

Certificate

We accept the work contained in this report as a confirmation to the required standard for the partial fulfillment of the degree of BS (CS).

Head of Department

Supervisor

Internal Examiner

External Examiner

Dedication

First of all we would like to thank almighty ALLAH with his grace we were able to complete the project. Next we would like to thank our families who really support us throughout our educational career. At last we will but not the least all of our friends who are with us all the time.

Acknowledgements

We would like to thank our respected supervisor Sir Suroor Zaidi without his help and support we were not able to complete this project, he helped us in every step where we needed. Thank you very much to our supervisor without his help it was next to impossible to complete the project on time.

Abstract

It has been observed during the last few years that the population of twin cities increasing rapidly due to development in these areas. People are migrating from their native areas to twin cities for doing business, education and other interests. People travel from one place to other. They are facing huge difficulties in reaching their destinations/working sites due to lack of good transportation. Mostly people get late to reach at job/working locations due to insufficient transport means. An effective way to tackle with this problem is through developing a Vehicle Sharing System (car-pooling) system. This enables a group of people to share daily driving times and expenses and overcome transportation problems of twin cities. To conquer the transportation need of twin city we added to a Vehicle Sharing System. This application allows the registered members to search rides that enable them to create a carpool/car-sharing group. The VSS (vehicle sharing system) also enables the administrator to access the database information belonging to each members as well as each rout of twin city for making analysis.

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Chapter # 1

1. Introduction

1.1 Introduction

Carpool is two or more commuters sharing a ride in one of their own vehicle. Individuals who offers rides in the same auto save fuel and cash and help nature by emanating less gas poisons.

Carpooling has been seen as one of the lowest cost alternatives. Carpoolers utilize their own particular cars to give rides frequently accomplishing group objectives for movement decrease without the expense of public transportation or worked vehicles. As 40-50% of people have their own conveyance but still the people who don't have their conveyance facing huge difficulty in travelling through twin cities. Maximum people /employee gets late daily due to the lack of public transportation in twin cities of Pakistan. In order to minimize this problem we are seeking solution through software tools.

1.2 Overview

In this project, an android based application is going to be implemented to provide Vehicle Sharing System among the users. We are going to restrict our project for corporate employees/ students within an organization/institution to avail the facility of carpooling effectively.

1.3 Problem Description

As in our country due to the lack of good transportation services people are facing difficulties in reaching their destinations. The purpose of our application is to minimize the transportation issues in twin cities by utilizing the resources of the people who have their cars/ vehicles. Driver and traveler know before the start of the trip that they will share the ride and at what time they will be going. Expert and/or business vehicles are rejected. Both the driver and the passenger(s) are considered as auto-poolers.

- Sharing the expenses while traveling.
- Less traffic and less pollution.

Our aim is to make Vehicle Sharing System (VSS) into a viable transportation alternative, so both driver & passenger can share the cost of the trip, reducing traffic and preserving the environment.

1.4 Objective

- To maintain an android based application that enables the corporate employees/students within an organization/institution to avail the facility of carpooling effectively.

1.5 Project Scope

As in the present era most of the people have their smart phones but don't have financially able to get their cars so this application helps those people to find people of the same organization who can provide lift/transportation. For this purpose we are developing a mobile/android based application. We are not doing web-based application because it's difficult to load whole website on the cell phones which supports only 2g services so application is the suitable for this kind of cell phones.

- **Sign Up:** Users need to sign up to use the application. The users should have a username and password. After filling their name, surname, email, age, job, phone and gender information, they register the system.
- **Sign In:** If a user is signed up, s/he can sign in the system by filling username and password boxes.
- **Sign Out:** A user may need to sign out the system. S/he can do it by clicking the sign out button which is placed in every page.
- **Add Transportation:** Users may add transportations by specifying a, date/time period. The user can select the by two different ways. The first way is entering start and end locations. Thus, the route is drawn on the map. The other way is he/she can select at most 8 waypoints to draw.
- **Delete Transportation:** A user may delete his/her transportation. After deleting, other passengers in that transportation will be informed by the system.
- **Request Transportation:** A user may use transportation by sending transportation request to the driver via SMS.
- **Search Transportation:** A user can search for transportations that the user can see suitable s to his/her.
- **Send Message:** The users can send a SMS to the person who is giving a ride.
- **Reply to A Message:** After receiving a message, the user can read the message.
- **Rate User:** After having transportation, the users in the same transportation can rate each other on the web site. Thus, other users can see the user rates and they can decide which transportation is better.

‘Chapter # 2

2. Literature Review

2.1 Android

Android is a mobile operating system developed by Google. It is a versatile working framework made in 2007 and called Android beta. Current Android OS rendition is Android API level 19. Android adaptations are named in alphabetic order similar to Cupcake, Donut, Éclair, Froyo, Gingerbread, Honeycomb and so on. The latest android version is 6.0 named as Marshmallow. Currently Android is having the largest installed base of all operating systems. In July 2013, Google play store has had one million Android applications published and there were 50 billion downloads of applications. In 2013 survey of mobile application developers 71% of the developers create applications for Android and in 2015 survey found that 40% of professional developers set Android as their first priority target platform. The company revealed that in September 2013 there were more than 1 billion dynamic clients and this number is expanding day by day. Android OS presented the thought of advanced cell which ought to have completely area mindfulness and inclinations consciousness of their proprietors. Every single advanced cell has GPS and Google maps introduced in them.

2.2 Carpool

Carpool is two or more people sharing a ride in one of their own vehicle. People who offers rides in the same vehicle save fuel and expenses and help the environment by emitting less gas pollutants.

The concept of carpooling can be easily described as an organized way to go from one place to another instead of sticking out thumb at the highway. Carpooling is chosen as one of the solutions for improving transportation efficiency and fuel saving. Encouraging carpool is known strategy for reducing traffic on road. The most important benefit of carpooling is decrease in number of vehicles which will save fuel.

2.3 History of Carpooling

In 1914 company name ‘Jitney’, a kind of carpooling and a taxi service in Los Angeles started. In 1915, approximately 62,000 licensed jitneys operated in twenty-seven localities, car owners had to get a license in order to carry people in their cars, but then increased in fees issued by the local authorities caused people to decline the practice rapidly. Carpooling has been taking place since cars have become common on roads.

In 1970s shortage of fuel caused the development of carpooling. Supportive measures other than advertising were applied to encourage carpooling such as funding carpooling

demonstration projects, construction or giving high occupancy lanes, creation of carpooling agencies etc. The internet based carpooling applications made carpooling much easier since 1990s. In 2000s rising prices of fuel and disposable income resulted in a slight increase of the carpooling rate.

2.4 Carpooling in Pakistan

As we know that transportation is indeed a necessity in human life and in Pakistan number of vehicles are increasing day by day, this is causing the traffic congestion on roads. In Pakistan the concept of carpooling is not common. There are few applications which offer carpooling services like 'Tripda'. This application uses 'to and from' destinations from the user to offer or give a ride.

Chapter # 3

3. Requirement

Specifications

3.1 Existing System

One of the most well known existing systems used for concept building for Vehicle Sharing System is tripda.com.pk. It is an application through which the user can offer a ride and have a ride for carpooling purpose. Tripda mostly focuses on offering a ride from user or searching a ride to and from destinations. It only takes to and from destinations and from the user and gives the information about the people who are sharing the rides.

3.2 Proposed System

The proposed system would be an android application that could be installed on Android smart phones and the user can give or get the rides from their desired s. The user can give the ride by drawing his on maps using 8 way points between its starting and ending destinations. Where as if a user wants to get a ride he will search using the destination and the list of users offering a ride will be displayed. The application to be developed will comprise of a complete carpooling system that will be beneficial for all people or different organizations and students.

3.3 Requirement Specifications

3.3.3 Functional Requirements

- Sign Up: The user should be able to create account using name, user ID and password.
- Sign In: The user should be able to sign in to the system using user ID and password.
- Get a Ride: The user must be able to search a ride.
- Give a Ride: The user must be able to give a ride using to and from destinations.
- Manage routes: The user should be able to delete the routes or change the status of the route.
- View Profile: Signed In user must be able to view his/her profile.
- Forgot Password: A user must be able to retrieve the password if forgotten.
- Sign out: The user should be able to sign out from the system.

3.3.4 Non Functional Requirements

- Accessible Home Page: the landing page should be easily accessible by entering the domain name as the URL.
- Response Time: Search response time should be less.
- Application load time: The application should be loaded with a minimum delay.
- Application Memory Consumption: The application should require less memory, minimum data should be cached.
- User's broadband speed: The user is preferred to use 3G services for the best interaction to be possible.
- Server Memory Consumption: The server should consume less memory, preferable 512MB for 50 requests.
- Server Broadband speed: The server should have minimum 3MBps connection for the interaction to be smoother.
- Server Reliability: The server should be reliable enough to generate the right response under heavy load.
- Server Availability: The server should be functional and working 99% of the time.

3.4 Use Cases

The use case diagrams are the visual representation of the event that happens while the application is running. Use cases are the best description of the dynamic behavior of the system. Following are the uses cases of the VSS system.

3.4.1 Use Case for operational scenario

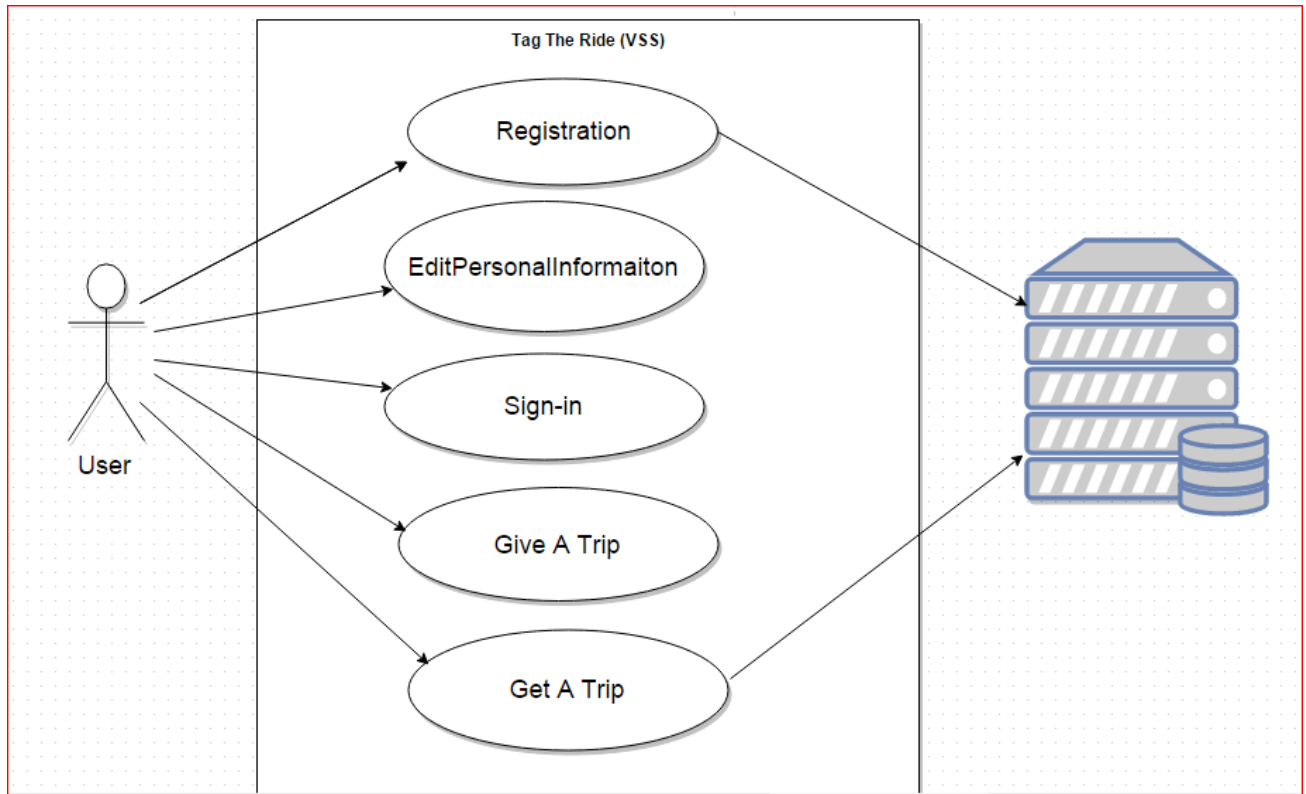


Figure 1 Operation Scenario Use Case

3.4.2 Registration Use Case

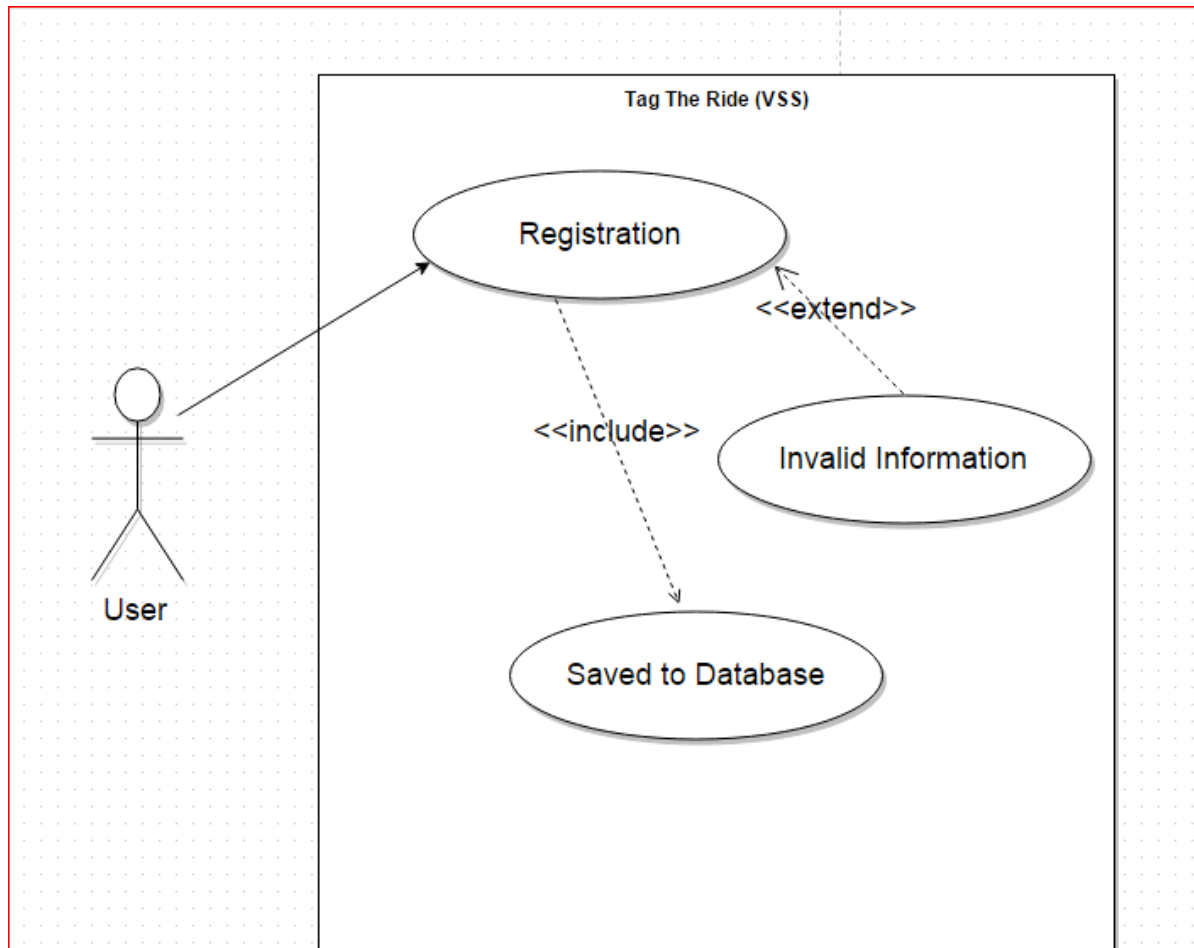


Figure 2 Registration Use Case

Title	Registering a user
Actors	User
Description	This function will allow the user to register on the application
Pre-conditions	Application must be installed on a Smartphone
Main Success Scenario	<ul style="list-style-type: none"> • User runs the application. • User taps on 'Sign up' button. • User provides in details (like Username, password, Full name) • User taps on 'Sign Up' button. • Application redirects to login page. • User enters his credentials and signs in.
Post condition	User registers successfully

Table 1 Registering a User

3.4.3 Log in Use Case

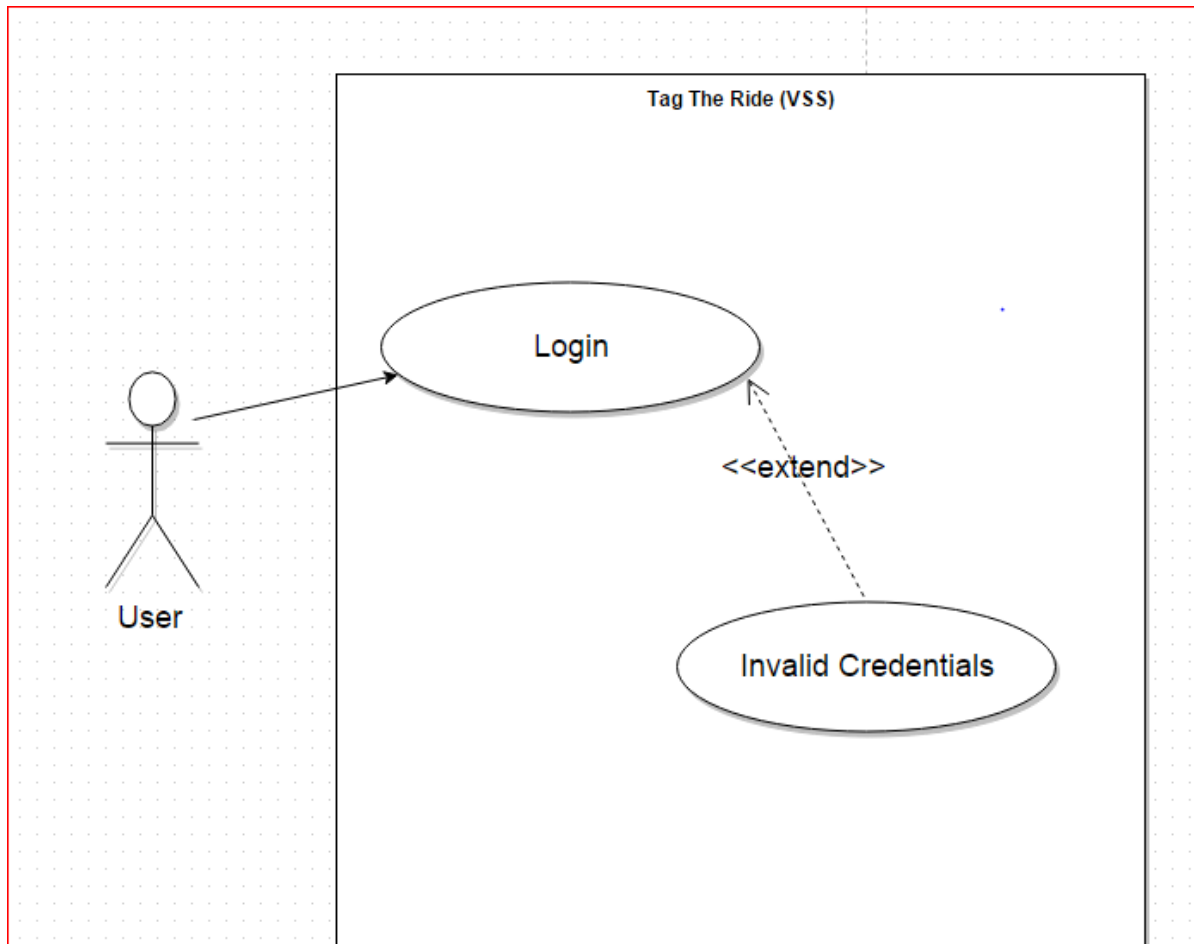


Figure 3 Login Use Case

Title	Logging In
Actors	User
Description	This function will allow the user to log in the application
Pre-conditions	User must be registered
Main Success Scenario	<ul style="list-style-type: none"> User runs the application. User enters his credentials and signs in.
Post conditions	Registered user logged in successfully

Table 2 Logging in

3.4.4 Edit Personal Information Use Case

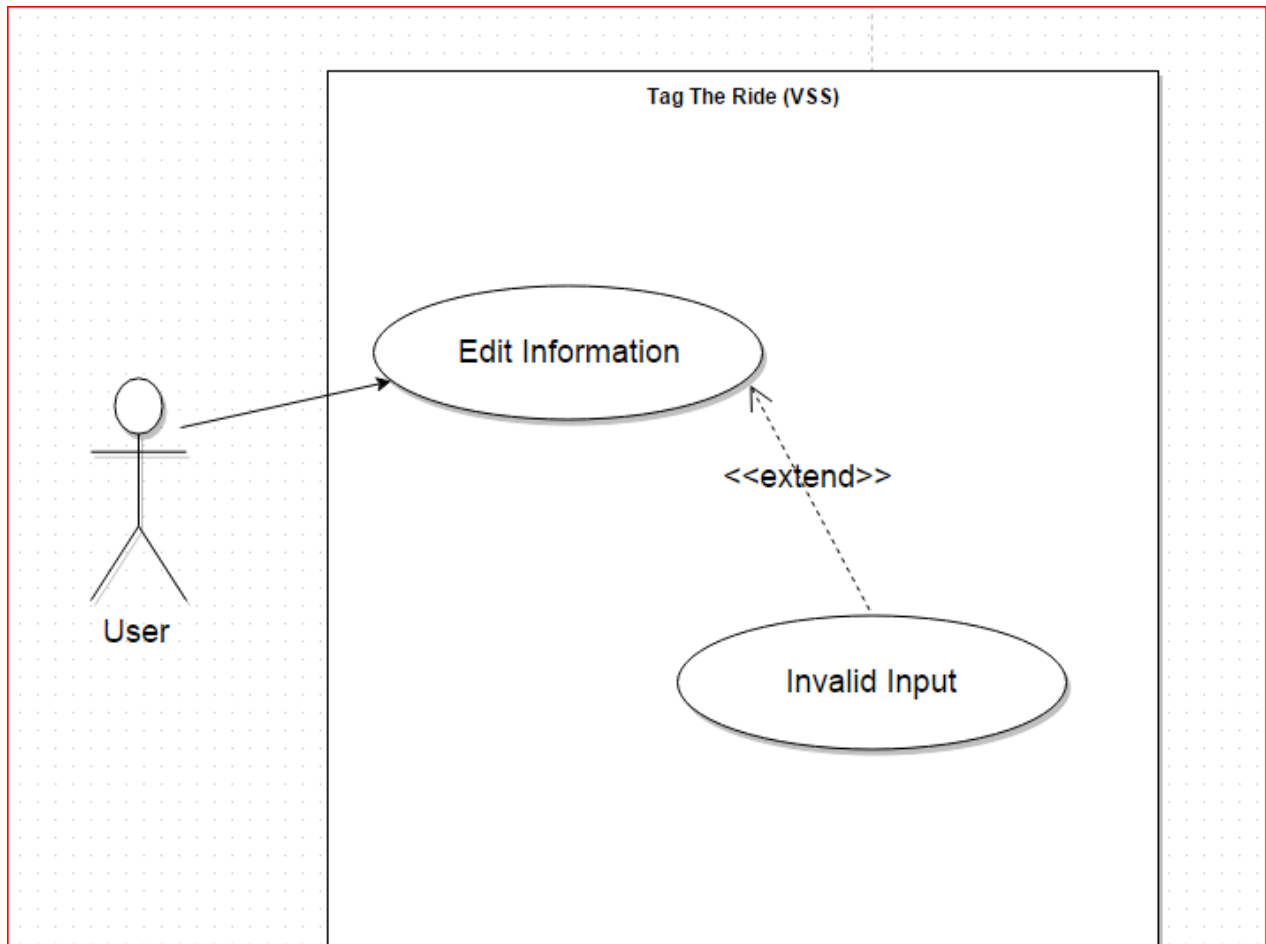


Figure 4 Edit personal information Use Case

Title	Edit personal information
Actors	User
Description	This function will allow the user to edit information of the user
Pre-conditions	User must be logged in
Main Success Scenario	<ul style="list-style-type: none"> User runs the application. User taps on profile to edit information.
Post conditions	Display edited information

Table 3 Edit Personal Information

3.4.5 Get a lift Use Case

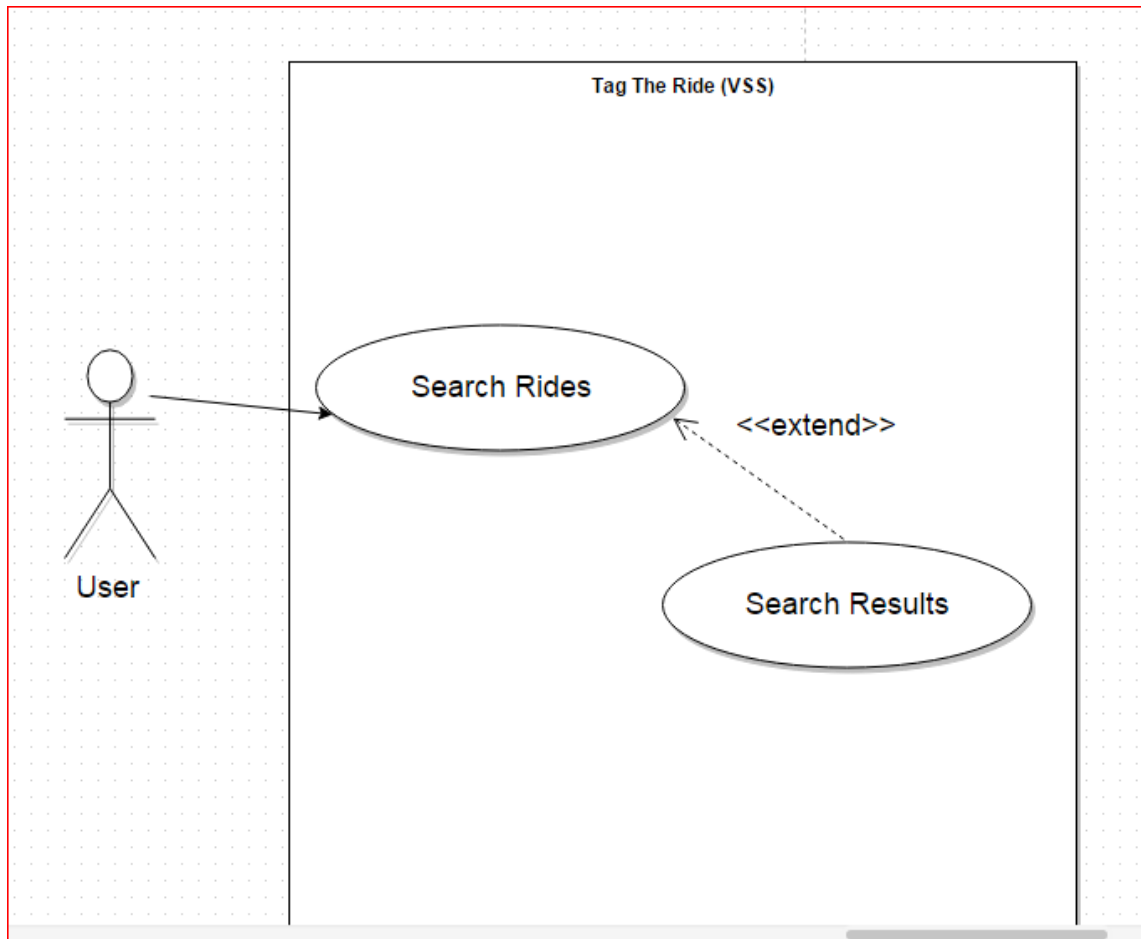


Figure 5 Get a Lift Use Case

Title	Get a lift
Actors	User
Description	This function will allow the user to get a trip
Pre-conditions	User must be logged in
Main Success Scenario	<ul style="list-style-type: none"> • User runs the application. • User taps on get a trip. • Search a trip with destination. • Results will be displayed.
Post conditions	Display results on screen

Table 4 Get a Lift

3.4.5 Give a lift Use Case

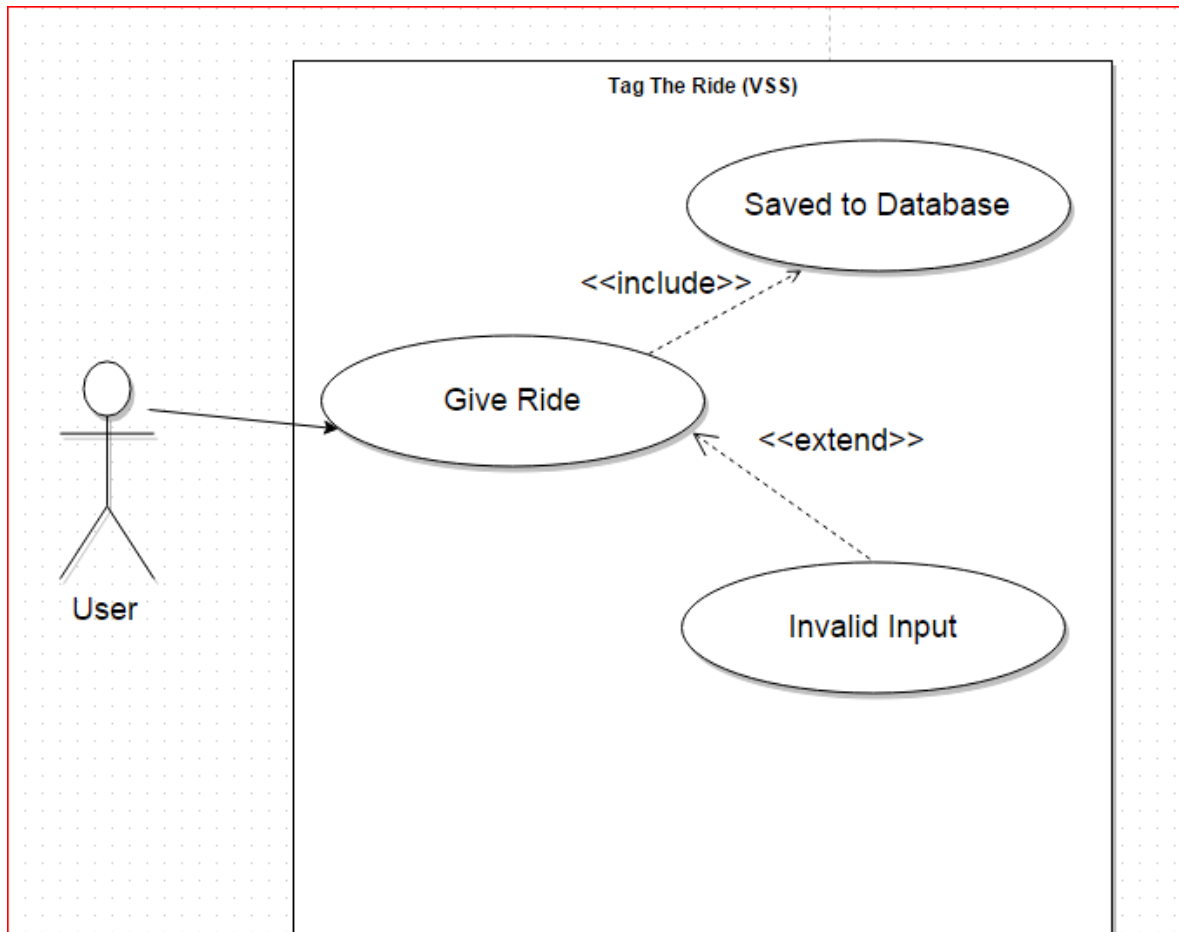


Figure 6 Give a Lift Use Case

Title	Give a lift
Actors	User
Description	This function will allow the user to give a lift
Pre-conditions	User must be logged in
Main Success Scenario	<ul style="list-style-type: none"> • User runs the application. • User taps on give a lift. • Get current position. • Draw route. • Save the route. • Gives information (Car number, phone number, date/time). • Information will be added.
Post conditions	Route added successfully

Table 5 Give a Lift

Chapter # 4

4. System Design

4.1 System Architecture

In system architecture we defined the architecture, components interfaces, modules and flow of data of the VSS system.

4.1.1 System Architecture Diagram

This section of the document describes the overall functionality of the VSS (Vehicle Sharing System). Following system architecture diagrams illustrates all the steps involve in making a transaction on this system.

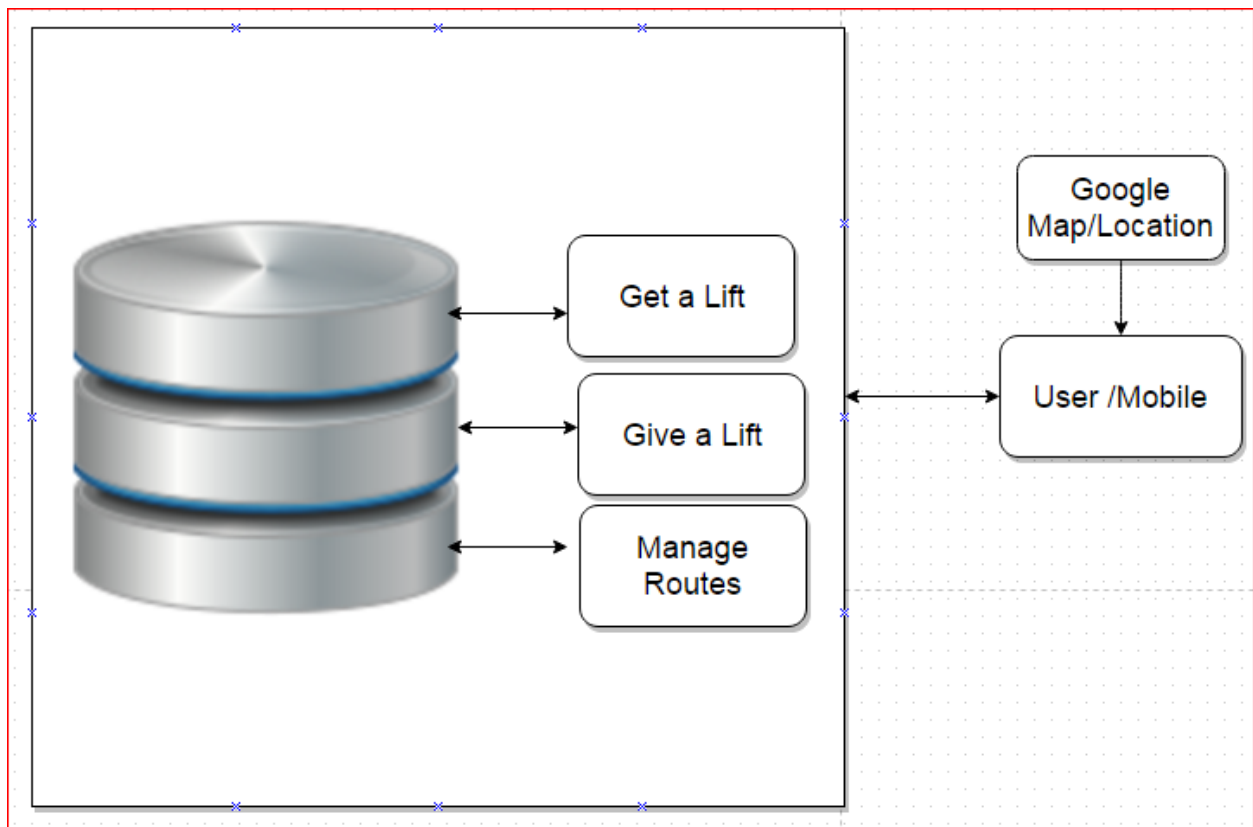


Figure 7 Architecture Design

4.1.2 Functional Architecture Diagram

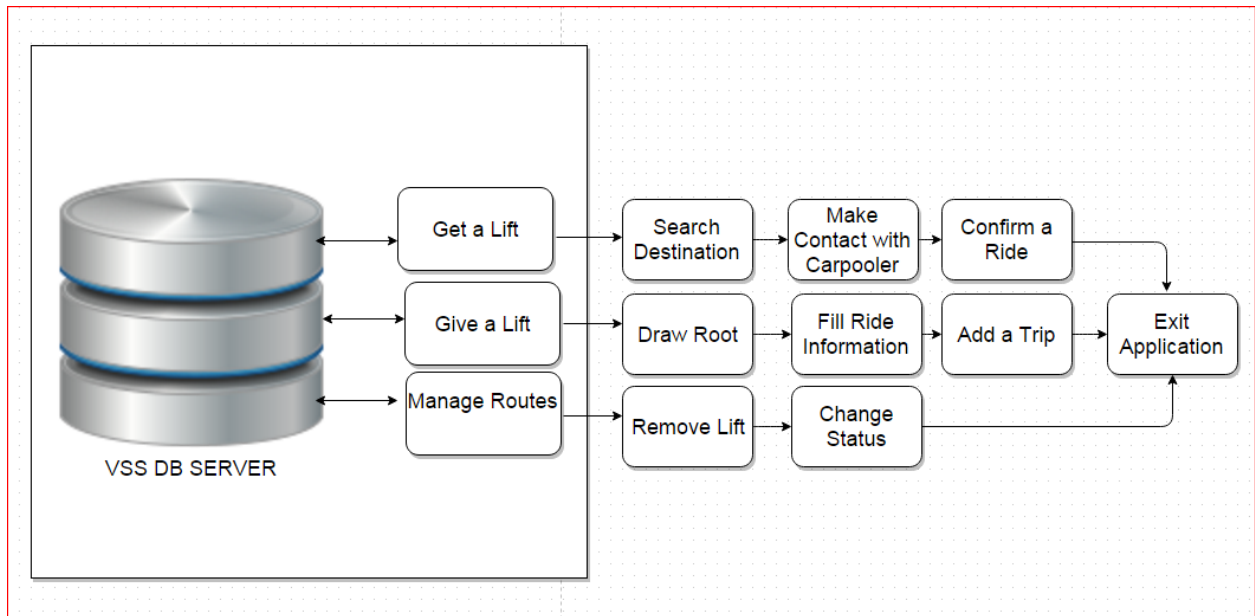


Figure 8 Functional Architecture Design

4.2 Context diagram

The Context Diagram demonstrates the system under consideration as a solitary abnormal state process and then demonstrates the relationship that the system has with other external elements (Carpooler, Passenger,). Another name for a Context Diagram is a Context Level Data Flow Diagram or a Level-0 Data Flow Diagram. Since a Context Diagram is a specialized adaptation of Data Flow Diagram, understanding a touch about Data Flow Diagrams can be useful.

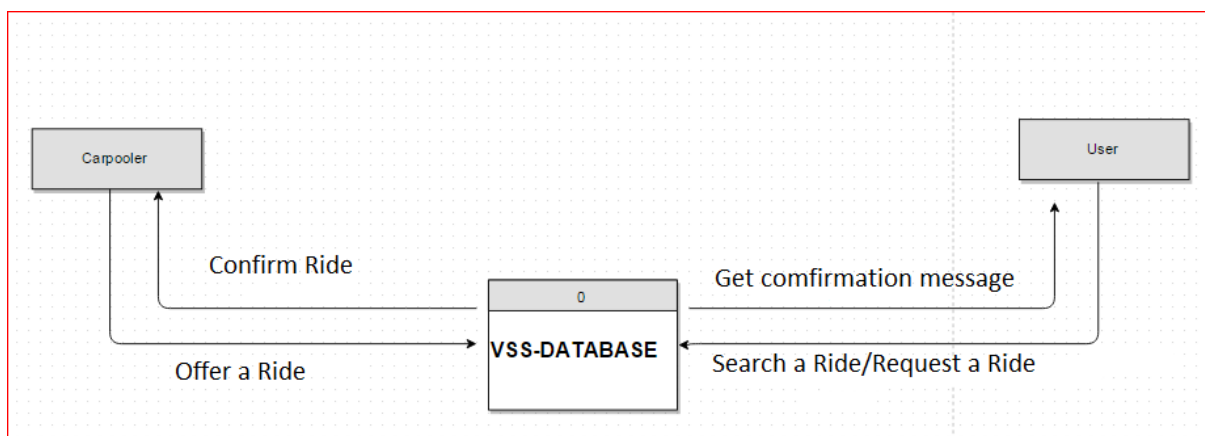


Figure 9 Context Diagram

4.2.1 Sign-Up

VSS requires membership of the client, there is a sign-up procedure expected to client's Personal information and an exceptional username and password. VSS allow just enrolled members to utilize the system.

4.2.2 Log-in

On the off chance that a client is already a member of VSS he/she requires a login process, after that he/she will have the capacity to tag or get ride and rate different clients of the system.

4.2.3 Give Lift

After your login process, you are able to initiate a give lift/ride process. This procedure facilitates you to manage your ride on the application your route and destination.

4.2.4 Manage

Road/route management feature allows the clients to draw a particular root on the Google map for speaking to your way leading to your destination.

4.2.5 Fill Information

You are required to enter your ride's information, Vehicle No, Seating Capacity, Date and Time of Ride etc.

4.2.6 Get Lift

Get lift process leads you to the searching mechanism for your required rides. You can search your coveted destinations and confirm particular searched ride.

4.2.7 Confirm Ride

After searching your ride you are required to confirm with the client that whether you are agreeing with this and you have to confirm it. An auto generated message will be sent to contact number given by the individual who offered that ride. He/she will also confirm about ride then you simply need to wait for the time of ride.

4.2.8 Logout

Logout function will sign out from the application and closes your session.

4.3 Design Constraints

For the time being the real time location tracking for the users of VSS was restricted to be used due to security issues.

- Security is limited to SQL Server authentication only.
- Just compatible with android bolstered mobile phones.
- Mobiles phones should support android platform applications.
- Cellular mobiles should support 3G, 4G service for better performance.
- User's location on cell phone should be Turn on.
- User should have a minimum balance in order to send SMS.

4.4 Design Methodology

The Design Approach is based on structures, neither top down nor bottom up or any hierarchal outline. To some degree Object oriented approach is adopted where necessary. Taking after are the couple of methodologies we adopted to achieve Performance, end client criteria and other configuration goals.

- Client Interfaces will be free from administration and can be controlled by the Users themselves.
- Proper Error Handling
- full check for input Validation

4.5 High Level Design

This segment portrays in further detail elements talked about in the architecture. Abnormal state plans are most compelling in the event that they attempt to model gatherings of system elements from a number of diverse perspectives. This perspective demonstrates the logical functional elements of the system. Each component speaks to a similar gathering of functionality. For UML, this would be a component diagram or a package diagram.

4.5.1 Conceptual or logical:

This section describes the logical or conceptual design of the system.

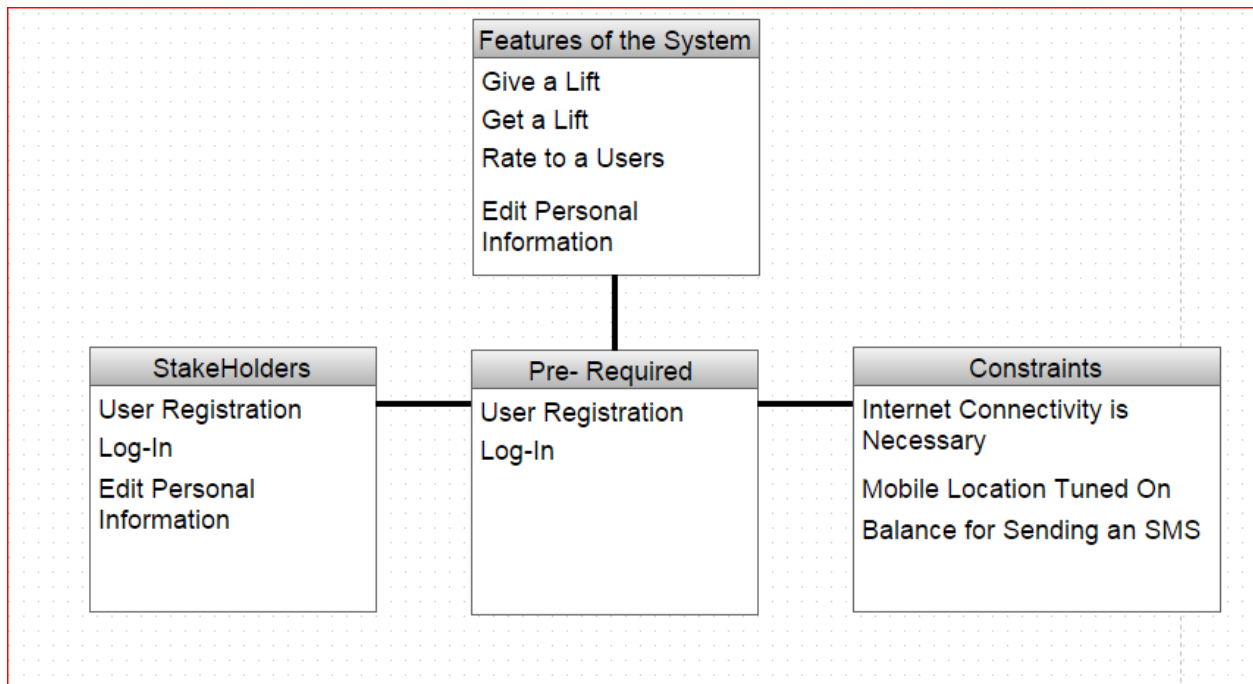


Figure 10 Conceptual Design

4.6 Data flow diagram

A Data-Flow Diagram (DFD) is a graphical visualization of the movement of data through an information system.

4.6.1- User Sign-Up DFD

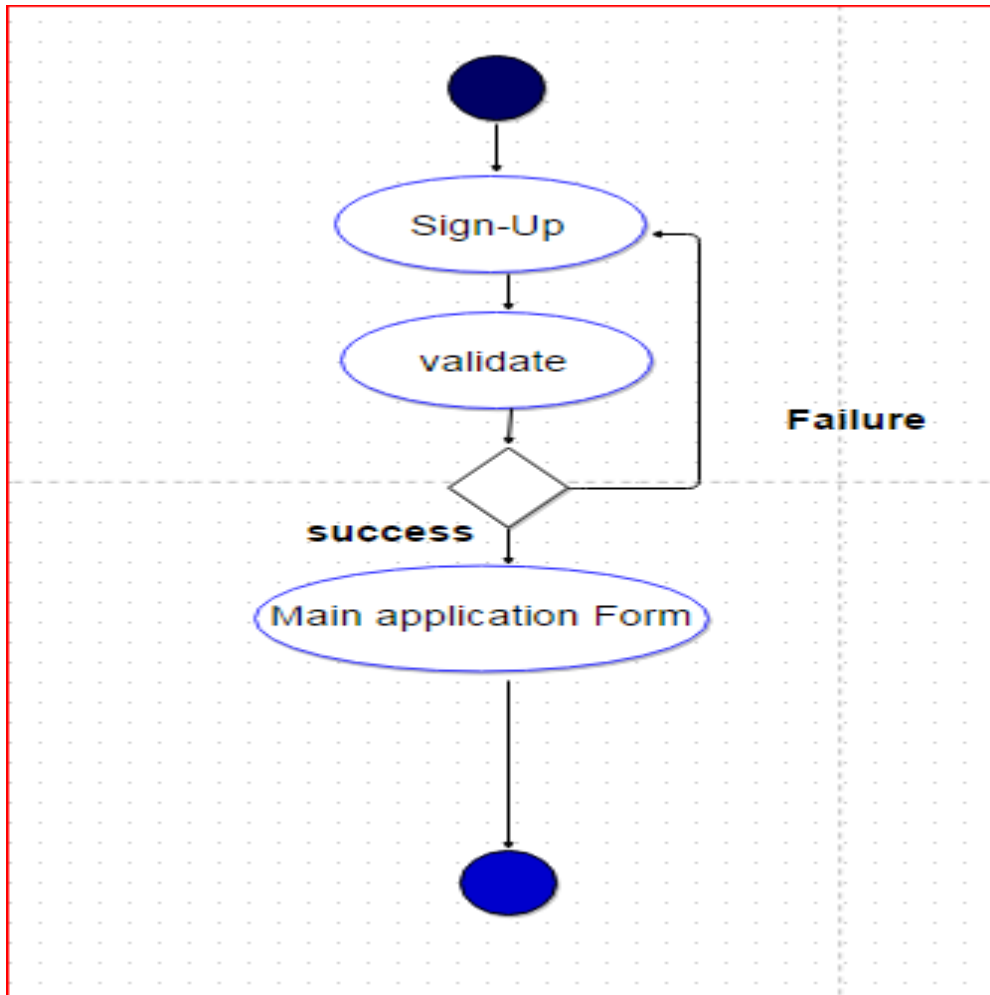


Figure 11 Sign-Up

4.6.2 -User Long-in DFD

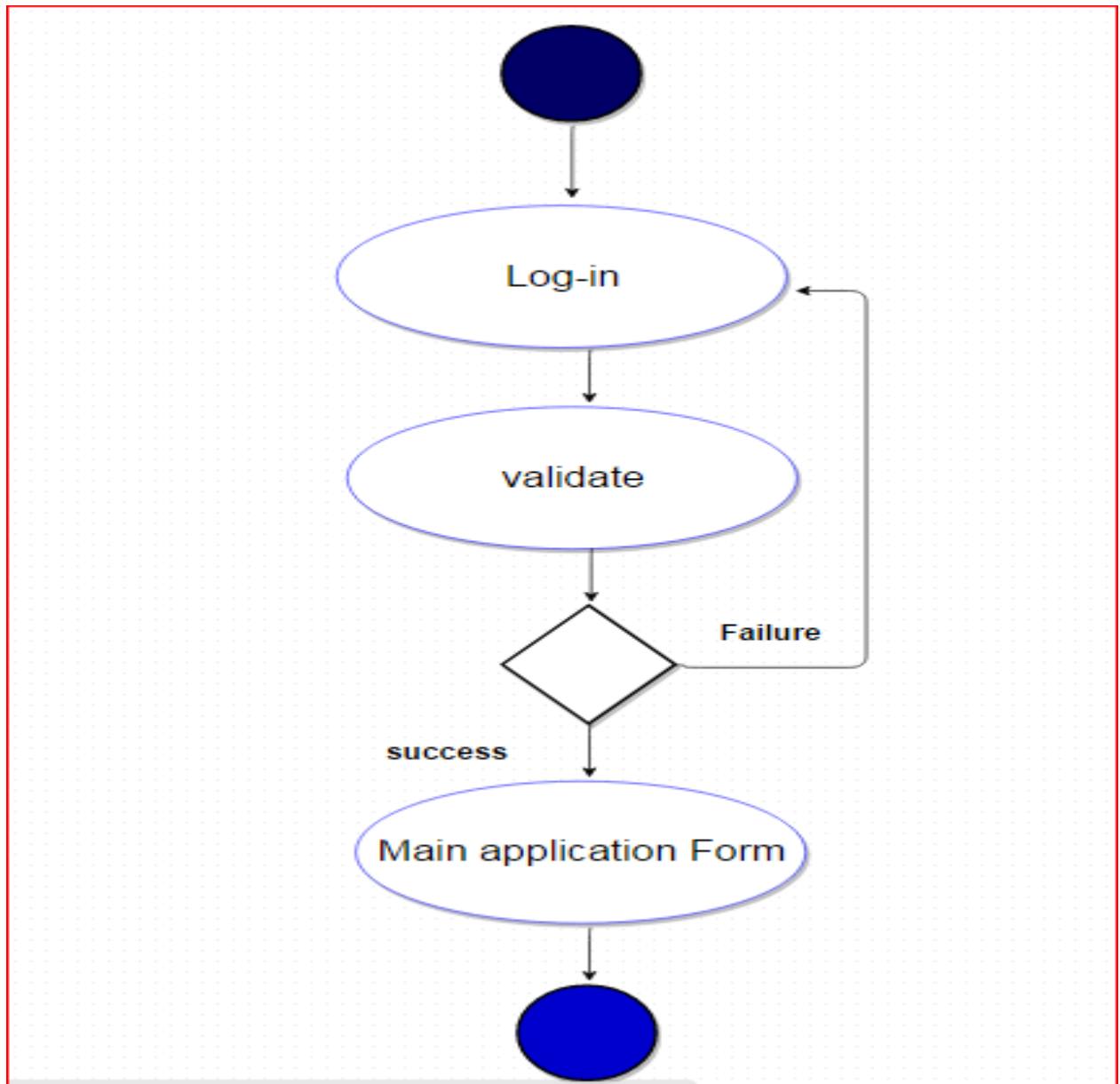


Figure 12 Log In DFD

4.6.3- Give a Ride DFD

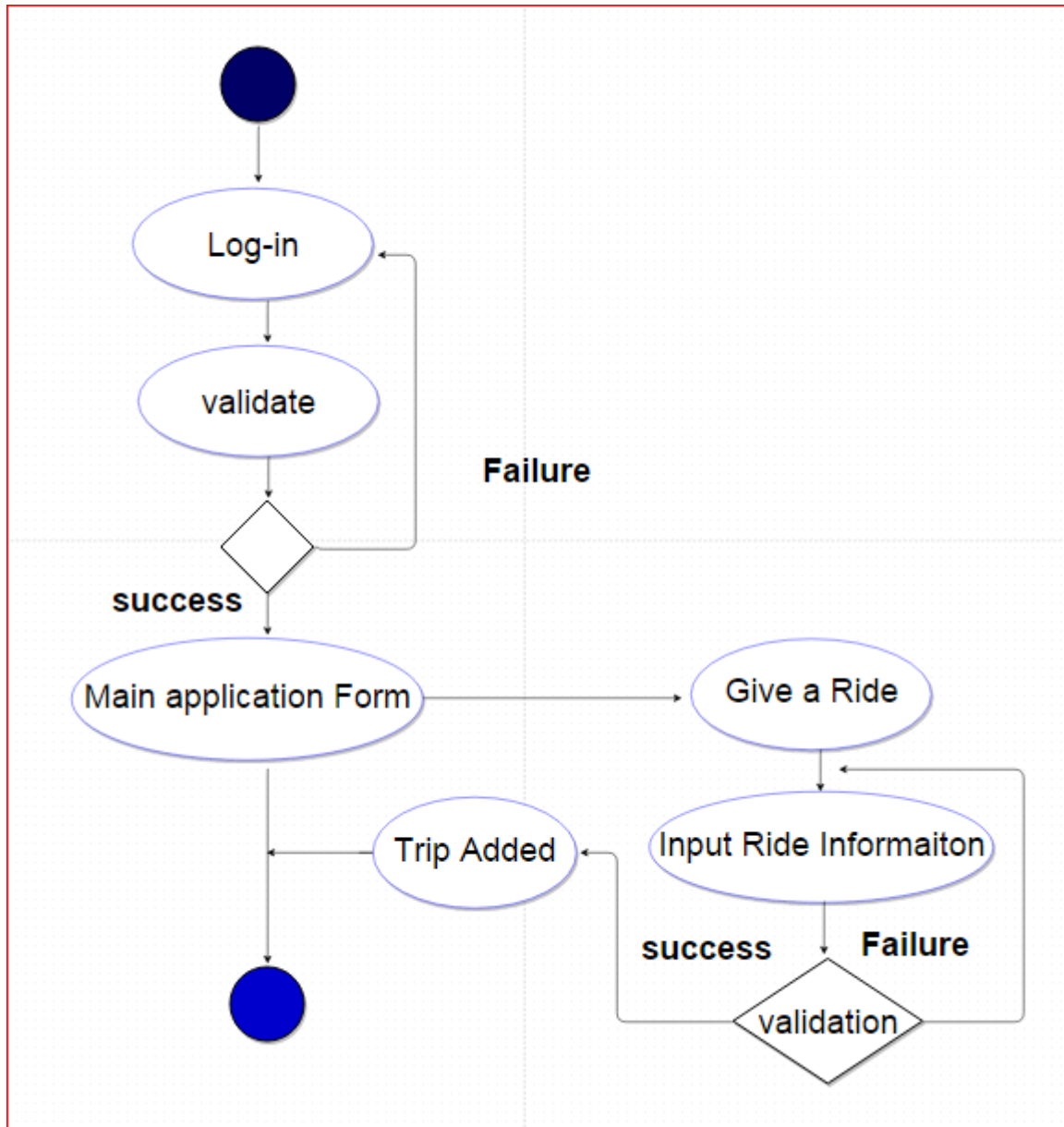


Figure 13 Give a Ride DFD

4.4.5 -Get A Ride DFD

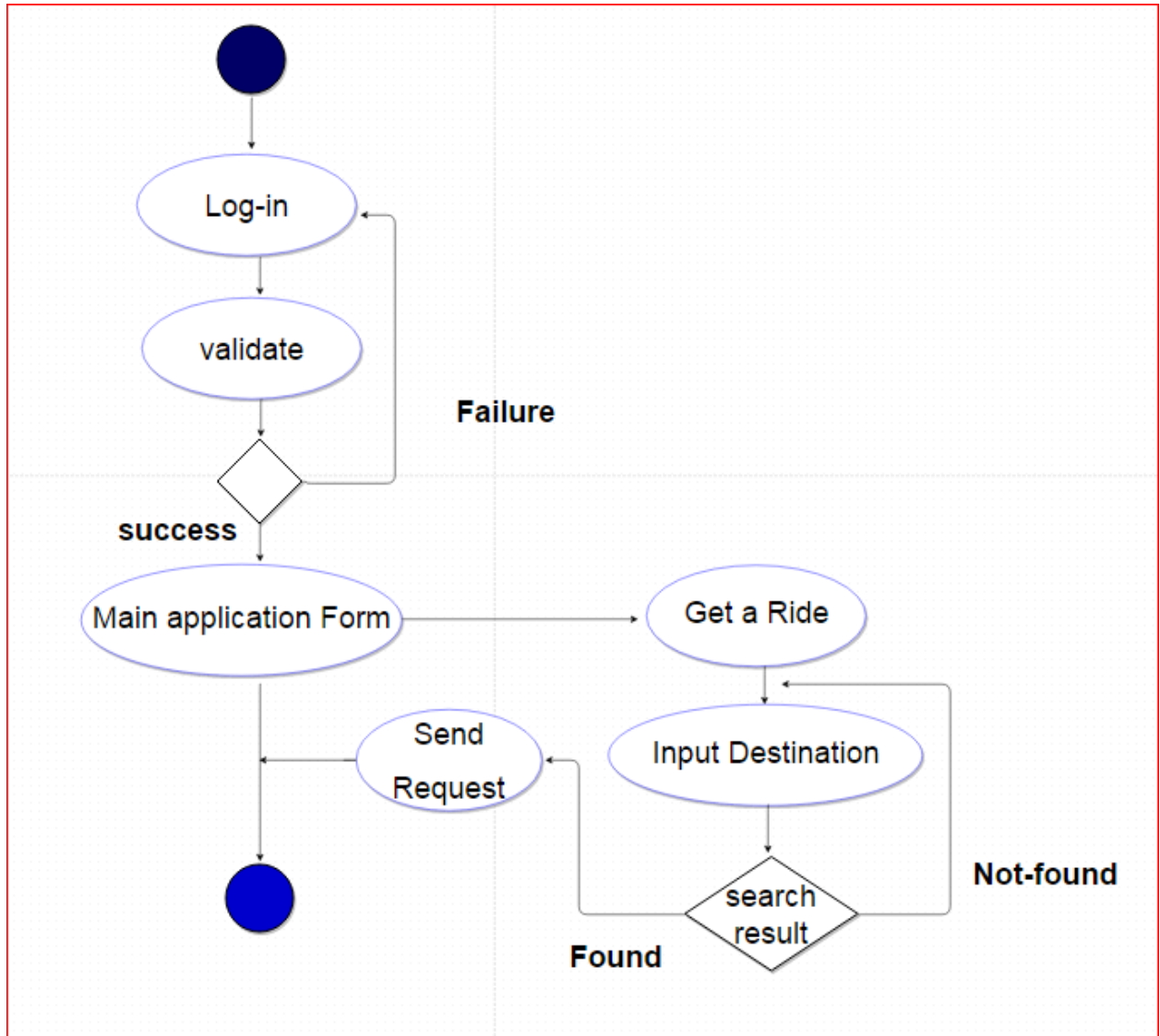


Figure 14 Get a Ride DFD

4.5-Sequence Diagram

A sequence diagram is visual representation of the processes performed by the system in a particular scenario. Following are the sequence diagrams of the VSS system.

4.5.1 Sequence diagram Registration

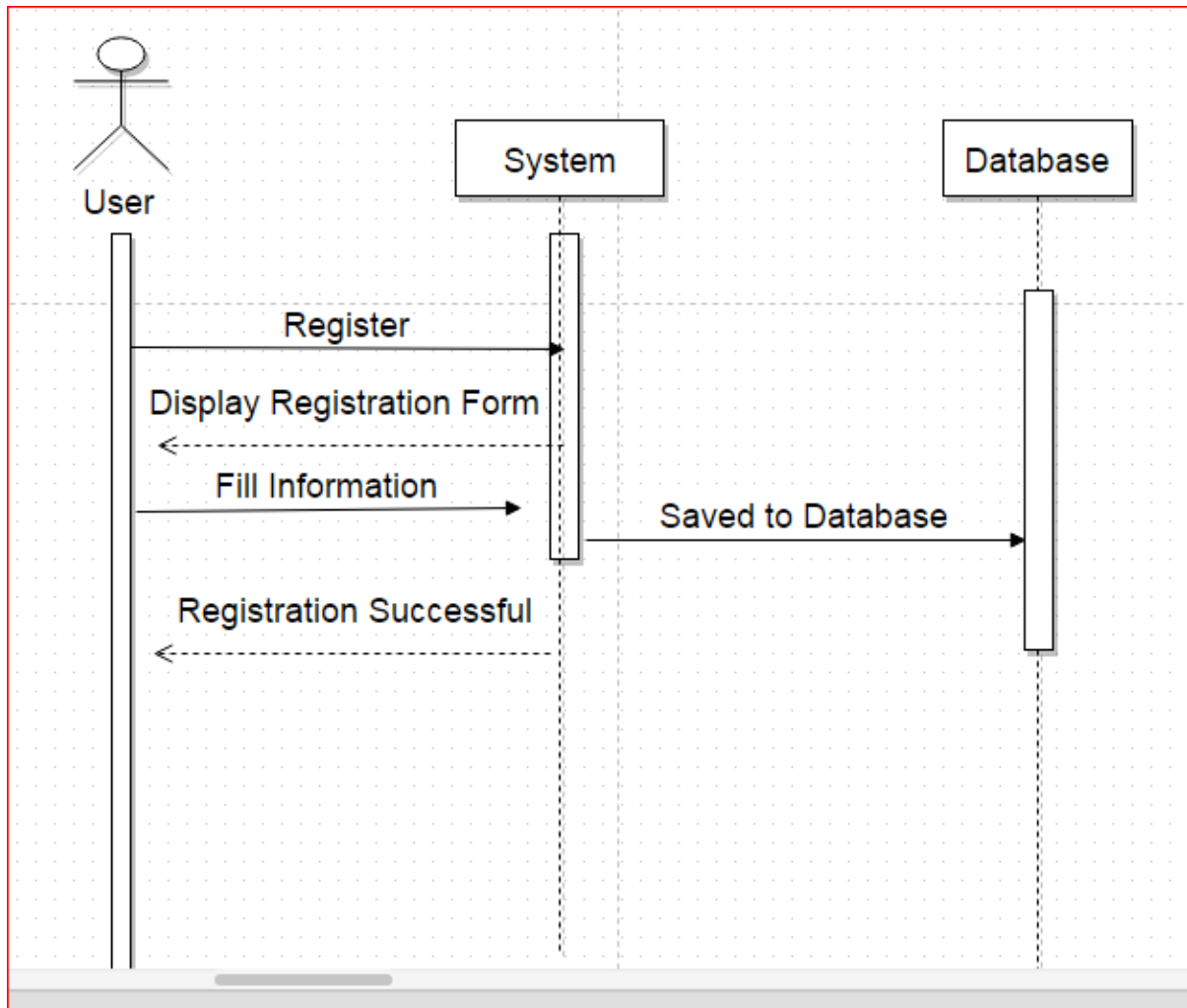


Figure 15 Registration Sequence Diagram

4.5.2- Sequence diagram Login

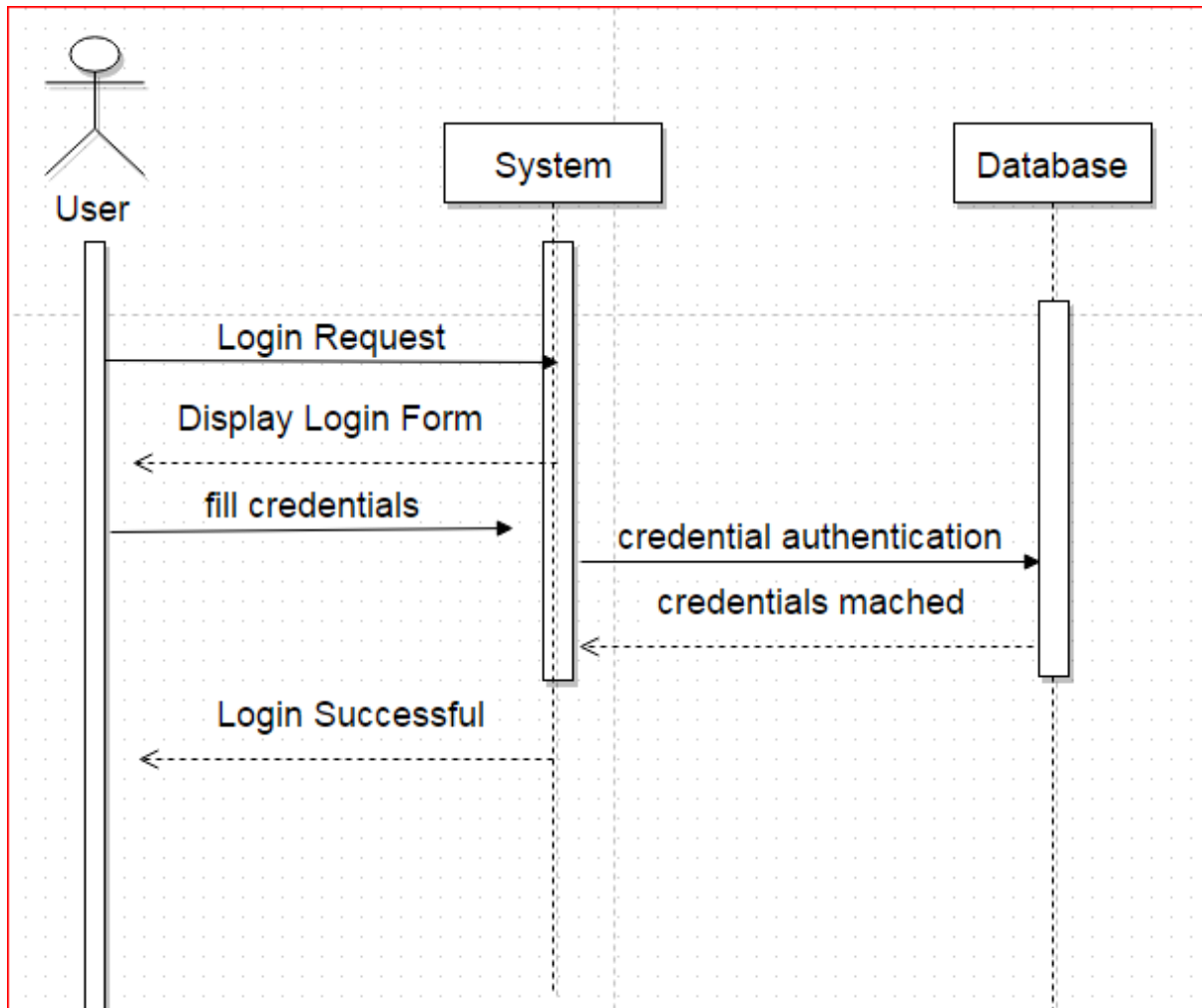


Figure 16 Login Sequence Diagram

4.5.3 Sequence diagram Add a Trip

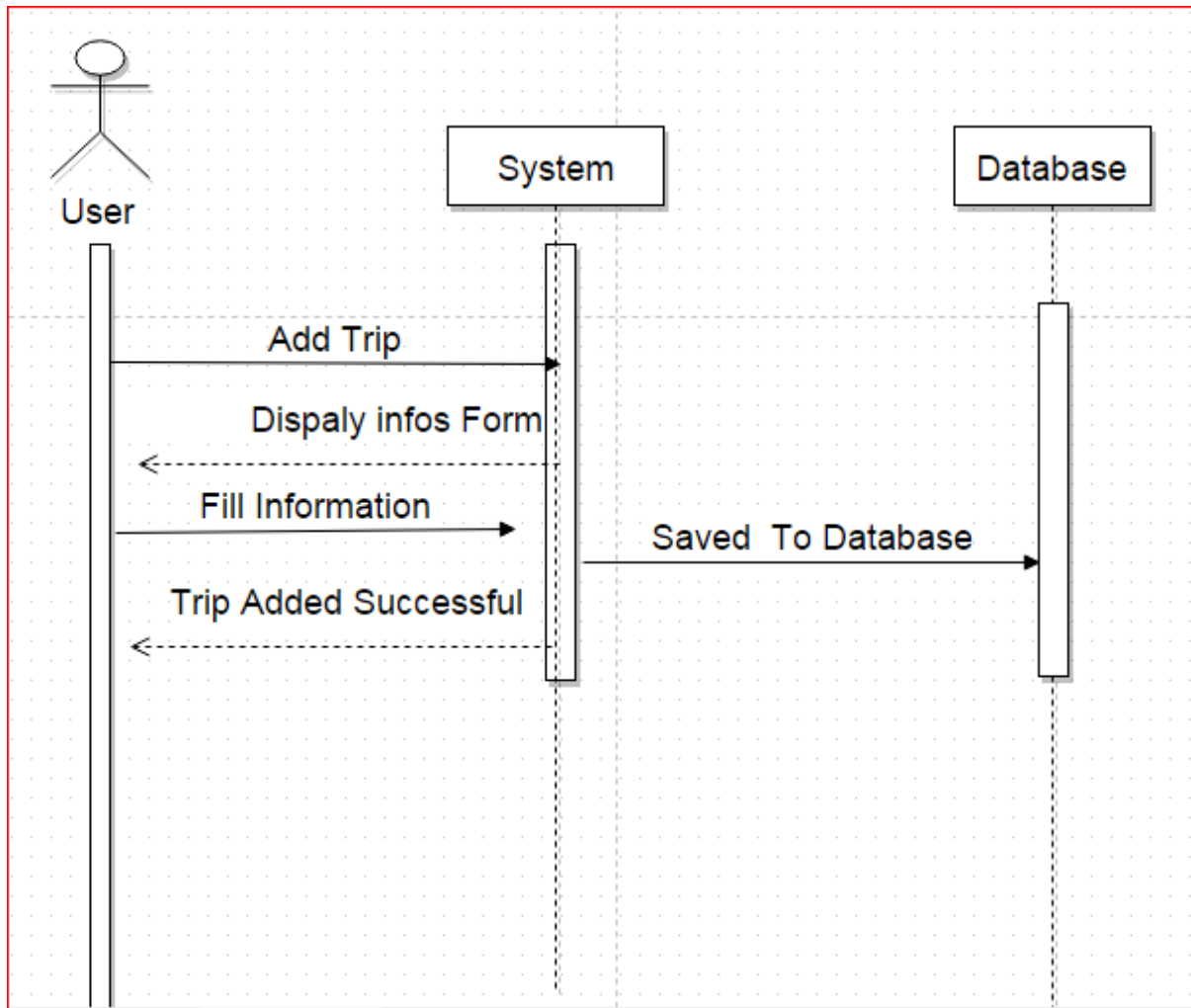


Figure 17 Add a Trip Sequence Diagram

4.5.4-Sequence diagram Search a Trip

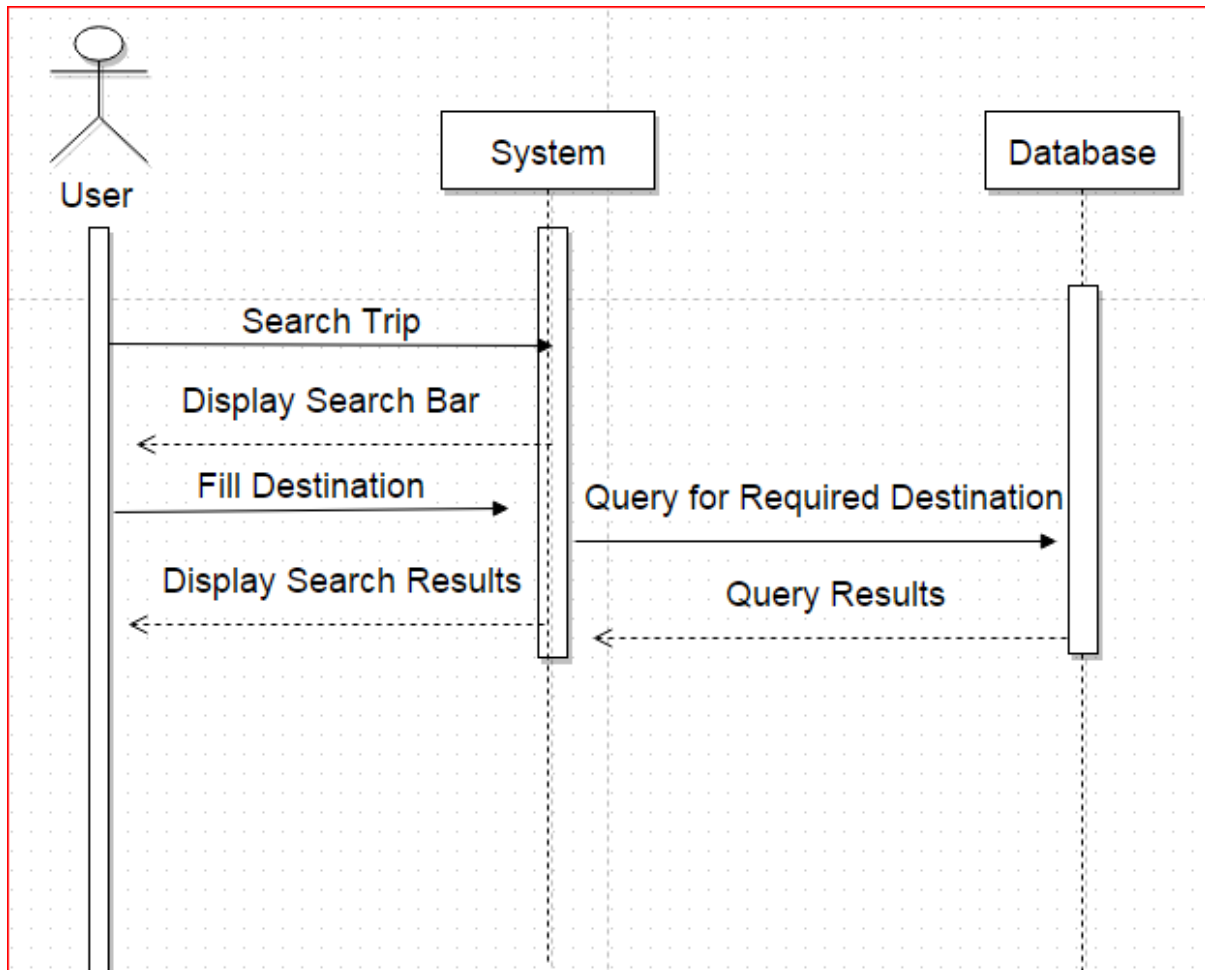


Figure 18 Search a Trip Sequence Diagram

4.5.5 Sequence diagram Edit Personal Information

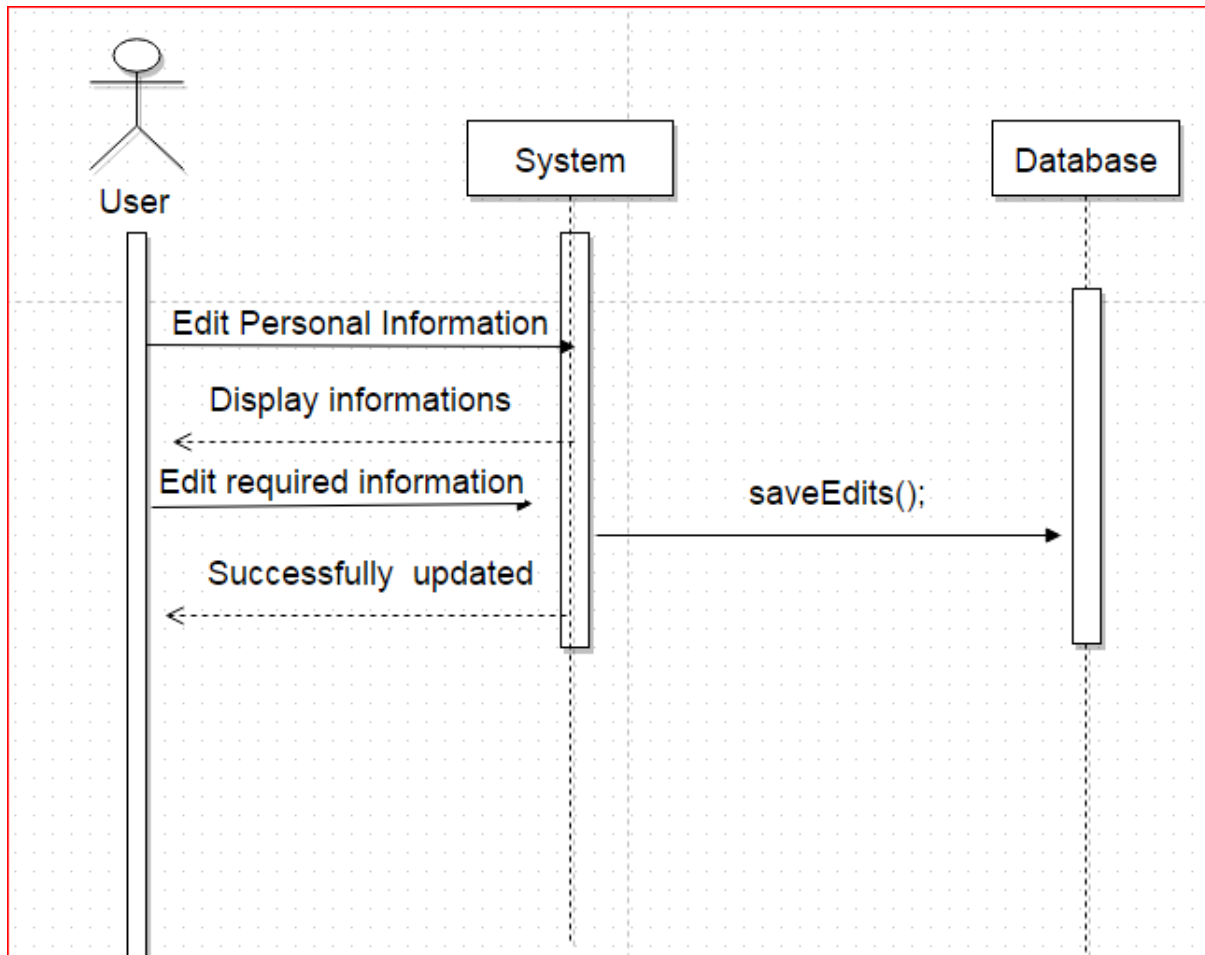


Figure 19 Edit Personal Information Sequence Diagram

4.5.6 -Security

Our database is secured and only registered users can use our database for querying their data by providing user name and password

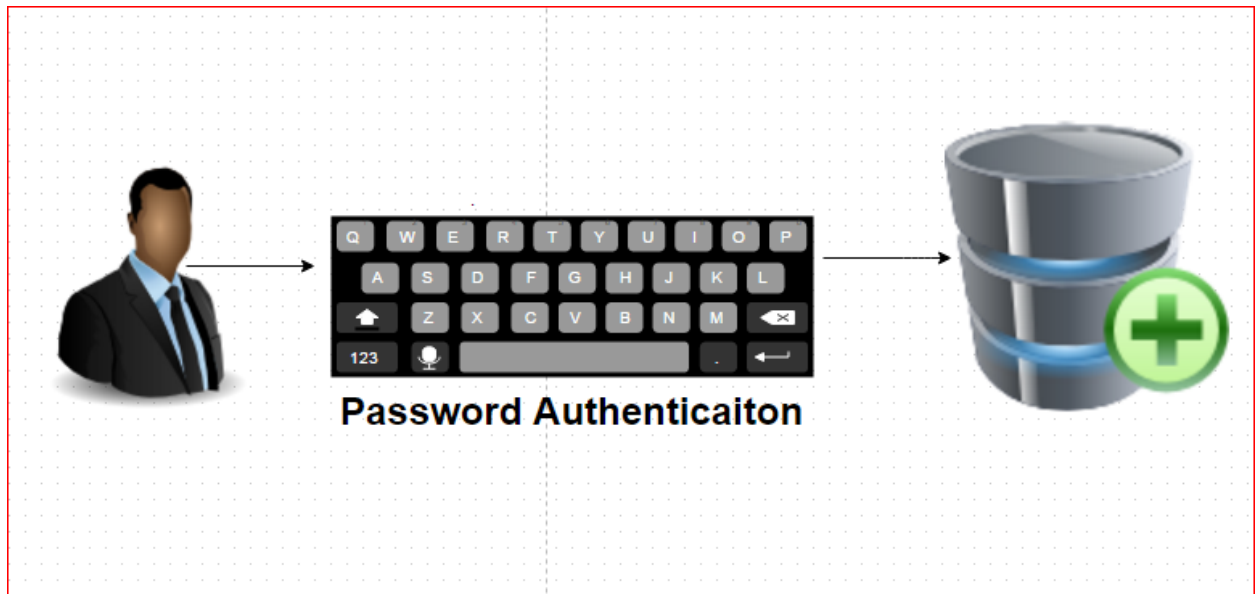


Figure 20 Password Authentication

4.5.7-Deployment Diagram

Deployment diagrams are used to visualize the topology of the physical components of a system where the software components are deployed. Following is the Deployment diagram of VSS that describes the Functioning view of the system.

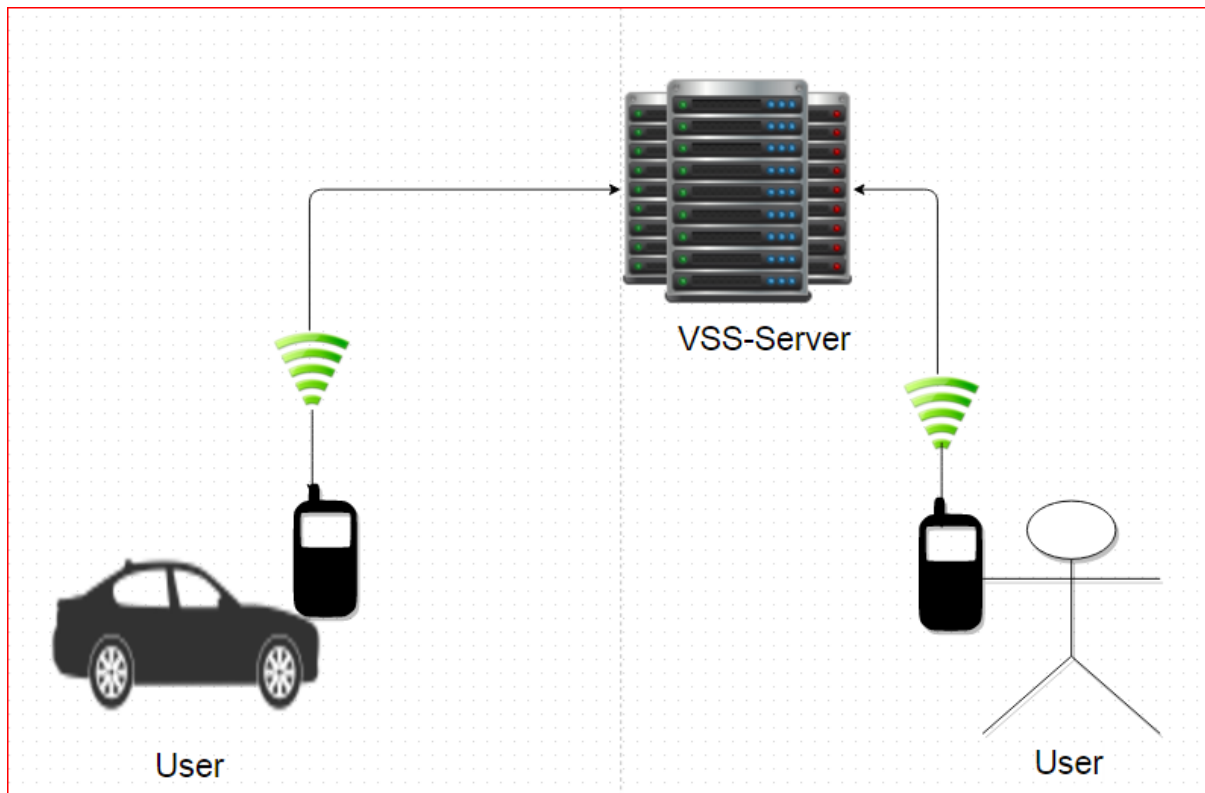


Figure 21 VSS Deployment Diagram

4.5.8-Low Level Design

This area gives low-level outline depictions that specifically bolster development of modules. Normally this segment would be split into separate documents for distinctive areas of the configuration. For each component we now need to break it down into its fundamental units or modules. For an OO implementation in Java, our components would become packages. At that point the low level outline will take each package and break it down into its classes.

4.5.9-Database Design

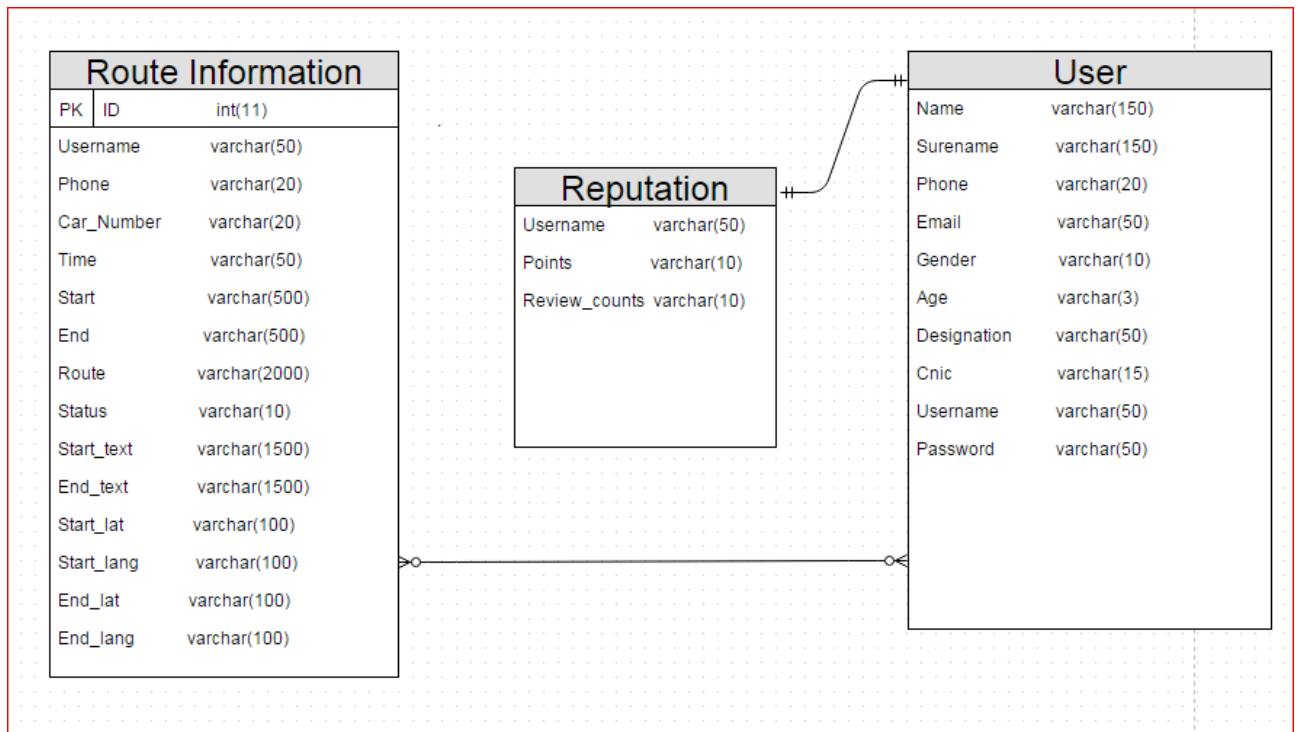


Figure 22 Database design

4.6-GUI Design

Following are the graphical user interface design.

4.6.1-Application Loading

Taking after diagrams demonstrates the behavior of our application while loading.

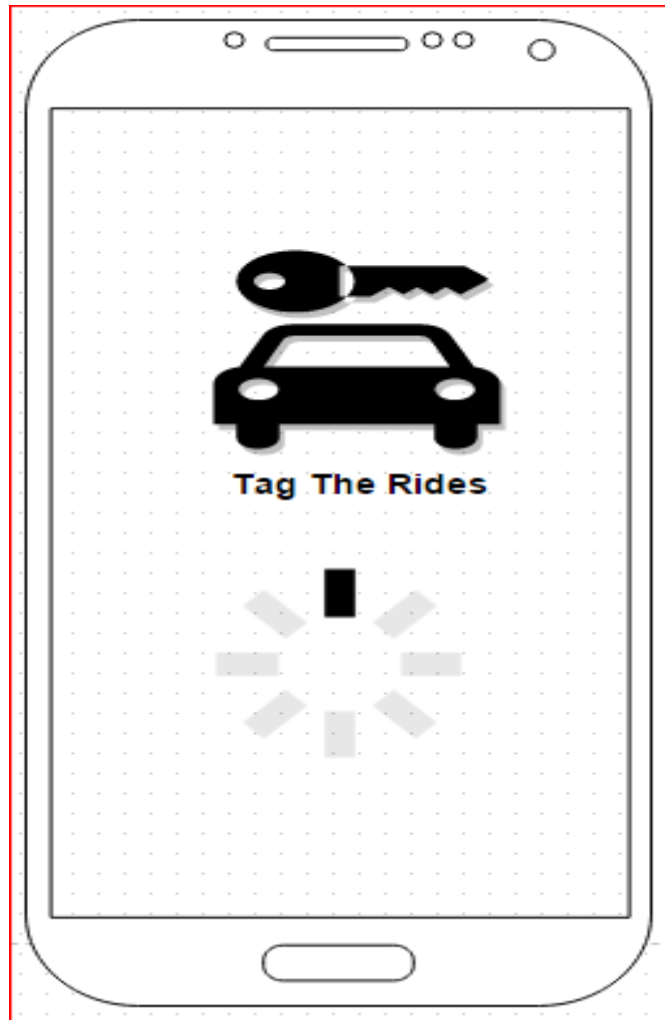


Figure 23 Application Loading GUI

4.6.2-Welcome Screen

This is the welcome screen and it appears after loading of application.



Figure 24 Application Sign-In GUI

4.6.3-Application Dashboard

Following graphical user interface describes the main dashboard of the application which provides main functioning mechanism to the users.



Figure 25 Application Dashboard

4.6.4-User Profile/Edit Personal Informaiton

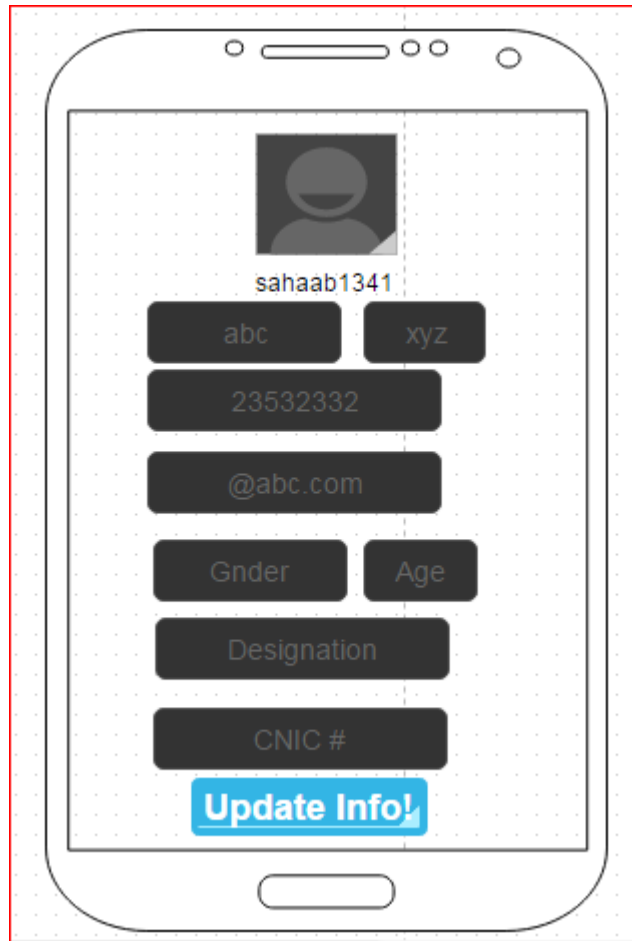


Figure 26 Application Edit Personal Area GUI

4.6.5-Get a Lift

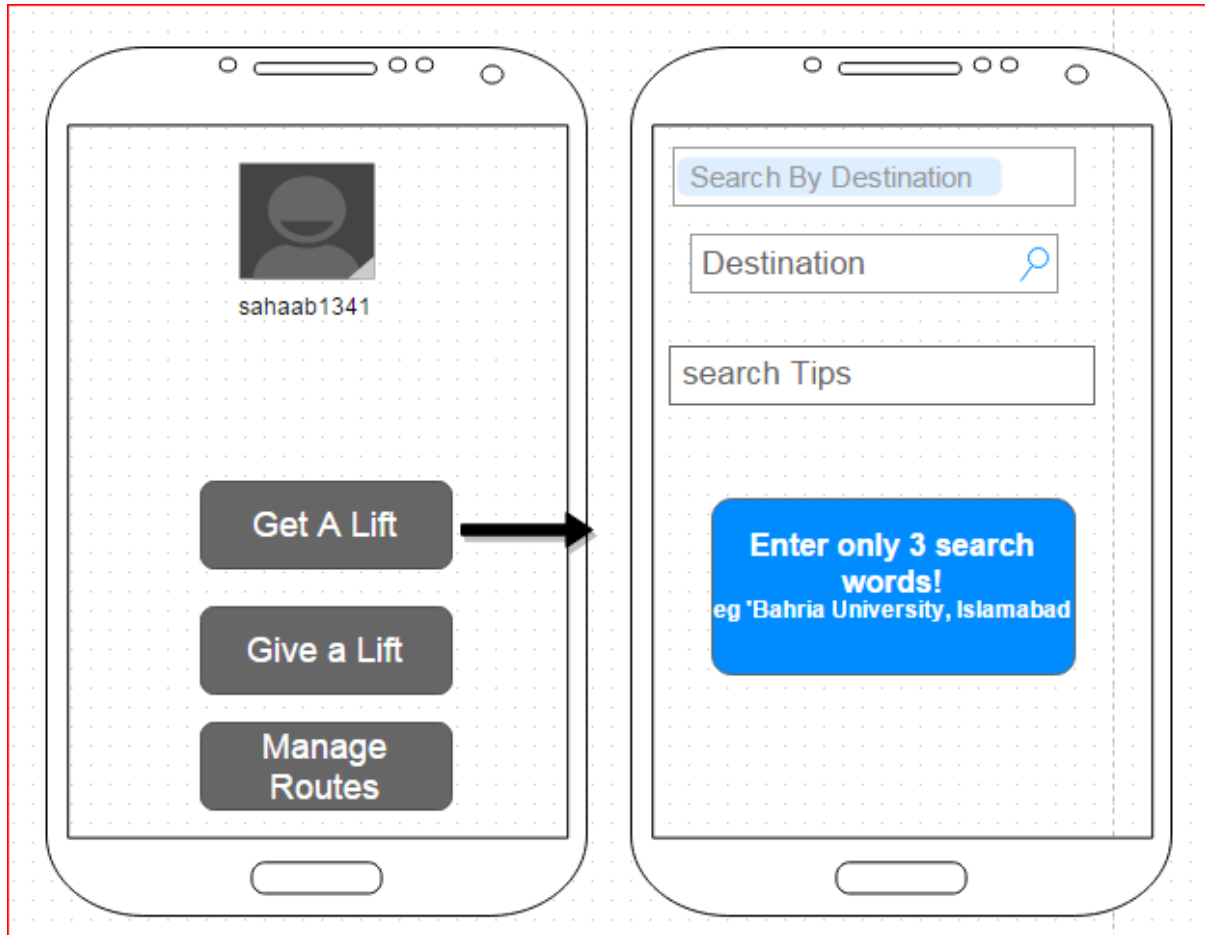


Figure 27 Get a Lift GUI

4.6.7-Give a lift

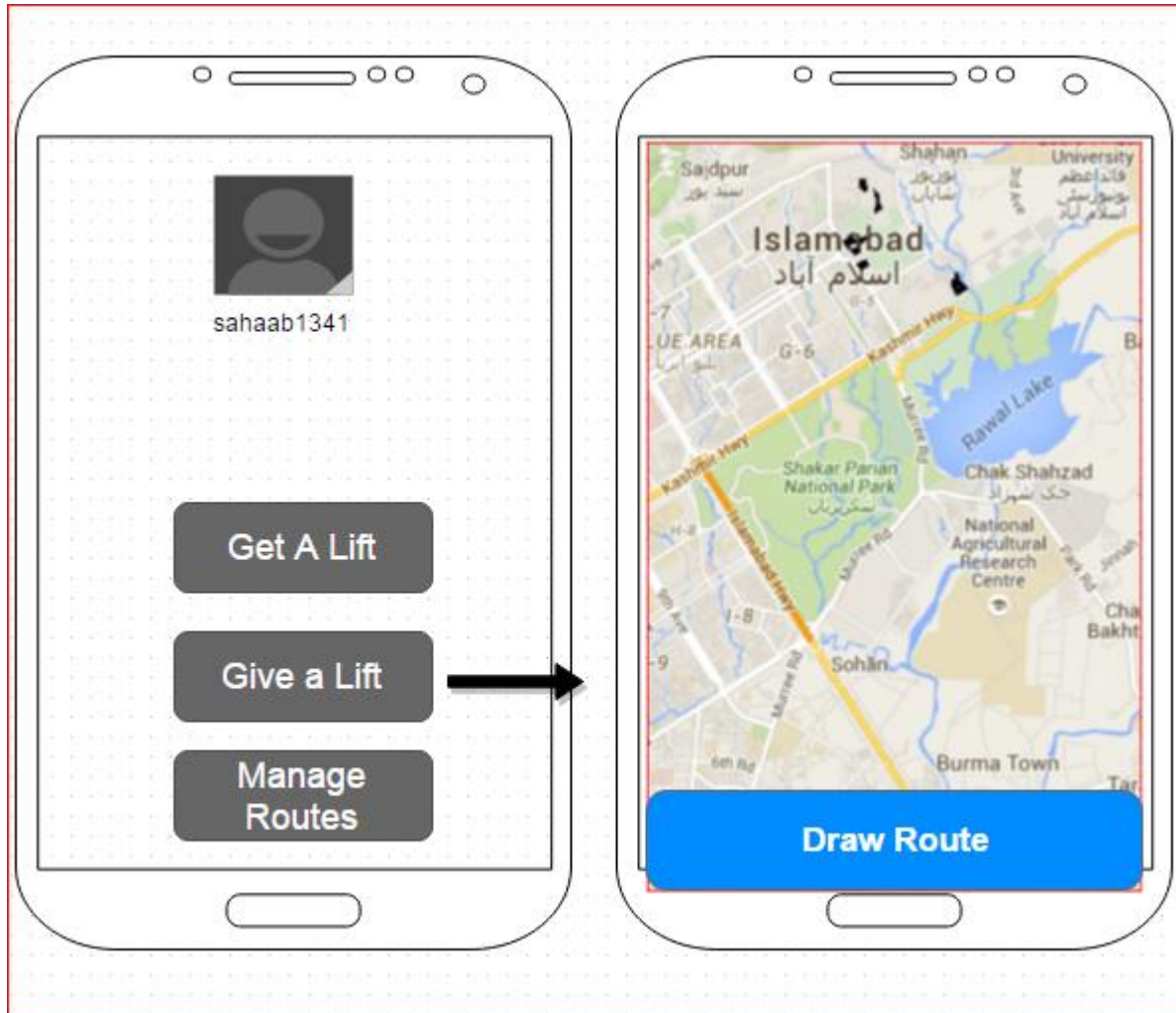


Figure 28 Give a Lift GUI

Chapter # 5

5. System Implementation

5.1-System Architecture

Describe the architecture e.g. in terms of: System internal components, Functionality of the components, Communication between the components

5.2-Tools and Technology Used

We used the following tools for the compliance of our project.

Web-Server

Eclipse Juno

Note pad

Google Map API

Mobile Phones

5.3-Development Environment/Languages Used

We used the following languages for the design and development of the various components of the VSS system.

- HTML
- CSS
- SQL
- JAVA SCRIPT
- PHP
- JAVA

5.4-Processing Logic/Algorithms

5.4.1-Registration

Registration functionality is most important in VSS. Keeping in mind the end goal to become a member of Vehicle Sharing System; the member must enlist with the system database. Without the information of member being put away amid this registration prepare the traveler cannot become the member of VSS and can't utilize VSS. The goal of the registration is to create member account (store members personal information to the VSS database) so that the members can sign into their account of VSS system by giving their login id and password. There is a registration form on the android application of the VSS where a user can get registered with the system by simply providing basic information. There are some mandatory fields given on the application form marked by * as can be seen in the figure (some figure no).user must should fill these filed in order for registration to be successful. After all information is entered press Submit button on the form for the submission of data to the database. Following is the mock-up for registration process.

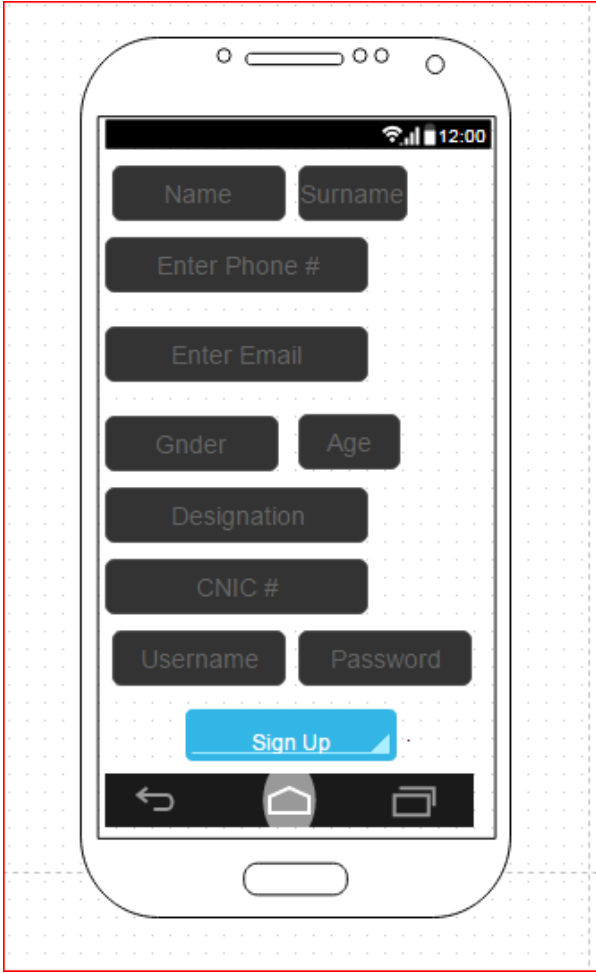
A mock-up of a mobile registration form on a smartphone screen. The form includes input fields for Name, Surname, Enter Phone #, Enter Email, Gender, Age, Designation, CNIC #, Username, and Password. A blue 'Sign Up' button is at the bottom. The screen also shows a status bar with signal, Wi-Fi, and battery icons, and a time of 12:00. The bottom navigation bar has back, home, and recent apps icons.

Figure 29 Registration Form

5.4.2-Validation in registration

In order to get successful registration with the system the user must have to follow the rules given below. These are the basically validation rules for input the data into registration form.

S.no	Criteria	Description
1	Invalid or Missing required filed(*)	User must have provided information on registration form indicated by (*).
2	User name Validation	<ol style="list-style-type: none">1. User name can contain letter, digits and special characters.2. User name should be unique for every user.3. Blanks or spaces are not allowed in user names.
3	Password Validation	<ol style="list-style-type: none">1. Password must be 6-12 characters long and can contain letters and digits.2. Blanks and spaces are not allowed in passwords.
4	Validate Phone Number	Phone number must be 10 digit number.as VSS is a local application so there is no need of International dialing code.
5	Validate e-mail Address	e-mail must have the following: <ol style="list-style-type: none">1. “@” character before the mail service provider name.2. At least one character exist in the email address.3. Must be letter, digits or

		<p>combination of both and also allowed “.,””@” character only.</p> <p>4. First letter must be letter or digit.</p> <p>5. Not allowed the “.” Character right after the “@” character.</p> <p>Eg.ehtsham.12@gmail.com</p>
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Table 6 Validation in Registration

5.4.5-Storing Data

The accompanying area will explain how the member's information will be store in the database amid the registration process. Outlined the database by keeping in perspective that the access to the database should be fast and there ought to be no delay and database can be accessed as fast as conceivable because the time of VSS clients are extremely valuable for us. All the data will be put away in the database named as "VSS-DB" the database contains many tables for putting away information of the VSS clients. Tables are logically related with each other for giving faster access to the data.VSS-DB has the tables listed below:

5.4.6-Edit Personal Information

The edited personal information capacity allows the client to audit and edit their personal information on the off chance that they are entered wrong or on the off chance that they are altered at later stages. At the point when a member moves, wants to change his/her telephone number or wants to change his/her name or address then the member can do as such by utilizing the Edit personal information feature. The VSS members can use this feature after signing in to their accounts. When a member want to make changes he/she will required to login with his/her account and a form will retrieve his/her personal information for database and present it on a form where an option is given for editing information. An “**update**” button is placed at the same form for inserting the updated data into database. A VSS user can edit/update all information except username provided at the time of registration. A user must need to press “**update**” button after filling required filed in order for the updating of information.

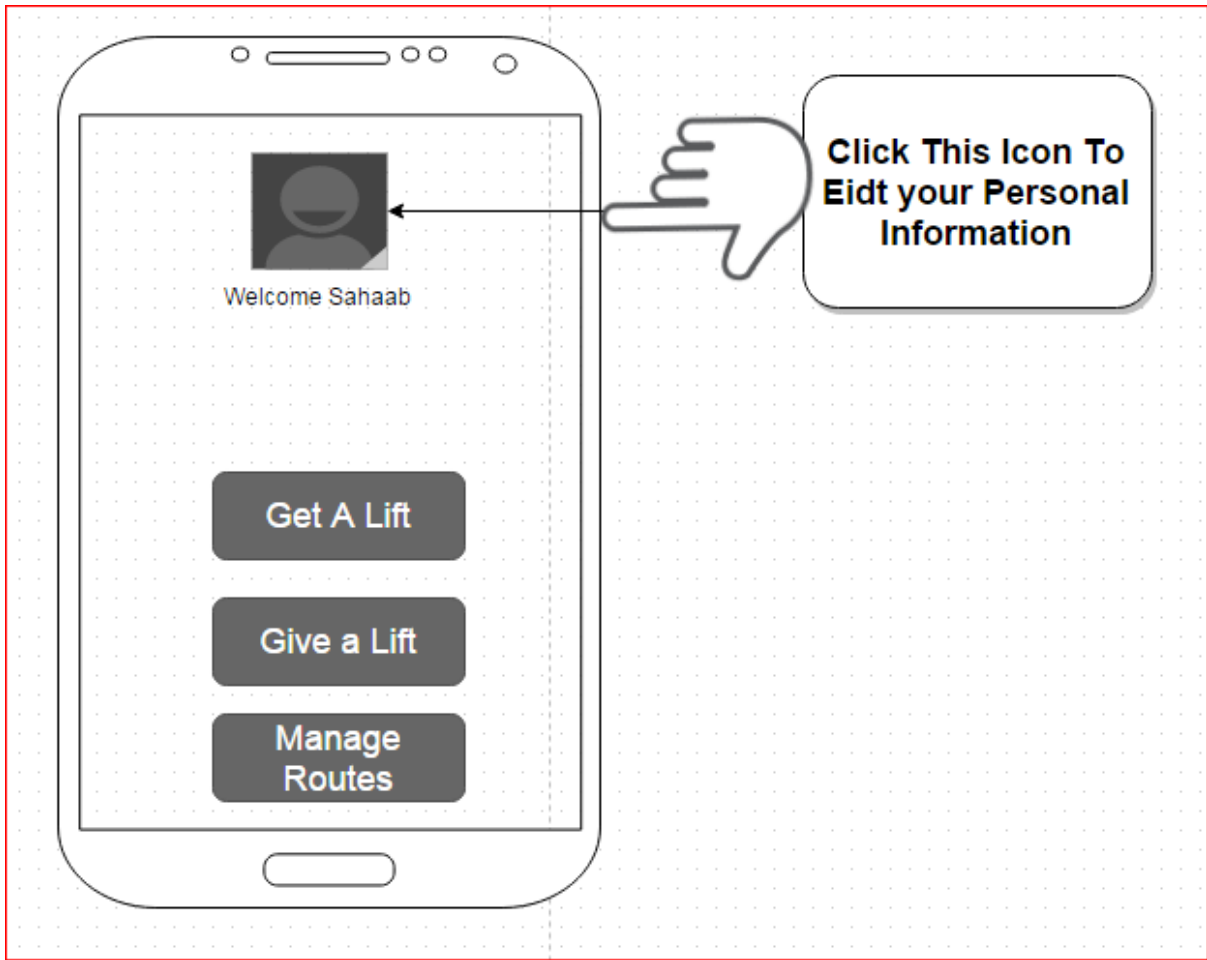


Figure 30 Edit Information Form

There are some required fields in the edit personal information form marked by (*) that a user must complete to update the information successfully. All the validation that is required during the edit personal information process is described in the following table.

S.no	Criteria	Description
1	Invalid or Missing required fields(*)	User must have provided information on registration form indicated by (*).
2	User name Validation	<ul style="list-style-type: none"> 4. User name can contain letter, digits and special characters. 5. User name should be unique for every user. 6. Blanks or spaces are not allowed in user names.

3	Password Validation	<p>3. Password must be 6-12 characters long and can contain letters and digits.</p> <p>4. Blanks and spaces are not allowed in passwords.</p>
4	Validate Phone Number	Phone number must be 10 digit number.as VSS is a local application so there is no need of International dialing code.
5	Validate e-mail Address	<p>e-mail must have the following:</p> <p>6. “@” character before the mail service provider name.</p> <p>7. At least one character exist in the email address.</p> <p>8. Must be letter, digits or combination of both and also allowed “.”,”@” character only.</p> <p>9. First letter must be letter or digit.</p> <p>10. Not allowed the “.” Character right after the “@” character. Eg. ehtsham.12@gmail.com</p>
S.no	Criteria	Description
1	Invalid information or Required field (*) missing	Information entered should be correct. You must fill up the required filed indicated by (*).

2	Validate User Name	<p>7. User name must be containing letters, digits or special characters.</p> <p>8. User name should be unique, choose other user name if it already exists in VSS database.</p> <p>9. No space allowed between the characters in user name.</p>
3	Validate Password	<p>5. Password must be 6-12 characters long and either letters, digits or combination of both.</p> <p>6. No space is allowed between the characters.</p>
4	Validate Phone Number	<p>Phone number must be 10 digit number.as VSS is a local application so there is no need of International dialing code.</p>
5	Validate e-mail Address	<p>e-mail must have the following:</p> <p>11. Must have only one “@” character before the mail service provider name.</p> <p>12. At least one character exists in the email address.</p> <p>13. Must be letter, digits or combination of both and also allowed “.,”@” character only.</p> <p>14. First letter must be</p>

		<p>letter or digit.</p> <p>15. Not allowed the “.” Character right after the “@” character. Eg.ehtsham.12@gmail.com</p>
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Table 6 Edit Personal Information

5.4.7-VSS Search for Rides/Trip

VSS clients are required to search individuals/car-poolers who offers rides joining to their transport stops. The VSS search functionality is specifically reliant on the data gave by the VSS members that is saved in the VSS-DB. Incomplete information of the clients in the database may affect the VSS search/carpool Search. The goal of this feature is to furnish a VSS member with information pertaining to different VSS members that live in close areas/locality giving carpooling administration. This current feature's performance time is based on the no of rides/carpools offered in particular area. For example, to complete the VSS search of 10,000 members of a particular area could take several seconds.to lessen search time database is separated into many tables for faster access to the data.

5.5-Application Access Security

Password authentication is required in order to use application. Our application only allows registered users to use it. Unknown people can't access and hence they can't log-in.

5.6-Database Security

All the text fields in any form have been programmed in such a way that it is not possible to insert “,” or “=” characters. This is to ensure that it is impossible to apply sequel injection to break into the system.

Chapter # 6

**6. System Testing and
Evaluation**

6.1 Introduction

It is the procedure of executing system with the purpose of discovering mistakes. The primary goal of system testing is to guarantee that the Product functionality meets the requirement specifications.

6.2 Usability Testing

Ease of use testing is a way to measure the simplicity with which the framework can be used. The comfort picking in order to test is completed a specimen of delegate customers and allowing them to use the application. Later, the feedback of the customers can be recorded to perceive the ease of utilization issues and resolve them

6.3 Software Performance Testing

It is the software testing that is performed to decide how quick some part of a framework performs under a specific workload. Performance testing can fill distinctive needs. It can exhibit that the framework meets execution criteria.

6.4 Compatibility Testing

It is the process of verifying that the application runs on different version of operating system as well as all android supporting mobiles/devices.

6.5 Load Testing

The main purpose of load test is to check the behavior of system under a specific workload. In this test we verified that our application works correctly under a particular workload.

6.6 Installation Testing

This is the final stage of testing where the application is ready to install. The tests concentrate on two things: fulfillment of the installed application and check of any functional or non-functional requirements that may be affected. We have installed this application on distinctive versions of android which comprises of diverse operating systems like "kit-Kat" and "jellybeans", it installed and executed effectively.

6.7 Usability Testing

6.7.1 Test Cases 1: Sign-Up to VSS

Test Case ID		TC_FUNCT_01	
Description		Test to verify that application's registration process	
Applicable for		Android phones	
Requirements		REQ_FUNCT_01	
Initial condition		Application should be complete for use	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Verify the application registration process	Pass/fail
Test Case ID		TC_FUNCT_01	
Description		Test to verify that application's registration process	
Applicable for		Android phones	
Requirements		REQ_FUNCT_01	
Initial condition		Equipment is set up as per Equipment Setup section. Application is installed on system. User enters valid user profile name to login.	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Verify the application registering the applicants	Pass/fail

Table 7 Test Cases 1: Sign-Up to VSS

6.7.2 Test Cases 2: Sign-In to VSS

Test Case ID		TC_FUNCT_02	
Description		Test to verify that application sing-up the registered users correctly	
Applicable for		Android phones	
Requirements		REQ_FUNCT_01	
Initial condition		User should must be registered with the VSS database	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Verify that the application signs in the registered users	Pass/fail
Test Case ID		TC_FUNCT_02	
Description		Test to verify the application sign-in process	
Applicable for		Android phones	
Requirements		REQ_FUNCT_01	
Initial condition		Equipment is set up as per Equipment Setup section. Application is installed on system. User enters valid user profile name to login.	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Verify that the application sign-in form appears	Pass/fail
3		Verify that sign-in form's input fields are working and getting right inputs	
4		Verity the data validation rules on input data	

Table 8 Test Cases 2: Sign-In to VSS

6.7.3 Test Cases 3: Edit Information

Test Case ID		TC_FUNCT_03	
Description		Test to verify the edit personal information function	
Applicable for		Android phones	
Requirements		REQ_FUNCT_02	
Initial condition		Equipment is set up as per Equipment Setup section. Application is installed on system. User enters valid user profile name to login.	
Steps	Full/regr	Tasks and expected results	
1.		Click on profile sign to view you information form	
2.		Verify that the edit personal information function works correctly	Pass/fail
Test Case ID		TC_FUNCT_03	
Description		Test to verify the user's Edit personal information function	
Applicable for		Android phones	
Requirements		REQ_FUNCT_02	
Initial condition		User must be login with the application	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Sign-in with the application	Pass/fail
3		Open edit personal information form by clicking on profile image sign	
4		Edit your required Information	
5		Verify that data validation is applied	
6		Press update button to verify that information are updated in database	

Table 9 Test Cases 3: Edit Information

6.7.4 Test Cases 4: Give a Lift

Test Case ID		TC_FUNCT_04	
Description		Test to verify the Give Lift Function of Application	
Applicable for		Android phones	
Requirements		REQ_FUNCT_02	
Initial condition		User should must be Sign-In with the VSS Application	
Steps	Full/regr	Tasks and expected results	
1.		Click on Give a Lift Button	
2.		Verify that Application's Give a lift Function Works Correctly	Pass/fail
Test Case ID		TC_FUNCT_04	
Description		Test to Verify that Application's Get a Ride Function Works Correctly	
Applicable for		Android phones	
Requirements		REQ_FUNCT_02	
Initial condition		Equipment is set up as per Equipment Setup section. Application is installed on system. User enters valid user profile name to login.	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Sign-in with the application	Pass/fail
3		Verify the Give Lift Tab by clicking it and moving on next form	
4		To verify the reservation by drawing desired	
5		To Verify that data validation is applied for Date, vehicle_No and Contact No	

Table 10 Test Cases 4: Give a Lift

6.7.5 Test Cases 5: Making Contact with carpooler

Test Case ID		TC_FUNCT_05	
Description		Test to Verify that Application enables users to make contact with each-other effectively	
Applicable for		Android phones	
Requirements		REQ_FUNCT_02	
Initial condition		User must be login with the application	
Steps	Full/regr	Tasks and expected results	
1.		Open the application	
2.		Sign-in with the application	Pass/fail
3		Verify that the application sends auto generated message to the partner/carpooler.	
4		To verify that both of users can initiate sessions for communication	

Table 11 Test Cases 5: Making Contact with carpooler

Chapter # 7

7. Conclusion

7.1 Conclusion

Back in time phones were only the way of voice communication, but now it is not the same case anymore. Voice communication is just one aspect of mobile phones. With the introduction of Smartphone, mobile phone is used for many aspects such as social networking, web-browsing and GPS services.

There are many problems in the world that affects our environment and our society. One of the problems is air pollution caused by gasoline-operated automobiles. As the number of automobiles is increasing day by day this is causing the traffic congestion on roads. An effective to control this problem is a Carpool system. This enables group of people to share daily driving times and expenses and help reduce air pollution and number of automobiles on roadways. From environmental point of view the primary aim of carpooling is to take drivers out of their cars by providing a cheaper alternative which is, at the same time almost as quick and comfortable (compared to local transportation).

7.2 Future Enhancements

After going through the surveys, we came to know that there is a huge scope of this application and there are many features which we will add in future.

- An instant chat messenger which will provide a user to chat.
- Most appropriate route search feature.
- Giving users to add display picture on their dashboard.

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