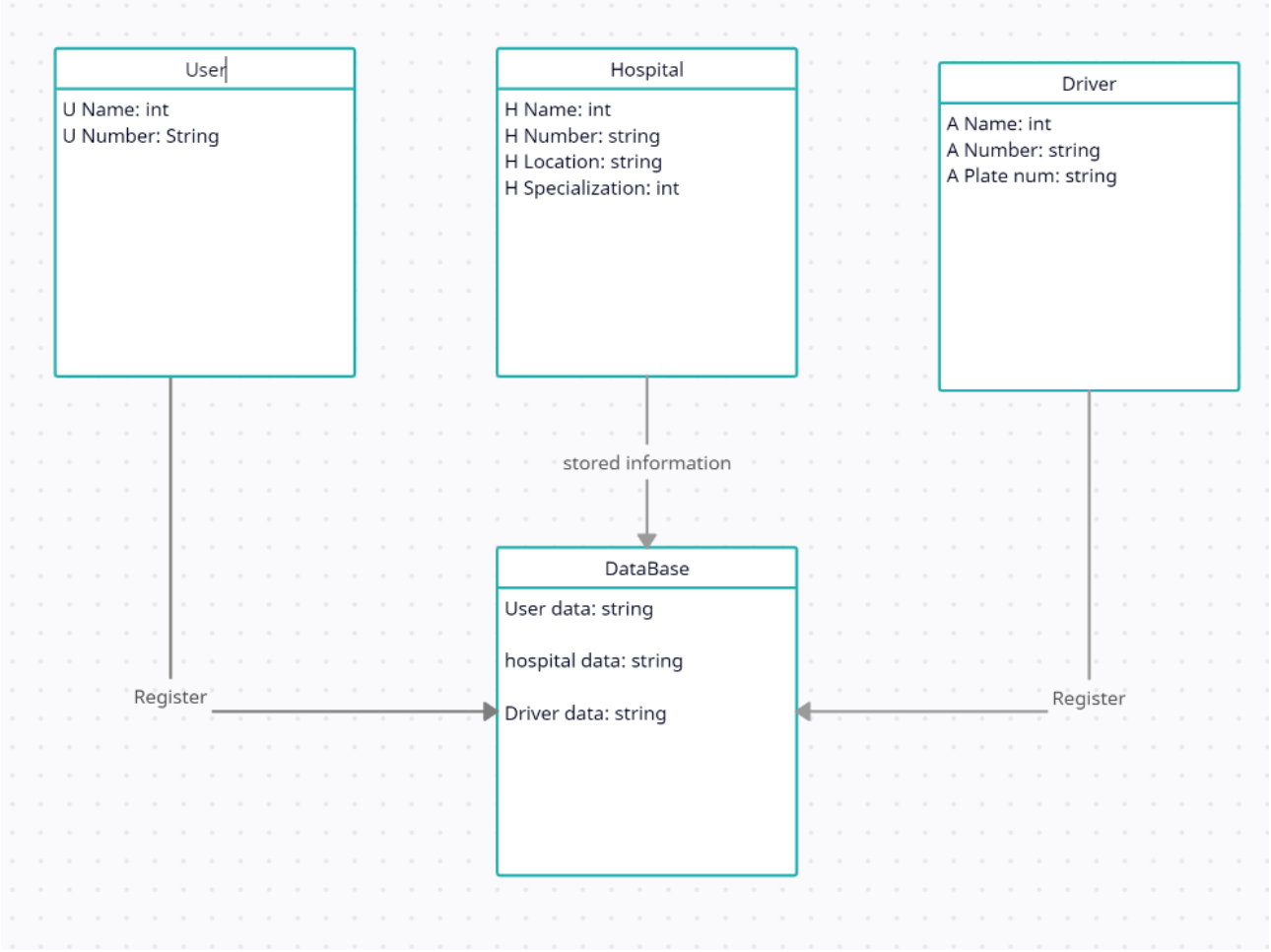
Stabilization: The process of making something physically more secure or stable.

Appendix B: Analysis Models

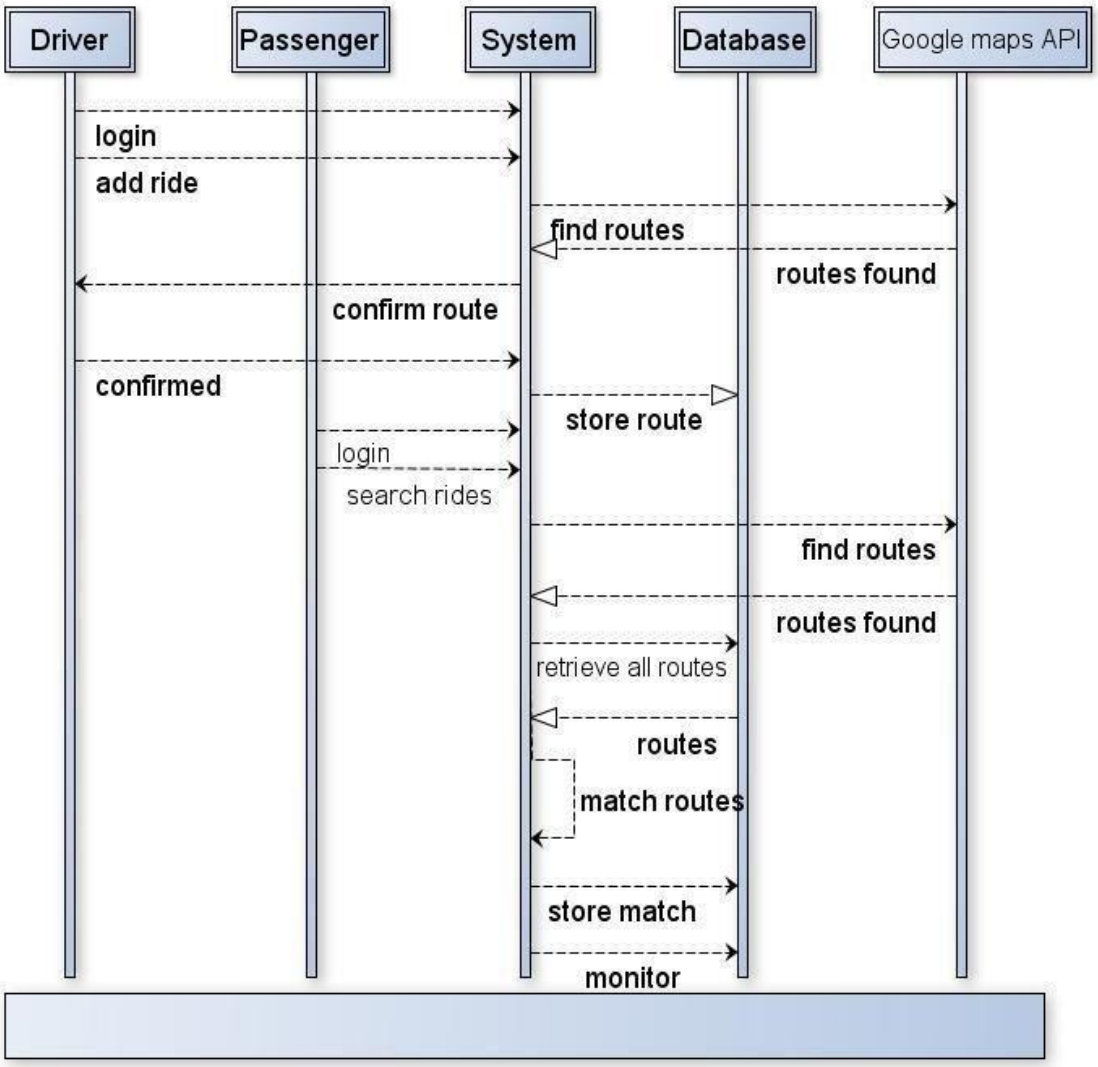
ERD



Domain Model



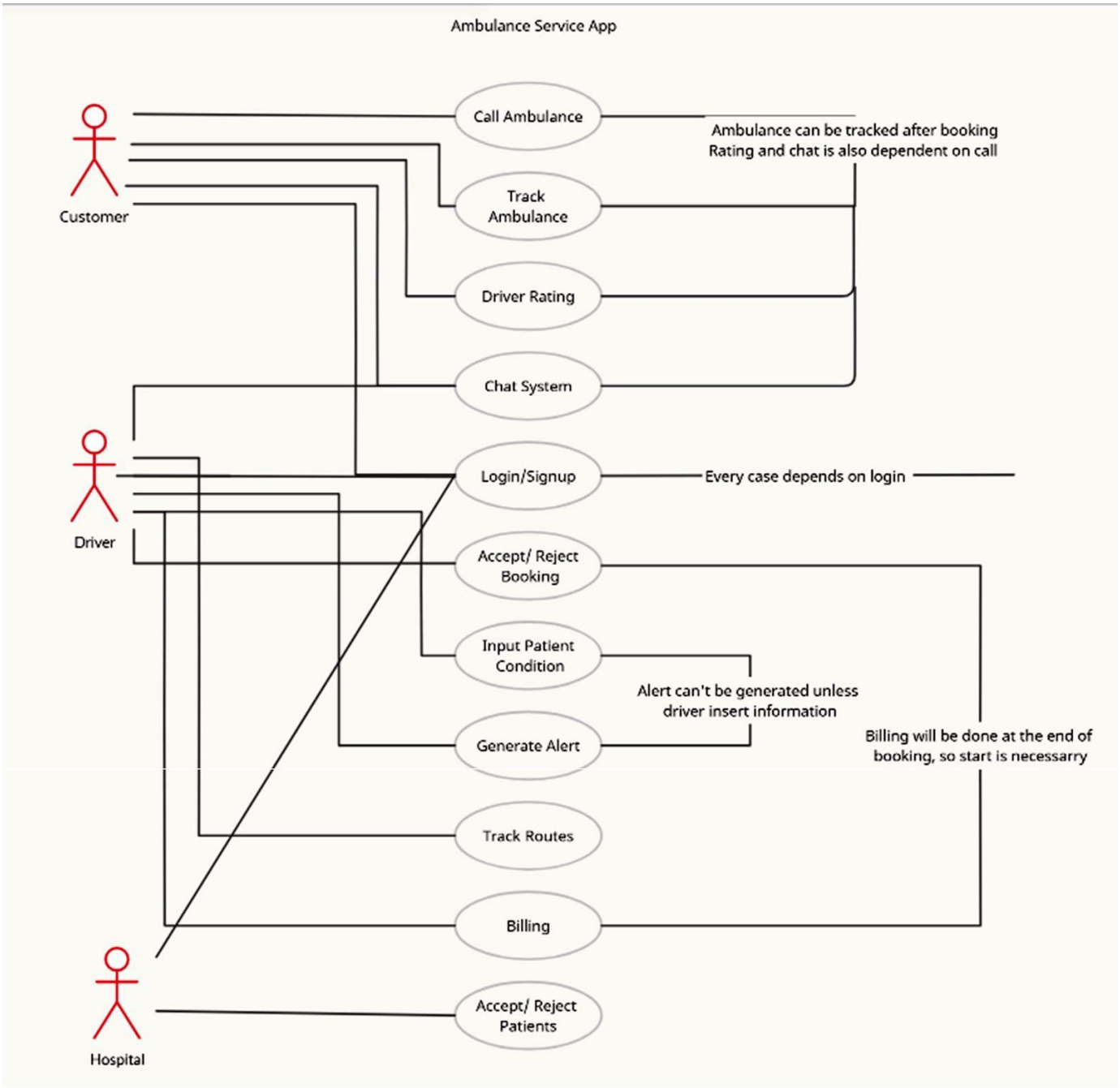
System Sequential Diagram



Appendix C: To Be Determined List

Numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure are none.

Use Case Diagram



Use Cases

1. SIGNUP

USE CASE NAME	SIGN UP
ACTORS	CUSTOMER, DRIVER
DESCRIPTION	The case represents actor signing in for the first time
PRECONDITION	Actor has to open App from home screen of their respective device.
POSTCONDITION	The actor has successfully registered him/her self.
ASSUMPTION	None

2. LOGIN

USE CASE NAME	LOGIN
ACTORS	CUSTOMER, DRIVER
DESCRIPTION	The case represents actor logging in the application with their credentials. For example: username, password
PRECONDITION	Actor has to open App from home screen of their respective device.
POSTCONDITION	The actor will be redirected to their respective dashboard.
ASSUMPTION	None

3. CALL AMBULANCE

USE CASE NAME	CALL AMBULANCE
ACTORS	CUSTOMER
DESCRIPTION	The case represents actor when they press button to call ambulance, immediately the nearest ambulance will approach towards actor destination.
PRECONDITION	Actor has to press the call button on their interface.
POSTCONDITION	The navigation screen will appear.
ASSUMPTION	Navigation glitch can occur due to poor connectivity.

4. TRACK AMBULANCE

USE CASE NAME	TRACK AMBULANCE
ACTORS	CUSTOMER
DESCRIPTION	Once the ride has been confirmed the user can track ambulance with GPS.
PRECONDITION	Navigation screen will automatically appear.
POSTCONDITION	Ambulance arrived notification will appear.
ASSUMPTION	Any emergency from driver side can occur.

5. DRIVER RATING

USE CASE NAME	DRIVER RATING
ACTORS	CUSTOMER
DESCRIPTION	Once the ride has been completed a driver's rating screen will occur.
PRECONDITION	Notification of ride has been started will appear.
POSTCONDITION	Actor will be redirected to their home screen.
ASSUMPTION	Driver's rating can be: Good/Bad

6. CHAT SYSTEM

USE CASE NAME	CHAT SYSTEM
ACTORS	CUSTOMER, DRIVER
DESCRIPTION	Customer and driver can chat with each other on the application.
PRECONDITION	Actor has to press chat button to open chat room.
POSTCONDITION	Chat will be recorded in database.
ASSUMPTION	May be driver cannot communicate through chat system while driving.

7. ACCEPT BOOKING

USE CASE NAME	ACCEPT BOOKING
ACTORS	DRIVER
DESCRIPTION	Driver has to press the accept button to confirm the ride.
PRECONDITION	Driver is waiting for a ride.
POSTCONDITION	Customer location will appear with Google maps.
ASSUMPTION	None

8. REJECT BOOKING

USE CASE NAME	REJECT BOOKING
ACTORS	DRIVER
DESCRIPTION	Driver has the option to reject the booking as well.
PRECONDITION	Driver is waiting for a ride.
POSTCONDITION	That ride will be transferred to another nearest driver.
ASSUMPTION	None

9. INPUT CONDITION

USE CASE NAME	INPUT CONDITION
ACTORS	DRIVER
DESCRIPTION	Driver will input patient’s condition and their details in alert form.
PRECONDITION	Driver has to press alert button to open form.
POSTCONDITION	Form has been submitted.
ASSUMPTION	May be driver details cannot meet the prior conditions.

10. GENERATE ALERT

USE CASE NAME	GENERATE ALERT
ACTORS	DRIVER
DESCRIPTION	After filling the patient form alert will be generated to the selected hospital.
PRECONDITION	Driver has to fill the form.
POSTCONDITION	Driver has to wait for the hospital response.
ASSUMPTION	Hospital cannot respond to that alert.

11. TRACK ROUTE

USE CASE NAME	TRACK ROUTE
ACTORS	DRIVER
DESCRIPTION	Driver can track routes for the desired hospital using Google maps.
PRECONDITION	Driver has to select hospital from database.
POSTCONDITION	Navigation screen will appear.
ASSUMPTION	Due to heavy traffic routes may not be seen clear.

12. BILLING

USE CASE NAME	BILLING
ACTORS	CUSTOMER, DRIVER
DESCRIPTION	Billing will be calculated according to kilometers and peak hour.
PRECONDITION	Driver has to complete the ride.
POSTCONDITION	Billing screen will appear to both actors at the end of ride.
ASSUMPTION	Bill can be generated wrong if network connection is poor.

TEST CASES

MODULE	ID	DESCRIPTION	EXPECTED RESULT	CONDITION
Login	1	Enter a valid Email & password & tap on login button	Login successful	Pass
Login	2	Enter a invalid email & password & tap on login button	Login unsuccessful	Fail
Login	3	enter valid email & invalid pass & tap on login button	Login unsuccessful	Fail
Login	4	enter invalid email & valid pass & tap on login button	Login unsuccessful	Fail
Login	5	Verify if a user cannot enter the characters more than the specified range in each field (Username and Password)	Limit exceeded	Fail
Login	6	Verify the login page by passing 'Back button' of the browser. It should not allow you to enter into the system once you log out.	Login again	Pass
Login	7	Verify that the validation message gets displayed in case the user leaves the email or password field as blank.	Field is empty	Pass
Login	8	Password must be encrypted	Encryption for safety	Pass
Login	9	If tap on eye the password must be visible	Hided/ show password	Pass
Login	10	Check upper case letters, lower case, numbers & symbols	Check credentials	Pass
Login	11	Verify if the password can be copy-pasted or not	Password is copied	Fail
Login	12	Verify that the user is able to login by entering valid credentials and pressing Enter key	Login successful	Pass

Login	13	Verify that the validation message is displayed in the case the user exceeds the character limit of the user name and password fields	Limit exceeded	Pass

MODULE	ID	DESCRIPTION	EXPECTED RESULT	CONDITION
Signup	1	Enter a valid credentials & tap on Sign up	Signup successful	Pass
Signup	2	Enter a invalid credentials & tap on Sign up	Signup unsuccessful	Fail
Signup	3	Check the upper limit of the textboxes	unsuccessful	Fail
Signup	4	Check validation on phone number field by entering alphabets and special characters	Characters found	Fail
Signup	5	Check enter only 1 data in phone no field	Fill complete number	Fail
Signup	6	Verify that not filling the mandatory fields and taping the submit button will lead to a validation error	Signup successful	Pass
Signup	7	Check if left empty fields & tap on register	Field is empty	Fail
Signup	8	Verify that not filling the optional fields and taping the submit button will still send data to the server without any validation error.	Signup successful	Pass
Signup	9	Check password must be encrypted	encrypted password	Pass
Signup	10	Verify that pass field accept alphabets, numbers & special characters	Correct credentials	Pass
Signup	11	Check if tap on eye icon	Password hide/show	Pass

Signup	12	Check pass match with confirm pass & tap on sign up.	Password matched	Pass
Signup	13	Verify that pass doesn't match with confirm pass & tap on sign up	Password unmatched	Pass
Signup	14	Check enter a invalid data on email field	Email is incorrect	Fail
Signup	15	Verify that after making a signup request to the server and then sending the same request again.	Already an account	Fail
Signup	16	Verify if you're already register user & want to register again	Already an account	Fail