**COMSATS University Islamabad,**
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# Car Bazar

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***Bachelor of Science in Computer Science (2016-2020)***

The candidate confirms that the work submitted is their own and appropriate credit has been given where reference has been made to the work of others.

**COMSATS University Islamabad,**
**Park Road, Chak Shahzad, Islamabad Pakistan**

# Car Bazar

**A project presented to**

**COMSATS University Islamabad**

**In partial fulfillment**

**of the requirement for the degree of**

***Bachelor of Science in Software Engineering (2016-2020)***

**By**

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It is to certify that the final year project of BS (SE) "Car Bazar" was developed by **SYED AON RAZA (CIIT/FA16-BSE-058)**, **KHIZAR KHAN (CIIT/ FA16-BSE-066)** and **ANMOL WAJID (CIIT/ FA16-BSE-105)** under the supervision of "Mr. Tehseen Riaz Abbasi" in his opinion; it is fully adequate, in scope and quality for the degree of Bachelors of Science in Software Engineering.

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# Executive Summary

In the present time, it is very difficult for a person to buy a product like car by visiting different showrooms. Also, it is very time consuming to visit all websites, search for products and get them compared to select one option. Similar well-known software system like motorscube.com, cars4u.com.pk and carfirst.com do not provide the option of searching by voice or by textual data. These systems don't have any Chatbots for the general assistance of the users. The ads on these systems only have the 2D images, that might result in misrepresentation of the product by the seller. Also, there is no guide/user book available on these systems for the new users, who want to interact with the system. For some buyers it is difficult to choose that what is the best product for them, that will fulfil all of their requirements. This type of feature that will recommend the best for the user, is not available on many known websites. Neither of these websites provides viewing newly launched cars to be viewed by the user perspective.

Car Bazar is a web and Smartphone Application that provides an interactive platform to buyers and sellers of cars, this system uses data from other internet sources because it is very time consuming to search for required product by searching it site to site. Car Bazar gets all data from other sites and show it to user on one place, which will be time efficient. Car Bazar is showing 3D models of cars so that user can get a real-time view of what they intend to purchase: these 3D models will be used to view those cars in AR (Augmented Reality) and also using a VR-box (Virtual Reality).

Car Bazar allows buyers to search for required car, by applying advanced search filters. It also provides general assistance to users by a virtual representative regarding any information about cars and providing assistance in using Car Bazar's different features. Car Bazar allows sellers to post video ads of cars, to provide buyers a real look and feel of the cars. The system will recommend buyer a car on the basis of their requirements by using an algorithm so as to help them make a decision about what to purchase from possible options.

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All praise is to Almighty Allah who bestowed upon us a minute portion of His boundless knowledge by virtue of which we were able to accomplish this challenging task.

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And we are also thankful to our parents and family who have been a constant source of encouragement for us and brought us the values of honesty & hard work.

# Abbreviations

| | |
|---|---|
| **SRS** | Software Requirement Specification |
| **PC** | Personal Computer |
| **MERN** | Mongo DB, Express.js, React, Node.js |
| **JS** | JavaScript |
| **SDLC** | Software development Lifecycle |
| **SRS** | Software Requirement Specification |
| **SDD** | Software Design Document |
| **AR** | Augmented Reality |
| **VR** | Virtual Reality |

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# 1 Introduction

According to a dawn news survey in year 2017 almost 160,000 cars have been sold, this number increases by 20% every year from 2004 to 2017. Manual process of car purchasing is considered to be very time consuming and still not efficient, Car Bazar is automating the process and bringing an evaluation to the auto-mobile industry.
The scope document defines the boundaries of the Car Bazar, what would or would not be included in the final product. This document specifies the problem that existing systems have and also a solution to those problems in an effective way. Document gives a brief comparison of motorscube.com, cars4u.com.pk and carfirst.com with Car Bazar stating the weaknesses of those systems and how Car Bazar is going to overcome those problems, providing Car Bazar a Business advantage over other systems.
Scope document also defines briefly main features of the system. The scope document also explains the limitations of the system, process methodologies, tools and technologies used to develop the system, role of the major participants, stakeholders and Sponsors.

## 1.1 Brief Overview

Car Bazar is an automated system for the buying and selling of cars, so user do not have to visit different showrooms. Also, Car Bazar will fetch all the ads about the specific car from other websites over the internet and display them in one place, this will be time efficient for the user. User can also search for required cars by adding cars features by using text parameters, which will cater the problem of buying the car. System will also have a Chatbots who will a virtual representative of system, it will provide general assistance to users and resolve their queries. Car Bazar will show video ads of all the available cars so that every buyer can have a look at the make and model of the car they are going to purchase, in this way buyers can have nearly the real view of the car, so they cannot be misguided. Car Bazar will show users models of cars in the Augmented form to view the sizing and coloring details of a specific car model, using VR box users can view interior and exterior of a car as well. Car Bazar also recommendation algorithm that will recommend cars based on the reviews and votes on car models. Whenever any seller or buyer get stuck in using the Car Bazar system, there will be a help option available so as to make system interactive and easy to learn.

## 1.2 Relevance to Course Modules

Below are the concepts that we will apply while implementing this system:

### 1.2.1 Concept 1: Augmented Reality

Augmented Reality is a concept in which a user can see the image of the object by residing it in a real world with the help of System generated visuals. In this project when a user search for some can, then can also see their image in Augmented Reality having the real-like view of the car.

### 1.2.2 Concept 2: Databases

Storing of any information electronically on a computer system and accessing it in a format which is the demand of the end user. This stored data can be manipulated when the user interacts with the system. Databases also allows only controlled access so that to maintain a privacy of the user and provide them security and integrity of data.

### 1.2.3 Concept 3: Web scrapping

Web scrapping is a technique to fetch/extract a huge amount of data from all over the internet/websites or some specific websites. Car Bazar will use web scrapping to extract data of car relevant to the user query and search method. Data will be first stored into the database and then, will be displayed to the users in specific view templates.

### 1.2.4 Concept 4: Image processing

Image processing is a method to enhance the image quality or to extract some useful information from it. One of the main purposes of image processing in this project is to distinguish between the objects in image. When user will make search query by an image then it will be checked that weather is it a car or not. Then the car object will be extracted from the image to perform the relevant search.

### 1.2.5 Concept 5: Artificial intelligence

Artificial intelligence is a concept of software engineering that emphasizes on production of intelligent software/machines that act like humans. In this project concept of artificial intelligence will be used to train Chatbots on some specific dataset of cars and natural language, so that it can help users in getting information/statistics of the cars.

### 1.2.6 Concept 6: Mobile Development

Mobile application development is a process by which we develop application that can run on the smart phone devices. These mobile applications are written to serve for a specific purpose and take advantage of the features that those mobile devices have.

### 1.2.7 Concept 7: Website Development

Website development is a programming technique that enable us to get the desired functionality as per the stakeholder's requirements. Website development includes client-side, server-side scripting. These websites are hosted over the internet to access them remotely anywhere from the internet.

## 1.3 Project Background

According to a dawn news survey in year 2017 almost 160,000 cars have been sold, this number increases by 20% every year from 2004 to 2017. Manual process of car purchasing is

considered to be very time consuming and still not efficient, Car Bazar is automating the process and bringing an evaluation to the auto-mobile industry.
The scope document defines the boundaries of the Car Bazar, what would or would not be included in the final product. This document specifies the problem that existing systems have and also a solution to those problems in an effective way. Document gives a brief comparison of motorscube.com, cars4u.com.pk and carfirst.com with Car Bazar stating the weaknesses of those systems and how Car Bazar is going to overcome those problems, providing Car Bazar a Business advantage over other systems.
Scope document also defines briefly main features of the system. The scope document also explains the limitations of the system, process methodologies, tools and technologies used to develop the system, role of the major participants, stakeholders and Sponsors.

## 1.4 Literature Review

In Pakistan around 17% of the cars business is done by the 3 major working websites pkmotors.com, car4u.com.pk and pakwheels.com. These systems are working not in way to at least get half shares of the market towards them.

**Table 1: Related System Analysis with Car Bazaar**

| Application Name | Weakness | Proposed Project Solution |
|---|---|---|
| Motorscube.com | • No video ads<br>• No car recommendation | Car Bazar is providing users a real-life experience of the products which they are going to spend money on. Before exiting will compare all those cars and show them a best possible option. |
| Car4u.com.pk | • No reviews.<br>• Pictures are not mandatory. | Dealers/showroom will have rating and reviews by the buyers which will help other buyers to enlist trusted sellers. Video ads will be mandatory for every ad so that users cannot have misconception about any car they are purchasing. |
| Carfirst.com | • No help option<br>• No chatbot | Car Bazar will provide an interactive user-interface and a virtual representative 24/7 available to help users in decision making. Users will be guided about the system usage by the help menu. |

## 1.5 Methodology and Software Lifecycle for this Project

Below are the details of software process methodologies and the design methodologies that will be used for the development of Car Bazar.

### 1.5.1.Software process methodology:

To process the Car Bazar, we used incremental. The choice of these methodology is based on the fact that to minimize the risk of development in short time spans called iterations.

#### 1.5.2.Design methodology:

To develop Car Bazar, we will be using Object oriented model. Object oriented model for the development of the android application using native java, this model allows reusability and consistency within the project.

# 2 Problem Definition

This chapter will discuss the problems which are faced in developing the project. The different solutions that can be chosen from to solve the problem and which is the best.

## 2.1 Problem Statement

In the present time, it is very difficult for a person to buy a product like car by visiting different showrooms. Also, it is very time consuming to visit all websites, search for products and get them compared to select one option. These websites do not provide efficient way of searching a specific product. Similar well-known software system like motorscube.com, cars4u.com.pk and carfirst.com do not provide the option of searching by voice or by textual data. These systems don't have any Chatbots for the general assistance of the users. The ads on these systems only have the 2D images, that might result in misrepresentation of the product by the seller. Also, there is no guide/user book available on these systems for the new users, who want to interact with the system. For some buyers it is difficult to choose that what is the best product for them, that will fulfil all of their requirements. This type of feature that will recommend the best for the user, is not available on many known websites. Neither of these websites provides viewing newly launched cars to be viewed by the user perspective.

## 2.2 Deliverables and Development Requirements

Following deliverables are required for the Car Bazar project:

- Scope Document
- SRS Document
- SDS Document
- Test Plan
- Final Report
- Project Source Code
- Apk
- Posters and Vedios

## 2.3 Tools and Technologies

Following are the Tools and Technologies that will be used to develop the system and implement the features described.

**Table 2: Tools and Technologies for Car Bazar**

| | **Tools** | **Version** | **Rationale** |
|---|---|---|---|
| **Tools And Technologies** | Pycharm | 3.2.8 | Scientific python development environment |
| | Android Studio | 3.4 | Mobile application development |
| | Visual Studio Code | 1.36 | IDE |
| | Mongo | 4.0.8 | DBMS |
| | MS Word | 2016 | Documentation |
| | MS Power Point | 2016 | Presentation |
| | Pencil | 3.0.4 | Mockups Creation |
| | Unity 3D | 2019 | Game engine |
| | Blender | 2.80 | Modeling |
| | ARcore | 2019 | Augmented Reality |
| | **Technology** | **Version** | **Rationale** |
| | Node | 12.0.0 | Framework |
| | React JS | 7.0. | Web front-end |
| | Python | 3.7.2 | Programming language |
| | Native Java | 10 | Programming language |

## 2.4 Current System

Currently systems that are available for the purpose of selling and buying of cars none of them is providing searching efficiently, users have to visit site by site to look for the alternatives and find the best possible solution. Car bazar is providing its users with the web and android application keeping user's interest at the priority. Car bazar makes it easy for its users to choose between possible options by recommending the best one according to their needs.
Furthermore, car bazar has the Augmented and Virtual Reality models so that a user can have the real-like experience of the car they are interested in buying.
For the assistance of their users car bazar have a virtual representative in their application that could answer and solve any ambiguities that users might have while using the application.

# 3 Requirement Analysis

To elicit requirements for Car Bazar brainstorming among the project members created some questions in the mind of members. Interviews and questionnaires from the supervisor solved

those queries. To understand the format and standards Document analysis of previous students of COMSATS university's final year student was also done.

#### 1.1.1. Questionnaire:

We ask people about the problems they usually face in buying and selling of cars. On the basis of this data we evaluated that what should be included in the system.

#### 1.1.2. Interviews:

Data gathering approach used for Car Bazar is flexible interviewing of the key stakeholder. This interview also had question related to the problems we are facing with the manual process and need for developing this system. This interview had to do pre-determined questions, on the basis of one response from the stakeholders next question from the interviewer was based on the confusions in their mind, to understand the functionality of the system.

## 3.1 Use Case(s) Diagram:

Below are the use case diagrams of the Car Bazar system actor-wise:

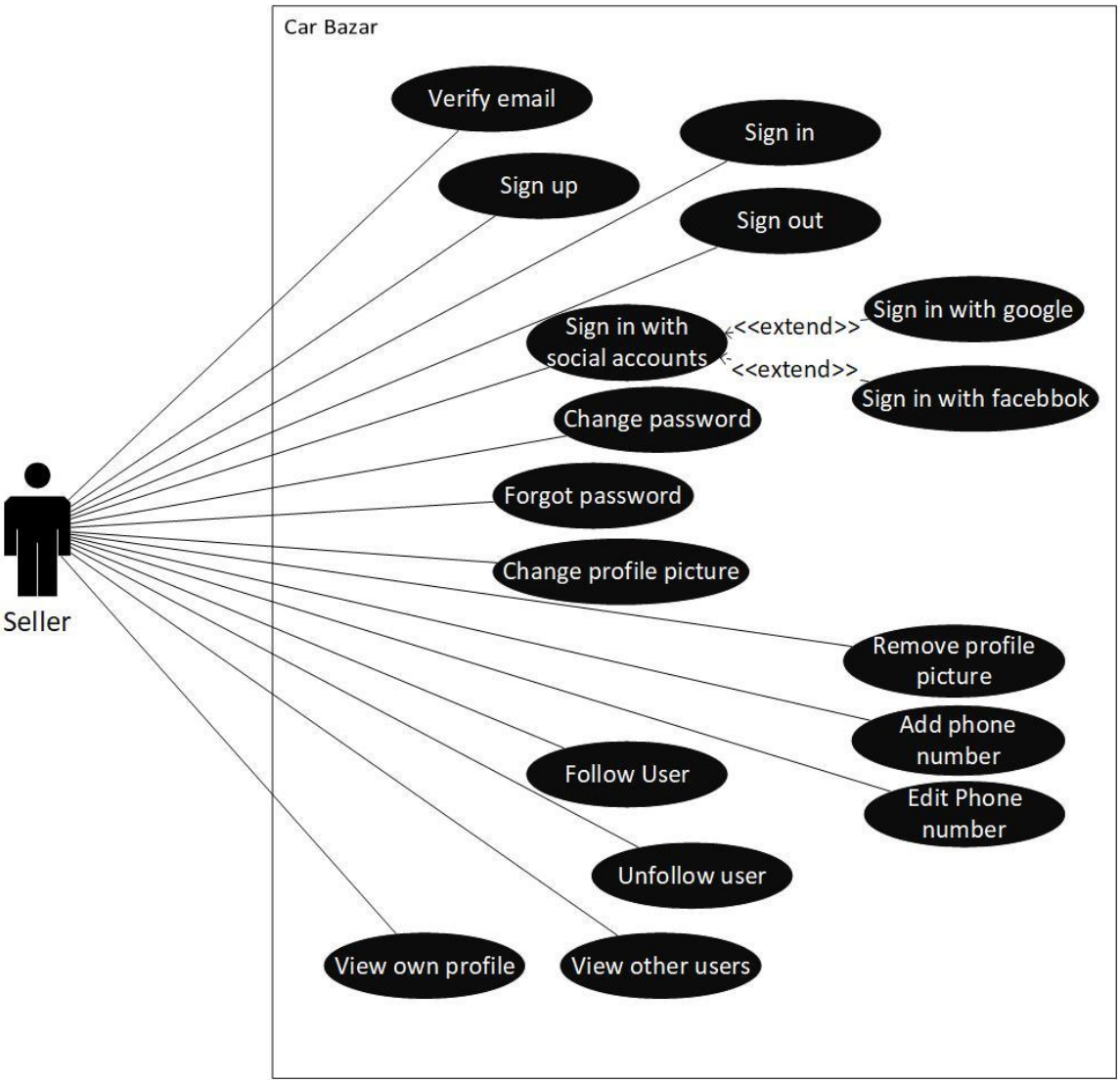


**Figure 1-Use Case Diagram: Actor seller**

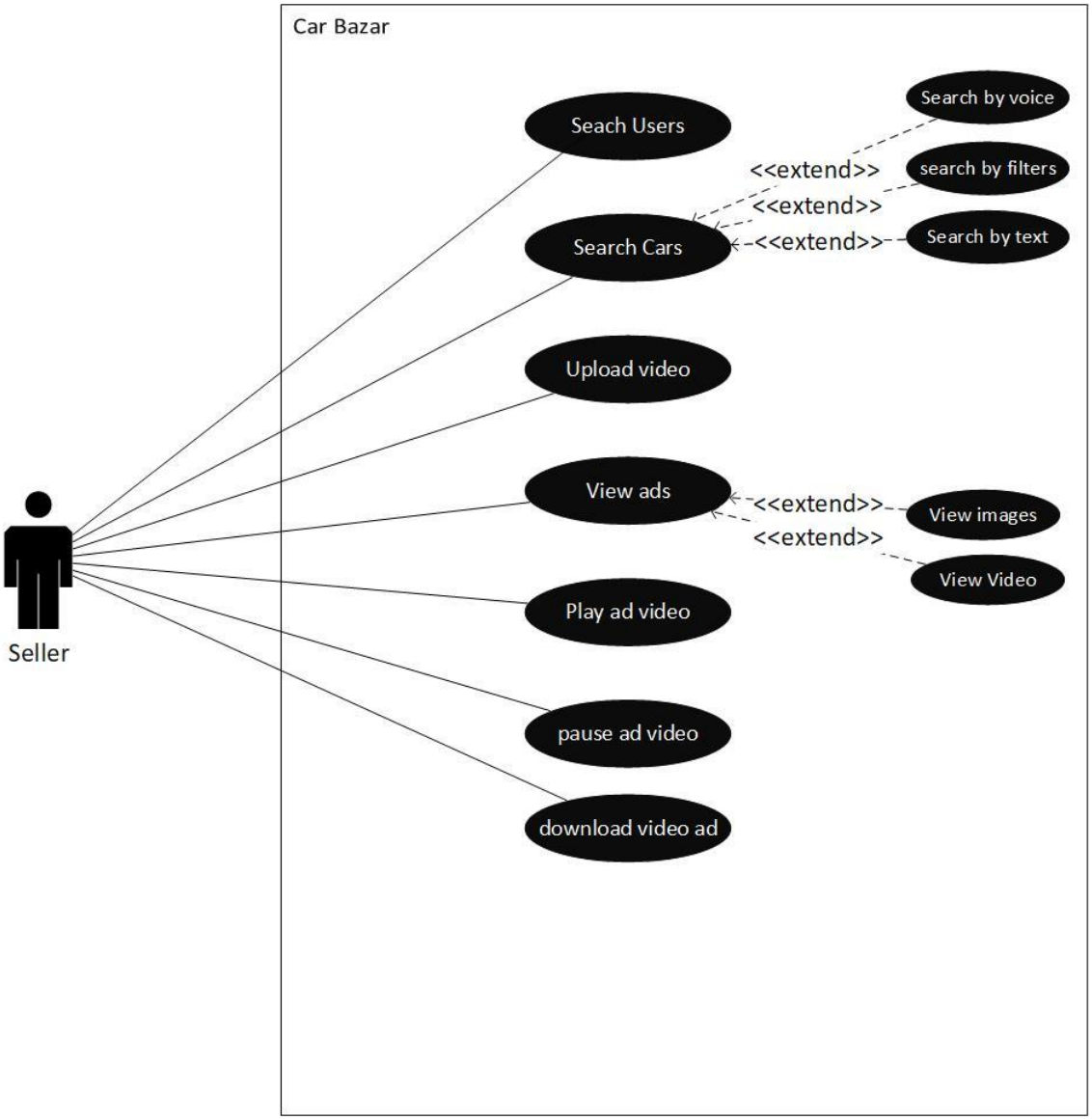


**Figure 2- Use Case Diagram:: Actor seller**

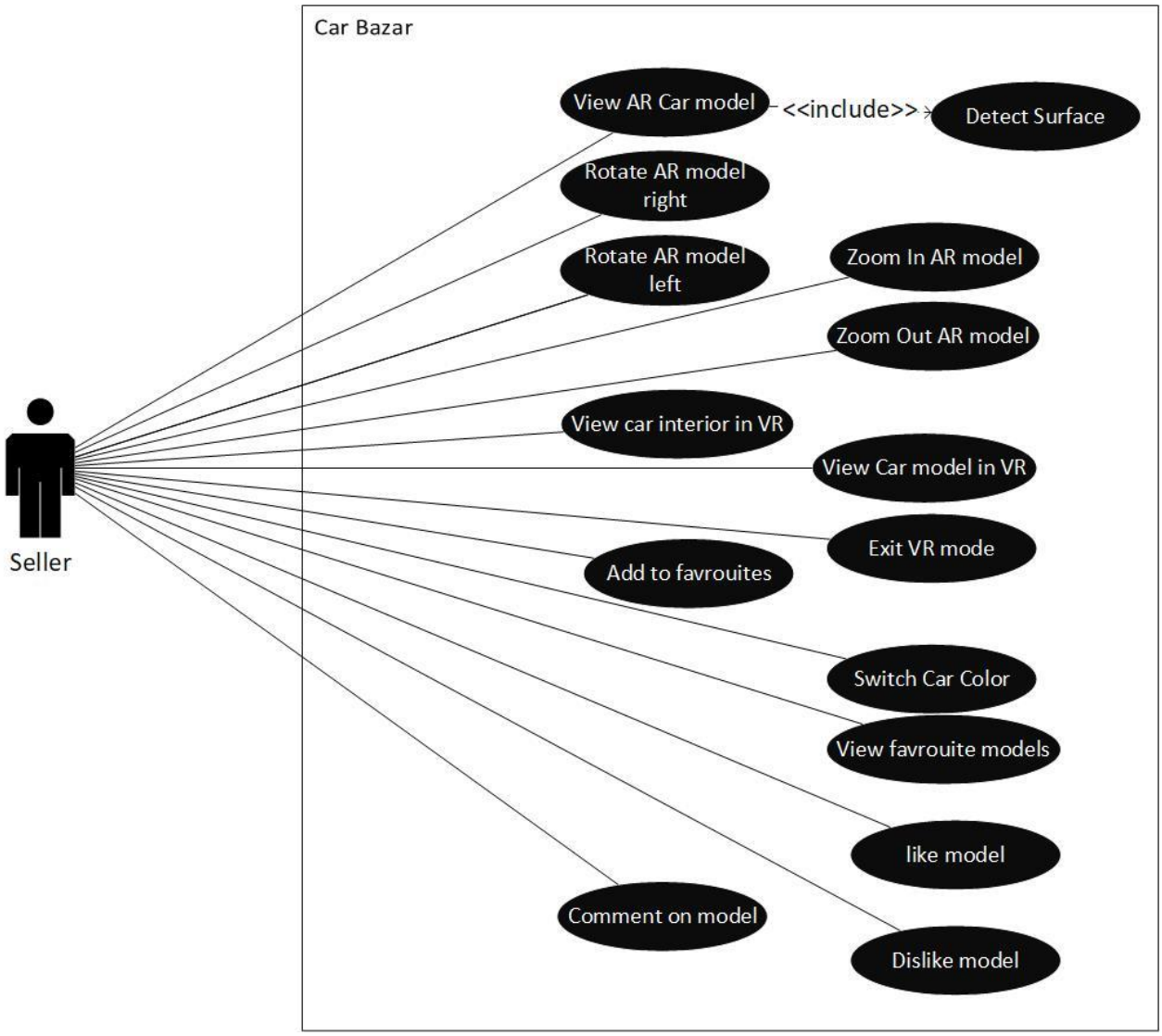


**Figure 3- Use Case Diagram:: Actor Seller**

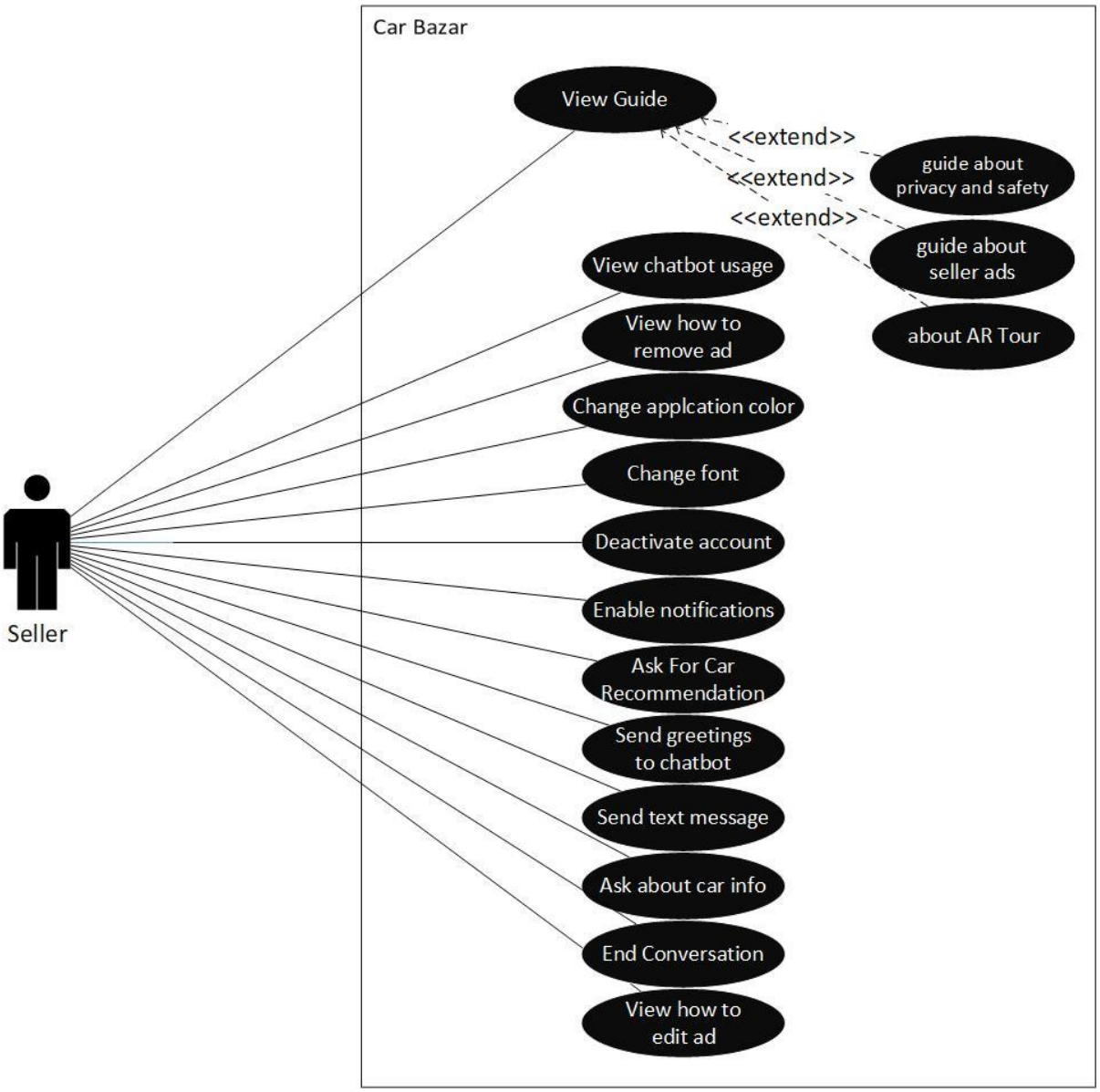


**Figure 4- Use Case Diagram:: Actor seller**

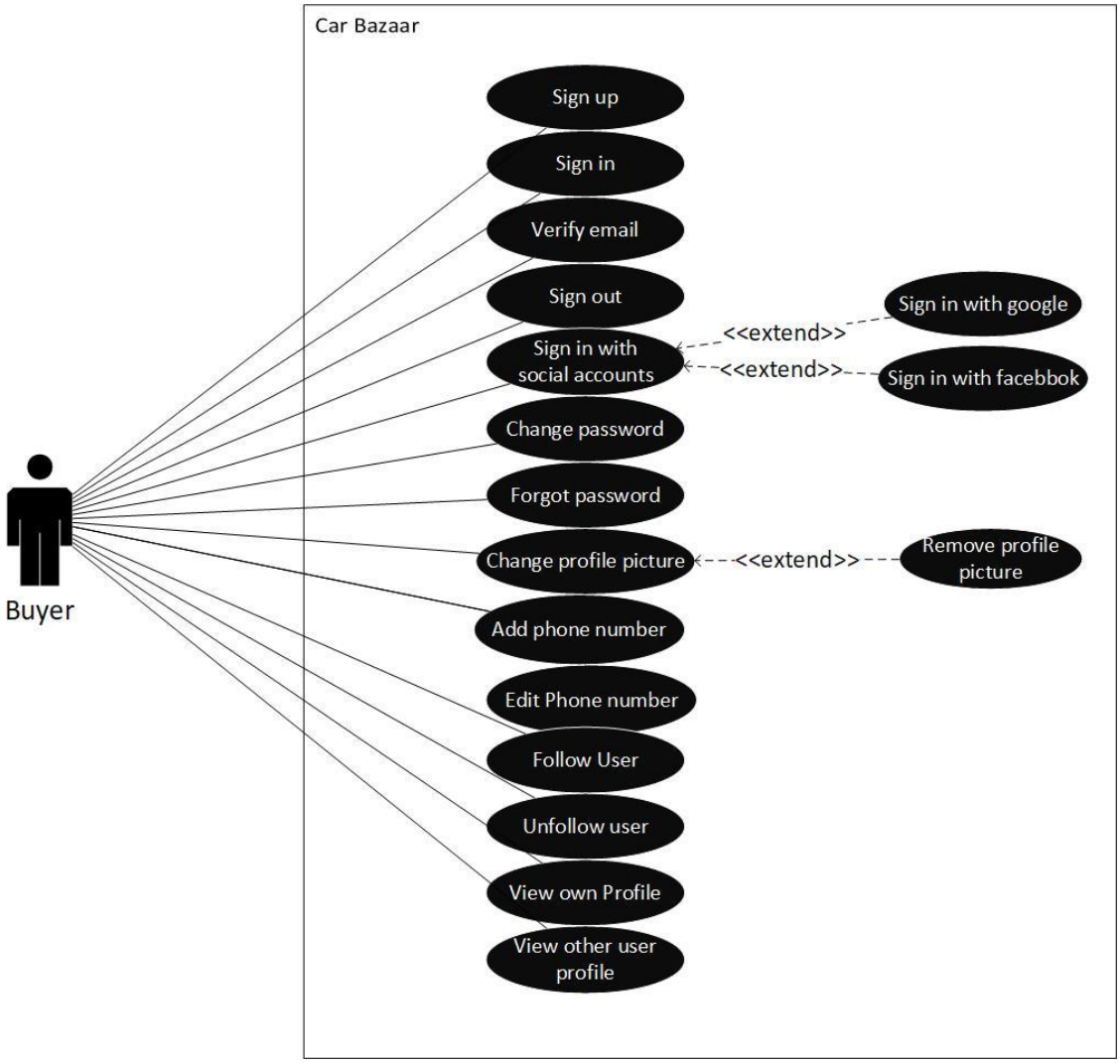


**Figure 5- Use Case Diagram:: Actor buyer**

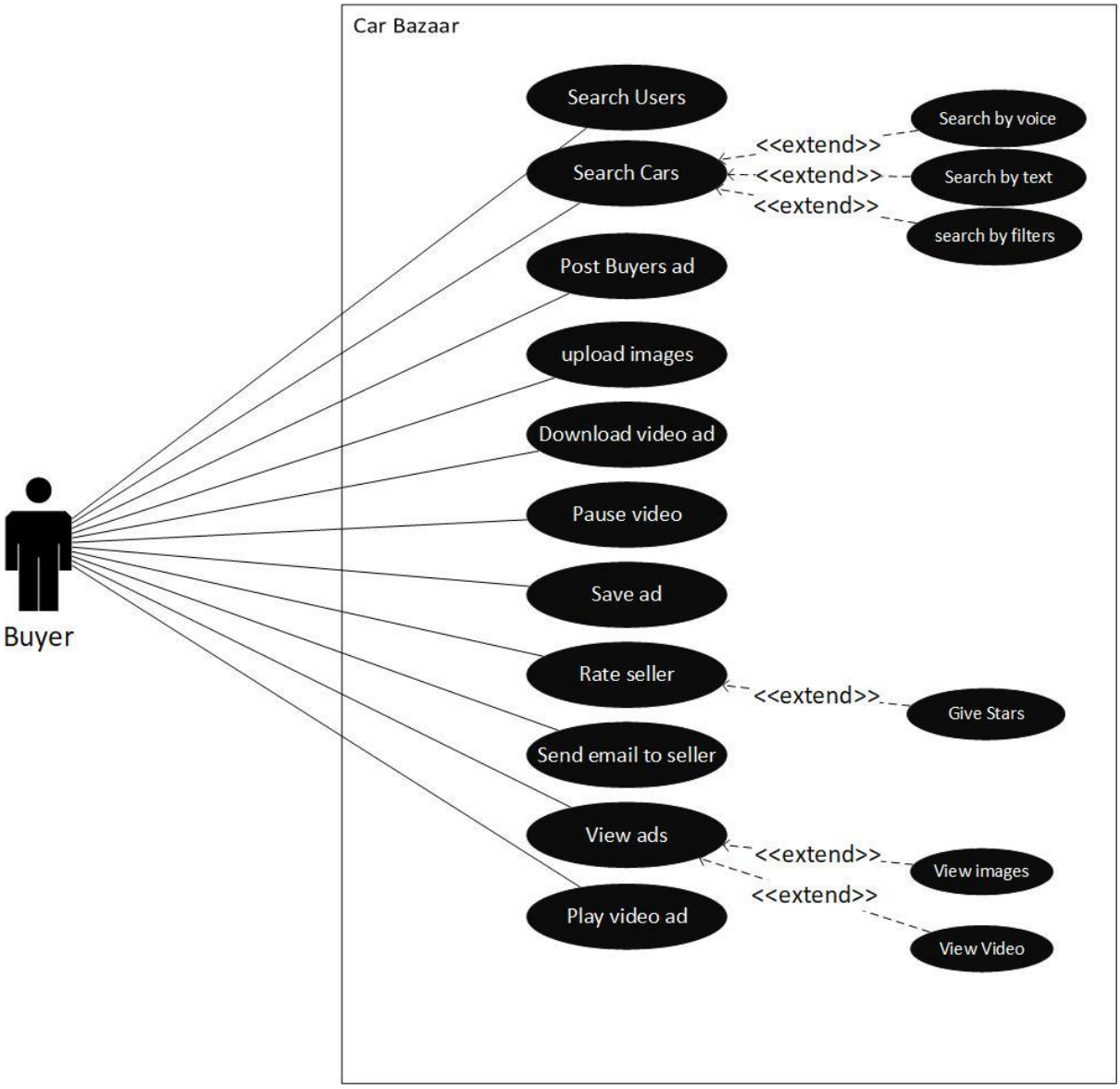


**Figure 6- Use Case Diagram:: Actor buyer**

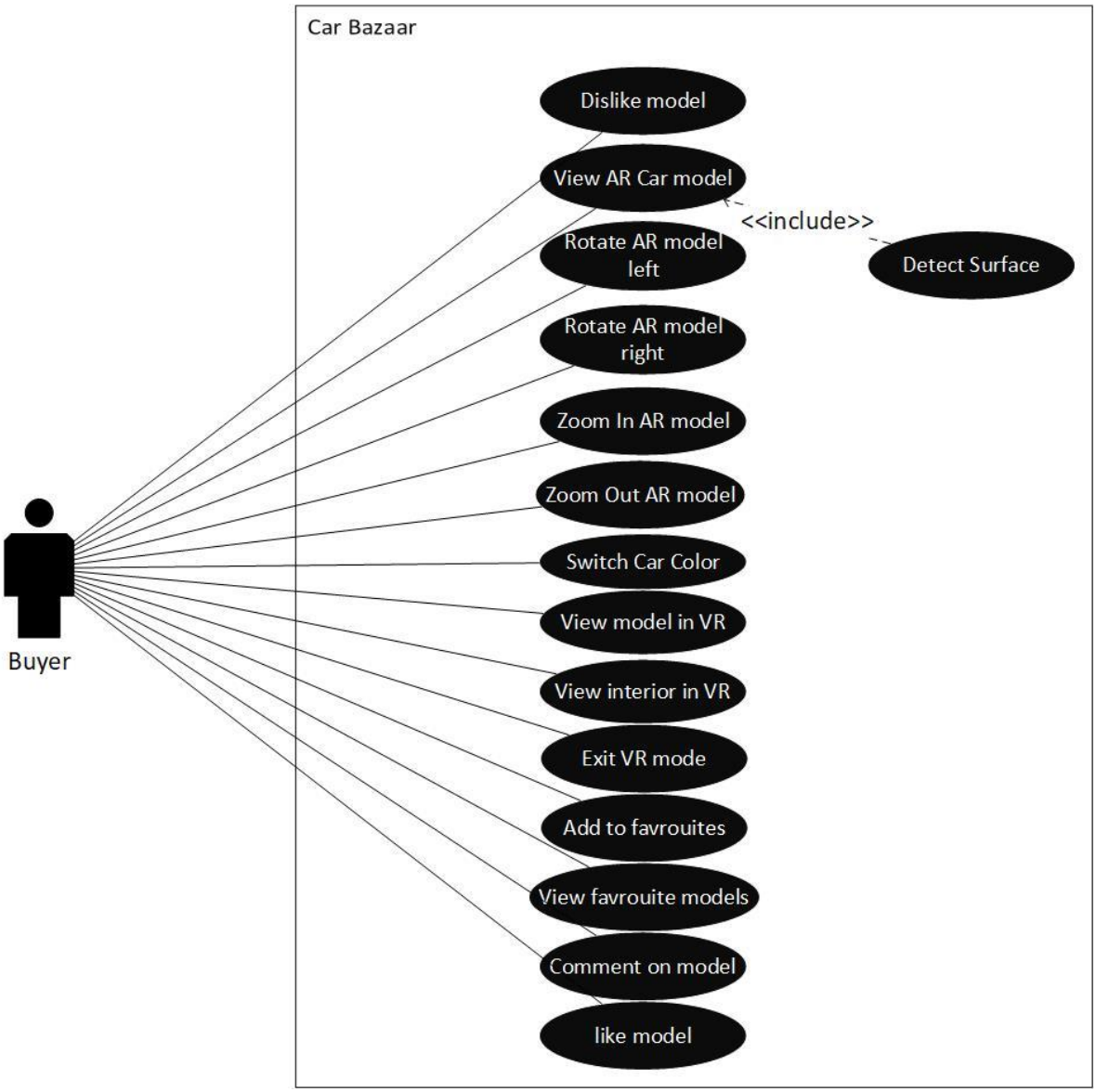


**Figure 7- Use Case Diagram:: Actor buyer**

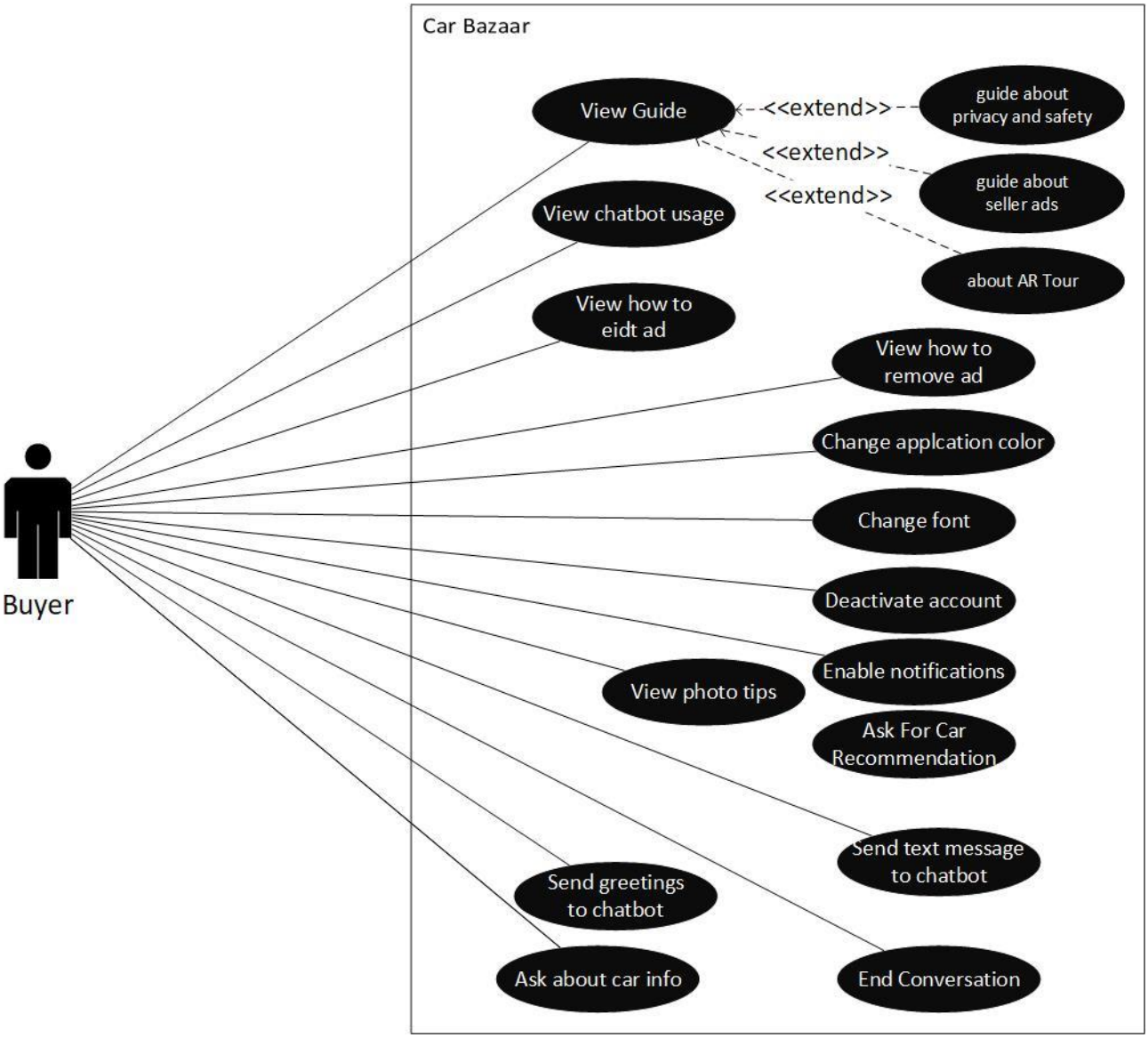


**Figure 8- Use Case Diagram:: Actor buyer**

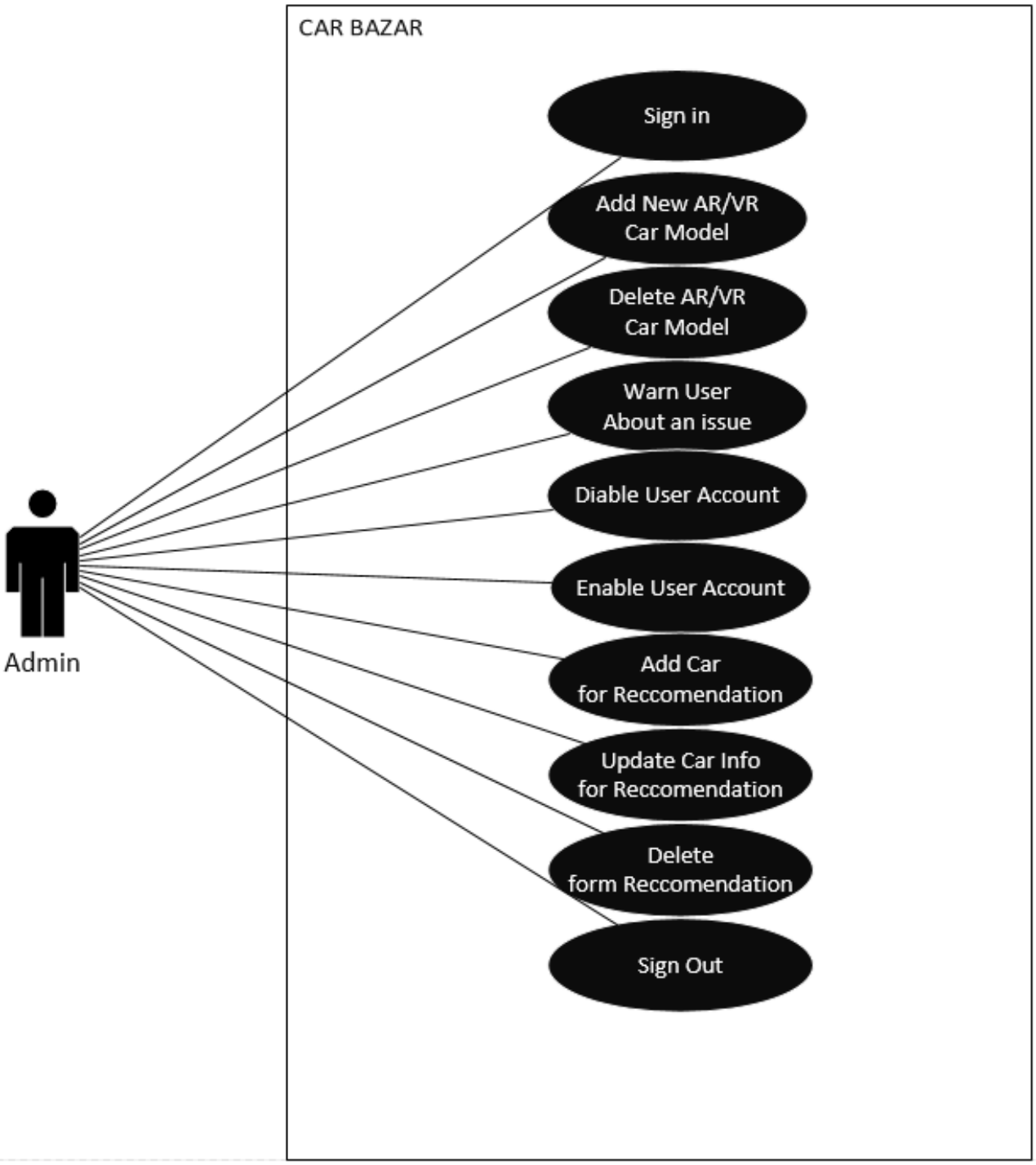


**Figure 9- Use Case Diagram:: Actor Admin**

## 3.2 Use Case(s):

Below are the use cases of all modules of the Car Bazar system:

### 3.2.1 Module 1: User Profiling:

Below are the uses cases for User Profiling:

1. **Signup**

**Table 3: User Signup**

| | |
|---|---|
| **Use Case ID:** | UC-1.1 |
| **Use Case Name:** | **User Signup** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | To access the functionality, a user must be authenticated and authorized by the system. |
| **Level** | High. |
| **Trigger:** | The user clicks "**sign up**" hyperlink on the home page. |
| **Preconditions:** | PRE-1: User must have an email address.<br>PRE-2: User must have a phone number. |
| **Postconditions:** | POST-1: User account is created.<br>POST-2: User is directed to the home page. |
| **Includes:** | N/A. |
| **Normal Flow:** | 1. Click on application Icon to launch it.<br>2. On the home screen click on "**sign up**" button.<br>3. Select the account type that can be dealer profiles or common profiles.<br>4. Enter the full name of the user.<br>5. Enter a valid email address.<br>6. Enter the password in the required field.<br>7. Enter contact information.<br>8. Click on "**Register"** button. |
| **Alternative Flows:** | 5a: In step 5 of the normal flow, if **"*Email is already registered*"** message appears.<br>1. System will prompt user to register with another email.<br>2. The user will register with another email.<br>3. Use case resume on step 4<br>5b: In step 5 of the normal flow if **"*Password mismatch*"** message appears.<br>1. System will prompt user to reenter password fields. |

| | |
|---|---|
| | 2. The user reenter password and confirm password.<br>3. Use case resume on step 4. |
| **Exceptions:** | 3a: In step 3 of the normal flow if user enter invalid email address.<br>1. Registration is unsuccessful.<br>2. User is prompt to enter valid email address.<br>3. Use case resumes from step 4. |
| **Business Rules:** | N/A. |
| **Assumptions:** | The user must understand English language.<br>The user must understand android and web forms. |

2. **Sign in**

**Table 4: Sign in**

| | |
|---|---|
| **Use Case ID:** | UC-1.2 |
| **Use Case Name:** | **Sign in** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will provide right credentials in order to login and use the application. |
| **Level:** | High |
| **Trigger:** | The user opens "**sign in**" page and clicks "**Sign in**" hyperlink |
| **Preconditions:** | PRE-1: User must have signed up using website or mobile application |
| **Postconditions:** | POST-1: User will be logged in and landing page will be displayed to the user |
| **Includes:** | UC-1.1 |
| **Normal Flow:** | 1. The user will open login page.<br>2. The user will enter his/her email.<br>3. The user will enter password against his email.<br>4. User will enter login button.<br>5. The system will validate password against the email.<br>6. User will be directed to the landing page |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 4a: In step 4 if user has not entered email and pressed login button.<br>1. System will prompt user to enter email.<br>2. Use case resume from step 2.<br>4b: In step 4 if user has not entered password and pressed login button.<br>1. System will prompt user to enter password.<br>2. User case resume form step 3. |

| | |
|---|---|
| **Exceptions:** | 4a: A connection error prevents step 4 to occur.<br>1. Systems will display an error message ***"Internet connection failed. Try again"***<br>2. Use case resumes from step 1. |
| **Business Rules:** | BR-1: Email address is valid. |
| **Assumptions:** | N/A |

3. **Verify Email**

**Table 5: Verify Email**

| | |
|---|---|
| **Use Case ID:** | UC-1.3 |
| **Use Case Name:** | **Verify Email** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | To have access to "**post ads**" functionality, user must have verified account using email. |
| **Level:** | Medium |
| **Trigger:** | When user first signs up and click "**Verify account**". |
| **Preconditions:** | PRE-1: User must have done "signup" |
| **Postconditions:** | POST-1: User account is verified.<br>POST-2: User can access post ad functionality. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicked on verify account.<br>2. A link is sent to the email user entered.<br>3. User opens email address.<br>4. User opens the link in the email.<br>5. User is directed to the applications home page.<br>6. A message ***"Account verified"*** is shown to the user. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 1a: After **"Signup"** if the link is not received to the user.<br>1. The user will go to profile<br>2. User will select verify email option.<br>3. User will select resend email option.<br>4. An email will be sent to the user email<br>5. Use case continues from step 3 of the normal flow |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message ***"Internet connection failed"*** will be shown to user. |

| | |
|---|---|
| | 1a: If at any step server went down, a message ***"Server is down at moment relaunch the application"*** will be shown to user. |
| **Business Rules:** | N/A. |
| **Assumptions:** | User have the access to the email he/she used in signing up |

4. **Forgot Password**

**Table 6: Forgot Password**

| | |
|---|---|
| **Use Case ID:** | UC-1.4 |
| **Use Case Name:** | **Forgot Password** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to reset password in case they have forgotten the password. |
| **Level** | Low. |
| **Trigger:** | Users will click "forgot password" link. |
| **Preconditions:** | PRE-1: User must have an account |
| **Postconditions:** | POST-1: User's password is reset. |
| **Includes:** | UC-1.1, UC-1.2, UC-1.3 |
| **Normal Flow:** | 1. User will click on forgot password link.<br>2. System will prompt user to enter email address.<br>3. System will validate email from the database.<br>4. System will send email for password reset to that email.<br>5. User will open the link.<br>6. User will enter new password for the account.<br>7. User will enter password again to match it with the new entered password. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | If user wants to cancel forget password. The user will click **"Cancel"** button to exit the process. |
| **Exceptions:** | 3a: if the email user entered does not exist in database<br>1. The system will prompt user to enter another email or to register.<br>2. Use case resume from step 4.<br>7a: The reentered password did not match.<br>1. System will focus on the confirm new password, telling "**Password doesn't match**". |
| **Business Rules:** | N/A. |
| **Assumptions:** | User have the access to the email he/she used in signing up |

5. **Change Password**

**Table 7: Change password**

| | |
|---|---|
| **Use Case ID:** | UC-1.5 |
| **Use Case Name:** | Change Password |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to change password of their profiles. |
| **Level** | Medium |
| **Trigger:** | Users will click "change password" link. |
| **Preconditions:** | PRE-1: User must have an account |
| **Postconditions:** | POST-1: User's password is changed |
| **Includes:** | UC-1.1, UC-1.2, UC-1.3 |
| **Normal Flow:** | 1. User goes to his profile.<br>2. User clicks change password link.<br>3. System prompts user to enter current password, new password, confirm password.<br>4. System validates current password.<br>5. User clicks confirm password |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 3a: if current password entered by the user is not valid.<br>1. System prompts user to enter valid current password.<br>2. Use case resumes from step 4.<br>If user wants to cancel change password. The user will click cancel button to exit the process. |
| **Exceptions:** | 3a: if new password and current password field does not match.<br>1. The system prompts user that *"new password and Confirm password does not match"*.<br>2. User reenters the password. |
| **Business Rules:** | N/A. |
| **Assumptions:** | N/A. |

6. **Sign out**

**Table 8: Sign out**

| | |
|---|---|
| **Use Case ID:** | UC-1.6 |
| **Use Case Name:** | **Sign out** |
| **Actors:** | **Primary:** Buyers, Sellers |

| | |
|---|---|
| **Description:** | Users will be able to sign out form their profiles. |
| **Level:** | Medium |
| **Trigger:** | Users will click "Sign out" link. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Postconditions:** | POST-1: User is signed out from his/her account<br>POST-2: User is directed to log in page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User goes to his profile.<br>2. User clicks **"Sign out"** link.<br>3. User is directed to **"log in"** page |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | N/A |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

7. **Change Profile Picture**

**Table 9: Change profile picture**

| | |
|---|---|
| **Use Case ID:** | UC-1.7 |
| **Use Case Name:** | **Change Profile Picture** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to change to display pictures of their profiles. |
| **Level:** | Low |
| **Trigger:** | Users will click "**Change Profile picture"** button in his/her profile |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Postconditions:** | POST-1: Users profile picture is changed.<br>POST-2: User is directed to his profile page. |
| **Includes:** | UC-1.1, UC-1.2 |

| | |
|---|---|
| **Normal Flow:** | 1. User goes to his profile<br>2. User clicks change profile picture button.<br>3. User selects "**Select form files**" option.<br>4. User selects a file.<br>5. User clicks **"Upload Photo"** button. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 3a: if user selects **"Capture from camera"** option<br>1. User captures image from camera.<br>2. User clicks **"Upload photo"** button. |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user.<br>5a: if selected picture is larger than supported size *"Select a photo of less size"* will be shown to the user.<br>1. Use case will resume form step 3. |
| **Business Rules:** | 1. Minimum resolution of profile picture must 360x360.<br>2. Size of profile picture must less than 1 MB. |
| **Assumptions:** | Users can only upload pictures as profile photos. |

8. **Search users/dealers**

**Table 10: Search Users/Dealers**

| | |
|---|---|
| **Use Case ID:** | UC-1.8 |
| **Use Case Name:** | **Search users/dealers** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to search other user and dealer profiles to see their ads. |
| **Level:** | Medium |
| **Trigger:** | Users will enter text in search field. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Postconditions:** | POST-1: Search results with all the profiles are shown to the user. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User enter search text in search box.<br>2. User clicks **"search"** button.<br>3. User profiles in search results are shown to the user. |
| **Alternative Flows:** | N/A |

| | |
|---|---|
| **[Alternative Flow 1 – Not in Network]** | |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user.<br>2a: if no profile existed that matched with the entered text, a message *"No user with this name exists"* will be shown to the user. |
| **Includes:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

9. **View Profile**

**Table 11: View profile**

| | |
|---|---|
| **Use Case ID:** | UC-1.9 |
| **Use Case Name:** | View other users |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to view profiles of other users. |
| **Level:** | Medium |
| **Trigger:** | Users will click on any user profile to view his/her profile. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Post conditions:** | POST-1: User is directed to that user's profile<br>POST-2: User can view the user's ads and other information |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User searches for other users.<br>2. User clicks on one of another user's profile.<br>3. User is directed to the user's profile on which the user clicked on. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | N/A. |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user. |
| **Business Rules:** | N/A |

| | |
|---|---|
| **Assumptions:** | N/A |

10. **Add Phone Number**

**Table 12: Add phone number**

| | |
|---|---|
| **Use Case ID:** | UC-1.10 |
| **Use Case Name:** | Add Phone Number |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to add their phone numbers so that other users can contact them. |
| **Level:** | High |
| **Trigger:** | Users clicks on **"Add Phone number"** link in the User Profile. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Postconditions:** | POST-1: Users Phone number is added to the user's profile.<br>POST-2: Other users can view user's contact number in their profiles |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User goes to his profile by clicking on the profile.<br>2. User clicks **"Contact details"** link in the profile.<br>3. User clicks **"Add Phone number"** link in **"Contact details".**<br>4. User enters his phone number.<br>5. User click **"confirm"** button. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 1a: if user is posting an ad and he has not yet provided hi phone number<br>1. The system will prompt user to Add phone number.<br>2. User will click **"Add phone number"** option in the pop up.<br>3. User is directed to his **"Contact details"** in his profile.<br>4. Use case resumes form step 4 of normal flow. |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user.<br>4a: If user enters an invalid number that is less than 11 digits.<br>1. *"Invalid Phone number"* message is shown to the user.<br>2. Use case resumes from step 4 of normal flow. |
| **Business Rules:** | |
| **Assumptions:** | User have access to his phone number |

11. **Edit Phone Number**

**Table 13: Edit phone number**

| | |
|---|---|
| **Use Case ID:** | UC-1.11 |
| **Use Case Name:** | **Edit Phone Number** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to edit their phone numbers so that they want their profiles up to date. |
| **Level:** | Medium. |
| **Trigger:** | Users clicks on **"Edit Phone number"** link in the User Profile. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account<br>PRE-3: User must have added his/her phone number |
| **Postconditions:** | POST-1: Users Phone number is edited in the user's profile.<br>POST-2: New phone number is updated in all user's ads. |
| **Includes:** | UC-1.1, UC-1.2, UC-1.10 |
| **Normal Flow:** | 1. User goes to his profile by clicking on the profile.<br>2. User clicks **"Contact details"** link in the profile.<br>3. User clicks **"Edit Phone number"** link in **"Contact details".**<br>4. User enters his new phone number.<br>5. User click **"confirm"** button. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | N/A |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user.<br>4a: If user enters an invalid number that is less than 11 digits.<br>1. *"Invalid Phone number"* message is shown to the user.<br>2. Use case resumes from step 4 of normal flow. |
| **Business Rules:** | N/A |
| **Assumptions:** | User have access to his phone number |

12. **Follow users/dealers**

**Table 14: Follow users/dealers**

| | |
|---|---|
| **Use Case ID:** | UC-1.12 |
| **Use Case Name:** | **Follow users/dealers** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to follow other users so that their ads come up first on their landing page |
| **Level:** | Medium |
| **Trigger:** | Users clicks on **"Follow"** button in another User's Profile. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Postconditions:** | POST-1: The user that is being followed is added to user's following list.<br>POST-2: Followed user's ads are seen first on the landing page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User searches for other users.<br>2. Users according to search results are shown.<br>3. User goes to another user's profile by clicking it.<br>4. User clicks on the follow button. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 1. User clicks on an ad.<br>2. User goes to the user profile who posted the ad.<br>3. User clicks on the follow button. |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. More than one user is registered in the application |

13. **Unfollow users/dealers**

**Table 15: Unfollow users/dealers**

| | |
|---|---|
| **Use Case ID:** | UC-1.13 |
| **Use Case Name:** | **Unfollow users/dealers** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to Unfollow other users so that their ads do not come up first on their landing page |
| **Level** | Low |

| | |
|---|---|
| **Trigger:** | Users clicks on **"Unfollow"** button in another User's Profile. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account<br>PRE-3: User must have followed the user. |
| **Postconditions:** | POST-1: The user that is being unfollowed is removed from the user's following list.<br>POST-2: Followed user's ads are not seen first on the landing page. |
| **Includes:** | UC-1.1, UC-1.2, UC-1.12 |
| **Normal Flow:** | 1. User goes to his own profile.<br>2. User clicks on **"View followings".**<br>3. User open the profile of the user he wants to unfollow.<br>4. User clicks unfollow button. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | N/A |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user.<br>1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. More than one user is registered in the application. |

### 14. Sign in using social accounts:

**Table 16: Sign in using social accounts**

| | |
|---|---|
| **Use Case ID:** | UC-1.14 |
| **Use Case Name:** | **Sign in using social accounts** |
| **Actors:** | Sellers, buyers |
| **Description:** | This use case will be used register a user to this app using users' information provided on their registered social account. |
| **Level:** | Medium |
| **Trigger:** | By clicking on **'Sign in using google'** button. |
| **Preconditions:** | PRE-1: User have a strong internet connection.<br>PRE-2: User has a valid, active google or Facebook account. |
| **Post conditions:** | POST-1: User will be registered to this app. |
| **Normal Flow:** | 1. User clicks on registration button.<br>2. User selects **'Sign in using google'** button. |

| | |
|---|---|
| | 3. System navigate user to google page, where user provide their google email address and its password.<br>4. System ask user to allow access of their Gmail information.<br>5. User presses **'OK'.** |
| **Alternative Flows:** | 2a: During the 2nd step of normal flow when user selects **'Sign in using Facebook'** button.<br>1. System navigate user to Facebook login page, where user provide their Facebook username or email address and its password.<br>2. System ask user to allow access of their Facebook information.<br>3. User presses **'OK'.** |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language.<br>2. User have basic understanding of social media accounts. |

15. **View own Profile**

**Table 17: View own profile**

| | |
|---|---|
| **Use Case ID:** | UC-1.15 |
| **Use Case Name:** | **View own profile** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | Users will be able to his/her own profile. |
| **Level:** | Medium |
| **Trigger:** | Users will click on his/her profile icon. |
| **Preconditions:** | PRE-1: User must have an account<br>PRE-2: User must be logged in to his/her account |
| **Post conditions:** | POST-1: User is directed page with his/her profile details.<br>POST-2: User can view his/her posted ads and other information. (profile information, saved ads) |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User opens the Car Bazar application.<br>2. User clicks on his/her profile icon.<br>3. User is directed to the his/her profile details page. |
| **Alternative Flows: [Alternative Flow 1 – Not in Network]** | 1a. User can open his/her profile details by entering link of the profile in the URL. |
| **Exceptions:** | 1a: If at any step the user internet connection is lost, a message *"Internet connection failed"* will be shown to user. |

| | |
|---|---|
| | 1a: If at any step server went down, a message *"Server is down at moment"* will be shown to user. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3.2.2 Module 2: Buyers and seller ads

Below are the uses cases for Buyer's and seller's ads.

1. **Upload video:**

**Table 18: Upload Video**

| | |
|---|---|
| **Use Case ID:** | UC-2.1 |
| **Use Case Name:** | **Upload video** |
| **Actors:** | **Primary:** Sellers |
| **Description:** | This use case will be used to upload video of the car that seller want to sell. |
| **Level:** | High |
| **Trigger:** | By clicking on "Upload video" button in the upload ads menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: Seller is logged in to their account.<br>PRE-3: Seller have allowed access of gallery or camera to the Car Bazar app. |
| **Post conditions:** | POST-1: Video will be uploaded as an video ad. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. Seller navigates to **'Post ad'** menu.<br>2. Seller selects the upload video option.<br>3. System ask for detailed video of the car<br>4. Seller selects a video from gallery of the car.<br>5. System prompts user to ***"Are you sure you want to upload this video?"***<br>6. User presses **'Ok'** button. |
| **Alternative Flows:** | 5a: During 5th step of normal flow user selects to take picture from camera.<br>1. User take video from camera.<br>2. System prompts user to ***"You want to upload this upload or take a new one?"***<br>3. User selects **"Save video".**<br>4. System continues to step 6 of normal flow.<br><br>13a: During 7th step of the normal flow if user selects cancel:<br>1. System prompts user ***"Are you sure you want to cancel?"***<br>2. User Selects **"Ok."**<br>3. System navigates user to **"Post ad"** page. |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message ***"Internet connection is lost"*** will be shown. |
| **Business Rules:** | N/A |

| | |
|---|---|
| **Assumptions:** | N/A |

2. **Download video ad:**

**Table 19: Download Video ad**

| | |
|---|---|
| **Use Case ID:** | UC-2.2 |
| **Use Case Name:** | **Download video** |
| **Actors:** | **Primary:** Buyers |
| **Description:** | This use case will be used to download video from the ad and save it to gallery in the smart phone. |
| **Level:** | Medium |
| **Trigger:** | By clicking on **"Download video"** button of the ad. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: User is logged in to their account. |
| **Post conditions:** | POST-1: Video from that particular ad has been saved to the gallery. |
| **Includes:** | UC-1.1, UC-1.2, UC-2.1 |
| **Normal Flow:** | 1. User launches Car Bazar app.<br>2. User logs in to their account.<br>3. User navigates to **'View ad'** option.<br>4. User clicks on **"download video"** option of the video. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message *"Internet connection is lost"* will be shown.<br>2a. If user's smart phone does not have enough space left in their phone *"You do not have enough space left in your phone"* message will be shown. |
| **Business rules:** | N/A |
| **Assumptions:** | 1. User have memory space more than video size left in their phone. |

3. **Post buyers' ad:**

**Table 20: Post buyer's ad**

| | |
|---|---|
| **Use Case ID:** | UC-2.3 |
| **Use Case Name:** | **Post buyers' ad** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will be used post an ad where seller will tell their budget and their needs for the car. |
| **Level:** | High |
| **Trigger:** | By clicking on the 'Post an ad' button in the buyers profile. |
| **Preconditions:** | 1. Internet connection is available on the user's phone. |

| | |
|---|---|
| | 2. User is logged in to their account. |
| **Post conditions:** | POST-1: An ad will be shared from that user account. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on post an ad option in their profile.<br>2. User allow access to the location.<br>3. User adds their price range for the car.<br>4. User adds the make and model of car they are searching for.<br>5. User clicks **'Share ad'** button. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message ***"Internet connection is lost"*** will be shown.<br>2a. During step 2 of the normal flow if user have not allowed system access of location system will ask user to turn GPS on.<br>5a. During step 5 of the normal flow if user clicks cancel system will ask user ***'Are you sure you want to discard this post?'***<br>1. User presses **'Ok'.**<br>2. System navigate user to the **"home"** page. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

4. **View ad:**

**Table 21: View ad**

| | |
|---|---|
| **Use Case ID:** | UC-2.4 |
| **Use Case Name:** | **View ad** |
| **Actors:** | **Primary:** Buyers |
| **Description:** | This use case will be used view a 360° ads' detail, when searched once. |
| **Level:** | High |
| **Trigger:** | By tapping on the 360° in the designated area of that ad. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: User is logged in to their account. |
| **Post conditions:** | POST-1: System opens the 360° ad, now user can pinch in, pinch out or rotate this ad in left or right direction. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User Searches for the ads.<br>2. System shows result on the basis of users' search<br>3. User clicks on the ad they want to view.<br>4. User taps the 360° ad. |
| **Alternative Flows:** | N/A |

| | |
|---|---|
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message ***"Internet connection is lost"*** will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User have basic knowledge of smart phone usage.<br>2. User have Car Bazar app in their phone. |

### 5. View ad images:

**Table 22: View ad images**

| | |
|---|---|
| **Use Case ID:** | UC-2.5 |
| **Use Case Name:** | **View ad images** |
| **Actors:** | **Primary:** Buyers |
| **Description:** | This use case will be used to view images of the cars that have been scrapped from other websites. |
| **Level:** | High |
| **Trigger:** | By clicking on the image |
| **Preconditions:** | PRE-1: User has searched for an ad. |
| **Post conditions:** | POST-1: Image in an ad will be displayed on the screen |
| **Includes:** | UC-2.4 |
| **Normal Flow:** | 1. User Searches for the ads.<br>2. System shows result on the basis of users' search from other websites.<br>3. User clicks on the ad they want to view.<br>4. System show user all related detail of that ad.<br>5. User taps on the **"image"** to view it. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 5a. During step 5 of the normal flow if the scrapped ad result does not contain an image system will show a message ***"Preview not available".*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 6. Save ad:

**Table 23: Save ad**

| | |
|---|---|
| **Use Case ID:** | UC-2.6 |
| **Use Case Name:** | **Save ad** |
| **Actors:** | **Primary:** Buyers |
| **Description:** | This use case will be used to save an ad, to later visit it; which user has once viewed. |

| | |
|---|---|
| **Level:** | Medium |
| **Trigger:** | By clicking on **"Save ad"** icon of the ad. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: User is logged in to their account. |
| **Post conditions:** | POST-1: Ad has been added to the saved list. And ready to be viewed in the saved list later |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User navigates to **'Search ad'** menu.<br>2. User selects an ad from the displayed results.<br>3. User presses **'Add to saved ads'** button. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message *"Internet connection is lost"* will be shown. |
| **Business rules:** | N/A |
| **Assumptions:** | N/A |

## 7. Send email to seller:

**Table 24: Send Email to sellers**

| | |
|---|---|
| **Use Case ID:** | UC-2.7 |
| **Use Case Name:** | Send email to seller |
| **Actors:** | Buyers |
| **Description:** | This use case will be used to contact seller via email to get more information about the car or discuss any issues. |
| **Level:** | High |
| **Trigger:** | By clicking on the 'Send Email' button in the seller profile option. |
| **Preconditions:** | PRE-1: User has a valid email address. |
| **Post conditions:** | POST-1: An email will be sent to the seller. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User Searches for the ads.<br>2. System shows result on the basis of users' search<br>3. User clicks on the ad they want to view.<br>4. User taps on the profile of the seller.<br>5. User click 'Send Email' button in the sellers' profile.<br>6. User is navigated to a 'Compose Email page'.<br>7. User provides their email in 'Your Email' field.<br>8. User provides 'Subject' of the Email.<br>9. User writes their message in the message body.<br>10. User taps the 'Send' button. |
| **Alternative Flows:** | N/A |

| | |
|---|---|
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message "Internet connection is lost" will be shown.<br>2a. During step 5 of the normal flow if user does not provide a valid Email address a message "Please provide a valid email address" will be shown.<br>3a. During step 9 of the normal flow if user leaves message body to be empty a message box "You cannot send an empty message" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 7. Watch video

**Table 25: Watch Video**

| | |
|---|---|
| **Use Case ID:** | UC-2.7 |
| **Use Case Name:** | **Watch video** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user with the option of watching video for having more realistic view of the car. |
| **Level:** | Medium |
| **Trigger:** | Click on **"Watch Video"** button. |
| **Preconditions:** | PRE-1: Working internet connection.<br>PRE-2: Ad must have a video. |
| **Post conditions:** | POST-1: Video must be played. |
| **Includes:** | UC-2.4 |
| **Normal Flow:** | 1. User select an ad by clicking on **"View ad"** button.<br>2. System will redirect user to the page with the details of the selected ad.<br>3. User clicks on **"watch video"** button. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br>**6a.** In the step 3 of the normal flow, if the ad has no video available then the system will prompt user with the message ***"No video available for this ad"*** |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed in the application.<br>3. User have basic knowledge of how to use the application. |

### 8. Pause Video

**Table 26: Pause Video**

| | |
|---|---|
| **Use Case ID:** | UC-2.8 |

| | |
|---|---|
| **Use Case Name:** | **Pause Video** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to pause video at any point during the video. This will help user to observe the parts of the car during the video. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Pause Video"** icon. |
| **Preconditions:** | PRE-1: User have played the video.<br>PRE-2: User have working internet connection. |
| **Post conditions:** | POST-1: Video is paused at specific time frame. |
| **Includes:** | UC-2.4 UC-2.8 |
| **Normal Flow:** | 1. User clicks on **"watch video"** button.<br>2. Video will be played.<br>3. User clicks on **"pause video"** icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 9. Resume Video

**Table 27: Resume Video**

| | |
|---|---|
| **Use Case ID:** | UC-2.9 |
| **Use Case Name:** | **Resume Video** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to play video at any point during the video where the video was paused. |
| **Level:** | Medium |
| **Trigger:** | User clicks on " ▶ " icon. |
| **Preconditions:** | PRE-1: User have paused the video. |
| **Postconditions:** | POST-1: Video is Resumed at specific time frame. |
| **Includes:** | UC-2.4, UC-2.8 |
| **Normal Flow:** | 1. User clicks on **"watch video"** button.<br>2. Video will be played.<br>3. User clicks on **"pause video"** icon.<br>4. User clicks on **"play video"** icon.<br>5. Video will be Resumed. |

| | |
|---|---|
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 10. Delete ad

**Table 28: Delete ads**

| | |
|---|---|
| **Use Case ID:** | UC-2.11 |
| **Use Case Name:** | **Delete ads** |
| **Actors:** | **Primary:** Seller |
| **Description:** | This use case will be used to delete an ad which was posted by that seller before. |
| **Level:** | High |
| **Trigger:** | By clicking on "Delete" button in the ad detail menu. |
| **Preconditions:** | PRE-1: At least one ad was posted by that seller account. |
| **Post conditions:** | POST-1: Ad has been removed from the search results of users and also from the database. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. Seller navigates to **"Posted ads"** menu.<br>2. Seller selects the particular ad that they want to delete.<br>3. User presses **"Delete"** button. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message *"Internet connection is lost"* will be shown. |
| **Business rules:** | N/A |
| **Assumptions:** | 1. User have basic knowledge of smart phone usage.<br>2. User have Car Bazar app in their phone. |

### 11. Update Ad

**Table 29: Update ads**

| | |
|---|---|
| **Use Case ID:** | UC-2.11 |
| **Use Case Name:** | **Update Ads** |
| **Actors:** | **Primary:** Seller |
| **Description:** | This use case will be used to update an ad which was posted by that seller before. |
| **Level:** | High |

| | |
|---|---|
| **Trigger:** | By clicking on **"Edit"** button in the ad detail menu. |
| **Preconditions:** | PRE-1: At least one ad was posted by that seller account. |
| **Post conditions:** | POST-1: Ad has been updated in the search fields and also in the database. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. Seller navigates to **'Posted ads'** menu.<br>2. Seller selects the particular ad that they want to edit.<br>3. User presses **"Edit"** button.<br>4. Seller update the fields they want to update.<br>5. Seller clicks **"Save changes"** button. |
| **Alternative Flows:** | 6a: on the 6th step of normal flow if user does not update any field<br>1. System prompts **"Cancel"** or **"Continue updating"** option.<br>2. User selects **"cancel".**<br>3. System navigates user to the **"Posted ads"** menu. |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message *"Internet connection is lost"* will be shown.<br>2a. During step 6 of the normal flow if user have edited values but does not saved them, and internet connection gets lost all updated field data will vanish. |
| **Business rules:** | N/A |
| **Assumptions:** | N/A |

### 12. View saved ads:

**Table 30: View saved ads**

| | |
|---|---|
| **Use Case ID:** | UC-2.12 |
| **Use Case Name:** | **View saved ads** |
| **Actors:** | **Primary:** Buyers |
| **Description:** | This use case will be used to view list of all ads that once has been saved. |
| **Level:** | Medium |
| **Trigger:** | By selecting **'saved ads'** option from the menu. |
| **Preconditions:** | PRE-1: User is logged in to their account. |
| **Post conditions:** | POST-1: A list of ads is shown to the user. User now can select any ad and view its details. |
| **Includes:** | UC-1.1, UC-1.2, UC-2.6 |
| **Normal Flow:** | 1. User launches Car Bazar app.<br>2. User logs in to their account.<br>3. User navigates to **"Saved ads"** menu. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message *"Internet connection is lost"* will be shown. |

| | |
|---|---|
| **Business rules:** | N/A |
| **Assumptions:** | N/A |

13. **Delete Saved ad:**

**Table 31: Delete saved Ad**

| | |
|---|---|
| **Use Case ID:** | UC-2.13 |
| **Use Case Name:** | **Delete saved Ad** |
| **Actors:** | **Primary:** Buyers |
| **Description:** | This use case will be used to delete an ad from the list of the saved ads. |
| **Level:** | Medium |
| **Trigger:** | By clicking on **"Delete ad"** icon of the saved ad. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: User is logged in to their account. |
| **Post conditions:** | POST-1: Ad has been removed from the saved list. |
| **Includes:** | UC-1.1, UC-1.2, UC-2.14 |
| **Normal Flow:** | 1. User navigates to **'Saved ads'** option.<br>2. User selects an ad and view it.<br>3. User selects '**Delete ad'** option.<br>4. System prompts user, *'Are you sure you want to remove this ad from saved list?'*.<br>5. User selects **'Yes'.** |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message *"Internet connection is lost"* will be shown. |
| **Business rules:** | N/A |
| **Assumptions:** | N/A |

### 3.2.3 Module 3: Data Acquisition

Below are the uses cases for Data maintenance and updating:

1. **Input search string**

**Table 32: Input Search string**

| | |
|---|---|
| **Use Case ID:** | UC-3.1 |
| **Use Case Name:** | Input search string |
| **Actors:** | **Primary:** Buyer |

| | |
|---|---|
| **Description:** | This use case will provide user of the application with the option to input search string to search the relevant ads from the specific websites. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: System will prompt user with the alert message "please wait".<br>POST-2: System will format search string. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "search ad" button.<br>2. User will be directed to ad search page.<br>3. User will input search string in the input field.<br>4. User will click "Search" icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br>. |
| **Business Rules:** | BR-1: User must have a fast internet connection. |
| **Assumptions:** | N/A |

### 2. Format search string

**Table 33: Format search string**

| | |
|---|---|
| **Use Case ID:** | UC-3.2 |
| **Use Case Name:** | Format search string |
| **Actors:** | **Primary:** Buyer **Secondary:** System |
| **Description:** | In this use case the string input by the user will be formatted in the form to search in data sources. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | System have formatted the input string. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1 |
| **Normal Flow:** | 1. User will input the search string.<br>2. User clicks on "Search" icon.<br>3. System will format the search string in the required matchable form. |
| **Alternative Flows:** | N/A. |

| | |
|---|---|
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3. Search in data sources

**Table 34: Search in data source**

| | |
|---|---|
| **Use Case ID:** | UC-3.3 |
| **Use Case Name:** | Search in data sources |
| **Actors:** | **Primary:** Buyer, **Secondary:** System |
| **Description:** | In this use case the system will search for data in the websites. All the specified websites will be searched for data one after other. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | All the specified websites will be searched for data. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1, UC-3.2 |
| **Normal Flow:** | 1. User will input the search string.<br>2. User clicks on "Search" icon.<br>3. System will search for data in specified websites. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 4. Match Data

**Table 35: Match Data**

| | |
|---|---|
| **Use Case ID:** | UC-3.4 |
| **Use Case Name:** | Match Data |
| **Actors:** | **Primary:** Buyer, **Secondary:** System |
| **Description:** | In this use case system will match the searched data with the formatted input string. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |

| | |
|---|---|
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | Searched data will be matched with the input string. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1, UC-3.2, UC-3.3 |
| **Normal Flow:** | 1. User will input the search string.<br>2. User clicks on "Search" icon.<br>3. System will match data with the formatted input string. |
| **Alternative Flows:** | **3a.** During 3rd step of the normal flow if no data is matched with the input string then system will prompt user with the message "No relevant ad found". |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 5. Parse Data

**Table 36: Parse Data**

| | |
|---|---|
| **Use Case ID:** | UC-3.5 |
| **Use Case Name:** | Parse Data |
| **Actors:** | **Primary:** Buyer **Secondary:** System |
| **Description:** | In this use case matched data will be converted in some form for data cleansing. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | Data will be converted into required form. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1, UC-3.2, UC-3.3, UC-3.4 |
| **Normal Flow:** | 1. System will get data from the data sources.<br>2. System will convert the data in the specified form. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 6. Extract data

**Table 37: Extract data**

| | |
|---|---|
| **Use Case ID:** | UC-3.6 |
| **Use Case Name:** | Extract data |
| **Actors:** | **Primary:** Buyer, **Secondary:** System |
| **Description:** | In this use case system will extract the meaningful data from the searched data and store it temporarily in a file. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: System will extract the meaningful data.<br>POST-2: System will store data temporarily in a file. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1, UC-3.2, UC-3.3, UC-3.4, UC-3.5 |
| **Normal Flow:** | 1. System will extract the meaningful data from the matched data.<br>2. System will store ad data in a separated file. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 7. Filter data

**Table 38: Filter Data**

| | |
|---|---|
| **Use Case ID:** | UC-3.7 |
| **Use Case Name:** | Filter data |
| **Actors:** | **Primary:** Buyer **Secondary:** System |
| **Description:** | In this use case the data stored temporarily in a file, will be filtered out. Incorrect, incomplete and redundant data is filtered out. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account. |
| **Postconditions:** | System should filter the data from file. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1, UC-3.2, UC-3.3, UC-3.4, UC-3.5, UC-3.6 |
| **Normal Flow:** | 1. System will check data from the file in an order.<br>2. System will remove the incorrect data.<br>3. System will remove incomplete data.<br>4. System will remove the redundant data. |

| | |
|---|---|
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

8. **Display data to user**

**Table 39: Display data to user**

| | |
|---|---|
| **Use Case ID:** | UC-3.8 |
| **Use Case Name:** | Display data to user |
| **Actors:** | **Primary:** Buyer, **Secondary:** System |
| **Description:** | In this use case Ads data from the temporary file will be displayed to the user. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account. |
| **Postconditions:** | Ads data will be displayed to the user. |
| **Includes:** | UC-1.1, UC-1.2, UC-3.1, UC-3.2, UC-3.3, UC-3.4, UC-3.5, UC-3.6, UC-3.7 |
| **Normal Flow:** | 1. System will get the ads data from the file.<br>2. System will display ads data to user on designated area of screen. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3.2.4 Module 4: Car searches

Below are the uses cases for Car searches:

1. **Search by Price range**

**Table 40: Search by price range**

| | |
|---|---|
| **Use Case ID:** | UC-4.1 |
| **Use Case Name:** | **Search by Price Range** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the price range filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |

| | |
|---|---|
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "Price range" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User enters price in "From" input field of the search by price range.<br>3. User enters price in "To" input field of the search by price range.<br>4. User clicks "Search" icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>4a: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 2. Search by Model

**Table 41: Search by model**

| | |
|---|---|
| **Use Case ID:** | UC-4.2 |
| **Use Case Name:** | **Search by Model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the model filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "Model" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User enters year in "From" input field of the search by model.<br>3. User enters year in "To" input field of the search by model.<br>4. User clicks "Search" icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |

| | |
|---|---|
| | 4a: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3. Search by City

**Table 42: Search by city**

| | |
|---|---|
| **Use Case ID:** | UC-4.3 |
| **Use Case Name:** | **Search by City** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the "City" filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "City" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User Selects city from drop down menu of search by city filter.<br>3. User clicks "Search" icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**3a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 4. Search by Registration City

**Table 43: Search by Registration city**

| | |
|---|---|
| **Use Case ID:** | UC-4.4 |
| **Use Case Name:** | **Search by Registration City** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the "Registration City" filter |
| **Level:** | Medium |

| | |
|---|---|
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "Registration city" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User Selects Registration city from drop down menu of search by Registration city filter.<br>3. User clicks "Search" icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**3a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 5. Search by Engine Capacity

**Table 44: Search by Engine Capacity**

| | |
|---|---|
| **Use Case ID:** | UC-4.5 |
| **Use Case Name:** | **Search by Engine Capacity** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the Engine capacity filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "Engine Capacity" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User selects minimum engine capacity from the dropdown of the search by engine capacity.<br>3. User selects maximum engine capacity from the dropdown of the search by engine capacity.<br>4. User clicks "Search" icon. |
| **Alternative Flows:** | N/A. |

| | |
|---|---|
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**3a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 6. Search by Category

**Table 45: Search by Category**

| | |
|---|---|
| **Use Case ID:** | UC-4.6 |
| **Use Case Name:** | **Search by Category** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the category filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | User is directed to Search results by "category" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User selects "New" from the dropdown of the search by category.<br>3. User clicks "Search" icon. |
| **Alternative Flows:** | 2a: user selects "Old" from the drop down of search by category.<br>1. Normal use case resumes from step 3. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**3a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 7. Search by Registration Year

**Table 46: Search by Registration year**

| | |
|---|---|
| **Use Case ID:** | UC-4.7 |
| **Use Case Name:** | **Search by Mileage Range** |
| **Actors:** | **Primary:** Buyer |

| | |
|---|---|
| **Description:** | This use case will provide user of the application with the option to search the cars by using the Mileage range filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "mileage range" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User selects "From" the dropdown of the search by mileage range.<br>3. User selects "to" the dropdown of the search by mileage range.<br>4. User clicks "Search" icon. |
| **Alternative Flows:** | |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**4a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 8. Search by Color

**Table 47: Search by color**

| | |
|---|---|
| **Use Case ID:** | UC-4.8 |
| **Use Case Name:** | **Search by color** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the color filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "color" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User selects "color" from the dropdown of the search by color.<br>3. User clicks "Search" icon. |
| **Alternative Flows:** | N/A |

| | |
|---|---|
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**3a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 9. Search by Transmission

**Table 48: Search by transmission**

| | |
|---|---|
| **Use Case ID:** | UC-4.9 |
| **Use Case Name:** | **Search by transmission** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the transmission filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "transmission" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User selects "Automatic" from the dropdown of the search by transmission.<br>3. User clicks "Search" icon. |
| **Alternative Flows:** | 2a: user selects "manual" from the drop down of search by category.<br>2. Normal use case resumes from step 3. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**3a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 10. Search by Make

**Table 49: Search by Make**

| | |
|---|---|
| **Use Case ID:** | UC-4.10 |
| **Use Case Name:** | **Search by Make** |

| | |
|---|---|
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to search the cars by using the make filter |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Search"** icon. |
| **Preconditions:** | PRE-1: User have logged in to his/her account.<br>PRE-2: User have working internet connection. |
| **Postconditions:** | POST-1: User is directed to Search results by "make" page. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks search by filters.<br>2. User writes keywords of make company in the input filed.<br>3. User selects "make" from the dropdown of the search by make.<br>4. User clicks "Search" icon. |
| **Alternative Flows:** | |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br><br>**4a**: If no such results exist the system will notify user with the message "***No results***" exits. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3.2.5 Module 5: AR VR Tour

#### 1. View cars in AR

**Table 50: View cars in AR**

| | |
|---|---|
| **Use Case ID:** | UC-5.1 |
| **Use Case Name:** | **View Cars in AR** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option of viewing the car in augmented reality to have real experience of the product. |
| **Level:** | High |
| **Trigger:** | User opens a Model and presses on the "**View in AR**" button. |
| **Preconditions:** | PRE-1: Admin has posted an AR model for that car model. |
| **Postconditions:** | POST-1: User view the specific product's model in AR. |
| **Includes:** | N/A |

| | |
|---|---|
| **Normal Flow:** | 1. User presses "**View in AR**" button.<br>2. Application opens the back camera.<br>3. System detects a surface to show an AR model.<br>4. Model is viewed on the screen. |
| **Alternative Flows:** | **2a.** In Step 2 of the normal flow if user attempts to switch the camera to the front system will show a "***AR models cannot be viewed on the front camera***" message. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 2. Rotate AR model left

**Table 51: Rotate AR model left**

| | |
|---|---|
| **Use Case ID:** | UC-5.2 |
| **Use Case Name:** | **Rotate AR model left** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to rotate specific AR model to left. |
| **Level:** | Medium |
| **Trigger:** | User slides finger in anti-clockwise direction on a specific AR model. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is rotated in anti-clockwise direction. |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User clicks on the designated area of the model to view it in augmented reality.<br>2. System will render AR model of the screen.<br>3. User slides finger in an anti-clockwise direction on the AR model. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | 1a: If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3. Rotate AR model right

**Table 52: Rotate AR model right**

| | |
|---|---|
| **Use Case ID:** | UC-5.3 |

| | |
|---|---|
| **Use Case Name:** | **Rotate AR model Right** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to rotate specific AR model to Right. |
| **Level:** | Medium |
| **Trigger:** | User slides finger in clockwise direction on a specific AR model. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is rotated in clockwise direction. |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User clicks on the designated area of the model to view it in augmented reality.<br>2. System will render AR model of the screen.<br>3. User slides finger in clockwise direction on the AR model. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | 1a: If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 4. Zoom AR model in

**Table 53: Zoom AR model**

| | |
|---|---|
| **Use Case ID:** | UC-5.4 |
| **Use Case Name:** | **Zoom in AR model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to zoom in the specific AR model. |
| **Level:** | Medium. |
| **Trigger:** | User pinches out specific AR model. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model.<br>PRE-2: User must have working internet connection. |
| **Postconditions:** | POST-1: AR model is zoomed in. |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User clicks on the "**designated area"** of the model to view it in augmented reality.<br>2. System will render AR model of the screen.<br>3. User pinches out on the AR model. |
| **Alternative Flows:** | N/A. |

| | |
|---|---|
| **Exceptions:** | 1a: If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 5. Zoom AR model out

**Table 54: Zoom AR model out**

| | |
|---|---|
| **Use Case ID:** | UC-5.5 |
| **Use Case Name:** | **Zoom out AR model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to zoom out the specific AR model. |
| **Level:** | Medium. |
| **Trigger:** | User pinches in specific AR model. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is zoomed out. |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User clicks on the designated area of the model to view it in augmented reality.<br>2. System will render AR model of the screen.<br>3. User pinches in on the AR model. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 6. Bookmark AR model

**Table 55: Bookmark AR model**

| | |
|---|---|
| **Use Case ID:** | UC-5.6 |
| **Use Case Name:** | **Save model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to save an AR model, to view it later. So, next time user should not have to search for the model again. s/he can view the model from the saved ones. |

| | |
|---|---|
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Save Model"** icon. |
| **Preconditions:** | PRE-1: User must be logged in to their account.<br>PRE-2: User must have working internet connection. |
| **Postconditions:** | POST-1: Model should be added to "saved models". |
| **Includes:** | UC-1.1, UC-1.2, UC-5.1 |
| **Normal Flow:** | 1. User Search for the specific car to view its AR model.<br>2. User clicks on **"Save Model"** icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 7. Comment on model

**Table 56: Comment on model**

| | |
|---|---|
| **Use Case ID:** | UC-5.7 |
| **Use Case Name:** | **Comment on model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to comment on model to give his/her review. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Comment"** icon. |
| **Preconditions:** | PRE-1: User must be logged in to their account.<br>PRE-2: User must have working internet connection |
| **Postconditions:** | POST-1: Comment the specific user profile is added to the model. |
| **Includes:** | UC-1.1, UC-1.2, UC-5.1 |
| **Normal Flow:** | 1. User Search for the specific car to view its AR model.<br>2. User clicks on **"Comment"** icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a:** While uploading a comment, if internet connection is lost, then comment will be uploaded when online. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 8. View Bookmarked model

**Table 57: View bookmarked model**

| | |
|---|---|
| **Use Case ID:** | UC-5.8 |
| **Use Case Name:** | **View Saved model** |
| **Actors:** | **Primary:** Buyer. |
| **Description:** | This use case will provide the user of the application with the option of viewing the AR models that user have recently saved. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Saved Models"** button. |
| **Preconditions:** | PRE-1: User must be logged in to their account.<br>PRE-2: Model must be recently saved. |
| **Postconditions:** | POST-1: A list of saved models is shown to the user. User can view any model from the list. |
| **Includes:** | UC-1.1, UC-1.2, UC-5.6 |
| **Normal Flow:** | 1. User opens the application by clicking on its icon.<br>2. User navigates to **'Saved model'** menu. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 9. Dislike model

**Table 58: Dislike model**

| | |
|---|---|
| **Use Case ID:** | UC-5.9 |
| **Use Case Name:** | **Dislike model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to dislike model to give his/her review. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Dislike"** icon. |
| **Preconditions:** | PRE-1: User is viewing menu option of a model. |
| **Postconditions:** | POST-1: Model is disliked from the specific user profile.<br>POST-2: Total number of dislikes on model increased by 1. |
| **Includes:** | UC-1.1, UC-1.2, UC-5.1 |
| **Normal Flow:** | 1. User Search for the specific car to view its AR model.<br>2. User clicks on **"Dislike"** icon. |
| **Alternative Flows:** | N/A. |

| | |
|---|---|
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 10. Like model

**Table 59: Like Model**

| | |
|---|---|
| **Use Case ID:** | UC-5.10 |
| **Use Case Name:** | **Like model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to like model to give his/her review. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"like"** icon. |
| **Preconditions:** | PRE-1: User is viewing menu option of a model. |
| **Postconditions:** | POST-1: Model is liked from the specific user profile.<br>POST-2: Total number of likes on model increased by 1. |
| **Includes:** | UC-1.1, UC-1.2, UC-5.1 |
| **Normal Flow:** | 1. User Search for the specific car to view its AR model.<br>2. User clicks on **"Like"** icon. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 11. Delete from saved model

**Table 60: Delete from saved model**

| | |
|---|---|
| **Use Case ID:** | UC-5.11 |
| **Use Case Name:** | **Delete from Saved model** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user of the application with the option to delete AR models from the recently saved model. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Unsave Model"** button. |
| **Preconditions:** | PRE-1: User must be logged in to their account.<br>PRE-2: Model must be recently saved. |
| **Postconditions:** | POST-1: Model should be removed from "saved models". |

| | |
|---|---|
| **Includes:** | UC-1.1, UC-1.2, UC-5.6 |
| **Normal Flow:** | 1. User opens the application by clicking on its icon.<br>2. User navigates to **'Saved model'** menu.<br>3. User selects a model.<br>4. User clicks on "Unsave Model" button. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 12. Move model Up

**Table 61: Move model in upward direction**

| | |
|---|---|
| **Use Case ID:** | UC-5.12 |
| **Use Case Name:** | **Move Model up** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to Move the specific AR model to upside direction. |
| **Level:** | Medium |
| **Trigger:** | User presses the Up arrow in the screen of the application. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is moved in upward direction |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User will press on the move up button and model will move in the upward direction. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 13. Move model down

**Table 62: Move model in downward direction**

| | |
|---|---|
| **Use Case ID:** | UC-5.13 |
| **Use Case Name:** | **Move Model down** |
| **Actors:** | **Primary:** Buyer |

| | |
|---|---|
| **Description:** | This use case will provide user of the application with the option to Move the specific AR model to downward direction. |
| **Level:** | Medium |
| **Trigger:** | User presses the Down arrow in the screen of the application. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is moved in downward direction |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User will press on the move down button and model will move in the upward direction. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 14. Move model left

**Table 63: Move model left**

| | |
|---|---|
| **Use Case ID:** | UC-5.14 |
| **Use Case Name:** | **Move Model left** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to Move the specific AR model to left direction. |
| **Level:** | Medium |
| **Trigger:** | User presses the left arrow in the screen of the application. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is moved in left direction |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User will press on the move left button and model will move in the left direction. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 15. Move model right

**Table 64: Move model right**

| | |
|---|---|
| **Use Case ID:** | UC-5.15 |
| **Use Case Name:** | **Move Model right** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to Move the specific AR model to the right direction. |
| **Level:** | Medium |
| **Trigger:** | User presses the right arrow in the screen of the application. |
| **Preconditions:** | PRE-1: User must be on view page of some specific AR model. |
| **Postconditions:** | POST-1: AR model is moved in right direction |
| **Includes:** | UC-5.1 |
| **Normal Flow:** | 1. User will press on the move right button and model will move in the right direction. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 16. View model in VR

**Table 65: View model in VR**

| | |
|---|---|
| **Use Case ID:** | UC-5.16 |
| **Use Case Name:** | **View model in VR** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user to look at the car model in the VR form to provide insight view of a car model. |
| **Level:** | High |
| **Trigger:** | User clicks on **"View in VR"** button. |
| **Preconditions:** | PRE-1: User has searched for a particular model.<br>PRE-2: Searched model is also available in the VR form. |
| **Postconditions:** | POST-1: Mobile mode is changed to the Landscape.<br>POST-2: Virtual garage appears in front of the user in the VR box.<br>POST-3: A car model is placed in the garage. |
| **Includes:** | UC-1.1, UC-1.2, UC-5.6 |
| **Normal Flow:** | 1. User pressed "View in VR" button.<br>2. System ensures VR-box connectivity.<br>3. Screen mode of mobile is changed from portrait to landscape. |

| | |
|---|---|
| | 4. A virtual garage appears in the box.<br>5. A model in placed in the garage in front of user.<br>6. User can see themselves standing in that garage near the car. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 17. View interior of a car in VR

**Table 66: View interior of a car in VR**

| | |
|---|---|
| **Use Case ID:** | UC-5.17 |
| **Use Case Name:** | **View interior of a car in VR** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide the user to look at the inside car model in the VR form, to have a real look and feel of the system. |
| **Level:** | High |
| **Trigger:** | User clicks on **"View interior"** button. |
| **Preconditions:** | PRE-1: User has viewed a model in the VR. |
| **Post conditions:** | POST-1: Interior of a car model will be shown to the user |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User has viewed a car in the VR.<br>2. User presses **"view interior"** button from the external controller.<br>3. User sees themselves sitting inside of a car.<br>4. User can see car's dashboard in front of them |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 18. Exit VR mode

**Table 67: Exit VR mode**

| | |
|---|---|
| **Use Case ID:** | UC-5.18 |
| **Use Case Name:** | **Exit VR mode** |

| | |
|---|---|
| **Actors:** | **Primary:** Buyer |
| **Description:** | This will allow users to exit from the VR mode and re-run the application. |
| **Level:** | High |
| **Trigger:** | User clicks on **"Exit VR"** button. |
| **Preconditions:** | PRE-1: User is viewing an VR mode. |
| **Post conditions:** | POST-1: User will get exit from the VR mode.<br>POST-2: A black screen will appear in front of the user for 3 screen.<br>POST-3: Mode of the screen will be changed from the landscape to portrait mode. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User has viewed a car in the VR.<br>2. User presses **"Exit VR"** button from the external controller.<br>3. A black screen will appear in front of the user for three seconds.<br>4. Screen from which user viewed this VR model will appear. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3.2.6 Module 6: Car chatbots

Below are the uses cases for Car chatbots:

1. **Send Greeting**

**Table 68: Send Greetings**

| | |
|---|---|
| **Use Case ID:** | UC-6.1 |
| **Use Case Name:** | **Send Greeting** |
| **Actors:** | **Primary:** System<br>**Secondary:** Sellers, Buyers |
| **Description:** | System will send user a message ***"Welcome, hope you are doing good How may I help you?"*** |
| **Level** | High |
| **Trigger:** | User will enter into chat box to type anything. |
| **Preconditions:** | PRE-1: User have a strong internet connection. |
| **Post conditions:** | POST-1: System sent a message "Welcome, hope you are doing good How may I help you?" |

| | |
|---|---|
| | POST-2: System sent a message "What do you want to ask, select an option from below" |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User launches application.<br>2. System directs user to **home page.**<br>3. On home screen user tapped chat box.<br>4. System responded with welcome message to the user. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 2. Send Audio

**Table 69: Send Audio**

| | |
|---|---|
| **Use Case ID:** | UC-6.2 |
| **Use Case Name:** | **Send Audio** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | User can send their messages to the system using audio. This will help user to avoid overhead of typing a message. |
| **Level** | Medium |
| **Trigger:** | Clicking on the "Microphone" icon from the keyboard and pressing it until system starts listening. |
| **Preconditions:** | PRE-1: Application is working in the user's environment. |
| **Post conditions:** | POST-1: User sent a voice message to the chat bot.<br>POST-2: Chat bot was able to convert the voice message into text.<br>POST-3: Chat bot responded with the required answer. |
| **Includes:** | UC-6.1 |
| **Normal Flow:** | 1. User opened the chatbot.<br>2. User opened the keyboard.<br>3. User clicked on the microphone.<br>4. Microphone will be enabled and start listening to the user.<br>5. User will speak to the microphone.<br>6. System will understand the voice convert it into the text.<br>7. System will respond to the message as per the training of the model. |

| | |
|---|---|
| **Alternative Flows:** | N/A |
| **Exceptions:** | When system will not be able to understand the audio user has sent them. System will show a message in the chat "***Due to the noise cannot hear your message, please speak again***". |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3. Send text message

**Table 70: Send text message**

| | |
|---|---|
| **Use Case ID:** | UC-6.3 |
| **Use Case Name:** | **Send text message** |
| **Actors:** | **Primary:** Buyers, Sellers |
| **Description:** | User will be able to send a message to the chatbot, and chatbot will respond to the query according to the training set of that model. |
| **Level** | High |
| **Trigger:** | Clicking on the chatbot screen typing area. |
| **Preconditions:** | PRE-1: Application is working in users' environment. |
| **Post conditions:** | POST-1: Chat bot responded with the required answer. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User typed in the message.<br>2. System will respond to the message as per the training of the model. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 4. Ask for Car information

**Table 71: Ask for car information**

| | |
|---|---|
| **Use Case ID:** | UC-6.4 |
| **Use Case Name:** | **Ask for Car information** |
| **Actors:** | **Primary:** Buyers<br>**Secondary:** System |
| **Description:** | User will be able to ask chatbot about the different cars available in the system on the basis of the filters chatbot asks or the users' own query. |
| **Level** | Medium |

| | |
|---|---|
| **Trigger:** | After greeting, selecting **"Car information"** from the options of the question user have provided. |
| **Preconditions:** | PRE-1: Application is working in users' environment. |
| **Post conditions:** | POST-1: System will respond user with a suggestion of a car, according to their query. |
| **Includes:** | UC-6.1, UC-6.3 |
| **Normal Flow:** | 1. User selected the option of "Show car information"<br>2. System will ask for the price range, they are looking a car in.<br>3. User will enter a range of price.<br>4. System will show user a message ***"This is such a wide range; could you please be specific?"***<br>5. System will again question user about the make and model of the car.<br>6. User will respond system with a make of car.<br>7. System will give user a best possible option according to the recorded responses. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | If the user has contradicting requirements system will respond with "***There is no car available for the specified constraints, please try with something new*** " |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 5. Ask about Car Bazar

**Table 72: Ask about car bazar**

| | |
|---|---|
| **Use Case ID:** | UC-6.5 |
| **Use Case Name:** | **Ask about Car Bazar** |
| **Actors:** | **Primary:** Buyers<br>**Secondary:** System |
| **Description:** | User will be able to ask chatbot about the Car Bazar, its working and advantages. |
| **Level** | Medium |
| **Trigger:** | After greeting, selecting **"About the system"** from the options of the question user have provided. |
| **Preconditions:** | PRE-1: Application is working in users' environment. |
| **Post conditions:** | POST-1: System will respond user with the details of the Car Bazar. |
| **Includes:** | UC-6.1, UC-6.3 |
| **Normal Flow:** | 1. User selected the option of **"About the system"** |

| | |
|---|---|
| | 2. System will ask user to select from "**Working of Car Bazar**" or "**Usage benefits**".<br>3. User will select "**Working of Car Bazar**".<br>4. System will redirect user to the "**Functionality demo**" page. |
| **Alternative Flows:** | **3a:** On step 3 of the normal flow user will select "**Usage benefits**".<br>1. System will show user the benefits of the Car Bazar. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

6. **End conversation**

**Table 73: End conversation**

| | |
|---|---|
| **Use Case ID:** | UC-6.6 |
| **Use Case Name:** | **End conversation** |
| **Actors:** | **Primary:** Buyers, Sellers<br>**Secondary:** System |
| **Description:** | User will be able to end conversation with the chatbot when they are done asking questions. |
| **Level** | Low |
| **Trigger:** | At the end of every conversation system will allow user to end the conversation at any time. |
| **Preconditions:** | PRE-1: Application is working in users' environment. |
| **Post conditions:** | POST-1: System will respond user with "***Wish to see you later***"<br>POST-2: System will end the conversation. |
| **Includes:** | UC-6.1 |
| **Normal Flow:** | 1. User got the response they are looking for.<br>2. User click on '**End conversation**'.<br>3. System responded with "***Wish to see you later, goodbye***". |
| **Alternative Flows:** | **2a:** On the 2nd step of the normal flow if user wish to end conversation, they can close the chatbot screen by pressing '**X**' button. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

### 3.2.7 Module 7: Car Recommender

Below are the uses cases for Module-7 for Car Recommender.

1. **View Recommended Car**

**Table 74: View Recommended cars**

| | |
|---|---|
| **Use Case ID:** | UC-7.1 |
| **Use Case Name:** | **View Recommended Car** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to see the best car available in the application. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"View Best Car"** button. |
| **Preconditions:** | PRE-1: User must be on the "search car" page.<br>PRE-2: User must have a good internet connection. |
| **Postconditions:** | System will display the best car to the user. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "Car Recommendation" in the menu.<br>2. User clicks on "View Best Car".<br>3. System will display best car to user. |
| **Alternative Flows:** | **1a.** User can view best car when user is on search car page:<br>1. User Search for a car.<br>2. User clicks on "View Best Car" floating button.<br>3. Use case continues on step 3. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed in the application.<br>3. User have basic knowledge of how to use the application. |

2. **View brand recommendation**

**Table 75: view brand recommendation**

| | |
|---|---|
| **Use Case ID:** | UC-7.2 |
| **Use Case Name:** | **View brand recommendation** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to view the best brand among the available brands. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"View Best Brand"** button. |
| **Preconditions:** | PRE-1: User must be logged in application. |

| | |
|---|---|
| **Postconditions:** | System will display best brand to user. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "Car Recommendation" in the menu.<br>2. User clicks on "View Best Brand".<br>3. System will display best brand to user. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application.<br>3. User have basic knowledge of how to use the application. |

### 3. View Price based recommendation

**Table 76: view price-based recommendation**

| | |
|---|---|
| **Use Case ID:** | UC-7.3 |
| **Use Case Name:** | **View Price based recommendation** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to view the best car according to input price range. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Best by price"** button. |
| **Preconditions:** | PRE-1: User must have logged in the application. |
| **Postconditions:** | System will display the best car with respect to price range. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "Car Recommendation" in the menu.<br>2. User clicks on "Best by price" button.<br>3. System will ask user for price range.<br>4. User will input the price range.<br>5. System will display best car with respect to price range to user. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br>**4a.** During step 4 of normal flow, if user input the negative value in price range field then system will prompt user with the message "***Price cannot be negative***". |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application. |

| | |
|---|---|
| | 3. User have basic knowledge of how to use the application. |

### 4. View Model based recommendation

**Table 77: View model based recommendation**

| | |
|---|---|
| **Use Case ID:** | UC-7.4 |
| **Use Case Name:** | **View Model based recommendation** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to view the best car according to input model. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Best by model"** button. |
| **Preconditions:** | PRE-1: User must be logged in application. |
| **Postconditions:** | System will display the best car with respect to model. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "Car Recommendation" in the menu.<br>2. User clicks on "Best by model" button.<br>3. System will ask user to input model.<br>4. User will input the model year.<br>5. System will display best car with respect to model input by the user. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application.<br>3. User have basic knowledge of how to use the application. |

### 5. View mileage-based recommendation

**Table 78: View mileage-based recommendation**

| | |
|---|---|
| **Use Case ID:** | UC-7.5 |
| **Use Case Name:** | **View mileage-based recommendation** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to view the best car according to input mileage. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Best by mileage"** button. |
| **Preconditions:** | PRE-1: User must have logged in the application. |

| | |
|---|---|
| **Postconditions:** | System will display the best car with respect to mileage. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "Car Recommendation" in the menu.<br>2. User clicks on "Best by mileage" button.<br>3. System will ask user for mileage.<br>4. User will input the mileage in km.<br>5. System will display best car with respect to mileage to user. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application.<br>3. User have basic knowledge of how to use the application. |

### 6. View Re-sale based recommendation

**Table 79: View Re-sale based recommendation**

| | |
|---|---|
| **Use Case ID:** | UC-7.6 |
| **Use Case Name:** | **View Re-sale based recommendation** |
| **Actors:** | **Primary:** Buyer |
| **Description:** | This use case will provide user of the application with the option to view the best car with respect to re-sale. |
| **Level:** | Medium. |
| **Trigger:** | User clicks on **"Best by re-sale"** button. |
| **Preconditions:** | PRE-1: User must be logged in application. |
| **Postconditions:** | System will display best car to user according to re-sale. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on "Car Recommendation" in the menu.<br>2. User clicks on "Best by re-sale".<br>3. System will display best car to user with respect to re-sale of that car. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application.<br>3. User have basic knowledge of how to use the application. |

### 7. Vote a car

**Table 80: Vote a car**

| | |
|---|---|
| **Use Case ID:** | UC-7.7 |
| **Use Case Name:** | **Vote a car** |
| **Actors:** | **Primary:** Buyer, seller |
| **Description:** | This use case will provide user of the application with the option to vote a car. Votes will be used to recommend cars to users. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Vote up"** button. |
| **Preconditions:** | PRE-1: There must be cars added by the admin to vote. |
| **Postconditions:** | POST-1: Car will be voted by users account.<br>POST-2: Number of votes on the car will increase by 1. |
| **Includes:** | UC-1.1, UC-1.2, UC-9.6 |
| **Normal Flow:** | 1. User will select a car.<br>2. System will prompt user on "Car Details" page.<br>3. User clicks on "Vote up" button.<br>4. System will prompt user with an indication that car is voted, by coloring vote icon.<br>5. System will increment the number of votes on car, |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed in the application.<br>3. User have basic knowledge of how to use the application. |

### 8. Give remarks about a car

**Table 81: Give remarks about a car**

| | |
|---|---|
| **Use Case ID:** | UC-7.8 |
| **Use Case Name:** | **Give remarks about a car** |
| **Actors:** | **Primary:** Buyer, seller |
| **Description:** | This use case will provide user of the application with the option to give remarks about a car. Remarks will be used to recommend cars to users. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Add remarks"** button. |
| **Preconditions:** | PRE-1: There must be cars added by the admin for remarks. |

| | |
|---|---|
| **Postconditions:** | POST-1: Remark to the car will be added by users account. |
| **Includes:** | UC-1.1, UC-1.2, UC-9.6 |
| **Normal Flow:** | 1. User will select a car.<br>2. System will prompt user on "Car Details" page.<br>3. User clicks on "Add remarks" button.<br>4. User will select a remark out of the available remarks.<br>5. System will add remark to the car with users account. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed in the application.<br>3. User have basic knowledge of how to use the application. |

### 9. Update car remarks

**Table 82: Update car remarks**

| | |
|---|---|
| **Use Case ID:** | UC-7.9 |
| **Use Case Name:** | **Update car remarks** |
| **Actors:** | **Primary:** Buyer, seller |
| **Description:** | This use case will provide user of the application with the option to update remarks about a car. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"Update remarks"** button. |
| **Preconditions:** | PRE-1: There must be cars added by the admin for remarks.<br>PRE-2: User must have already added remarks on car. |
| **Postconditions:** | POST-1: Remark to the car will be updated. |
| **Includes:** | UC-1.1, UC-1.2, UC-9.6, UC-7.8 |
| **Normal Flow:** | 1. User will select a car.<br>2. System will prompt user on "Car Details" page.<br>3. User clicks on "Update remarks" button.<br>4. User will select a remark out of the available remarks.<br>5. System will Update remark to the car with users account. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."*** |

| | |
|---|---|
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application.<br>3. User have basic knowledge of how to use the application. |

**10. View all remarks of a car**

**Table 83: View all remarks of a car**

| | |
|---|---|
| **Use Case ID:** | UC-7.10 |
| **Use Case Name:** | **View all remarks of a car** |
| **Actors:** | **Primary:** Buyer, seller |
| **Description:** | This use case will provide user of the application with the option to view all remarks about a car. |
| **Level:** | Medium |
| **Trigger:** | User clicks on **"View remarks"** button. |
| **Preconditions:** | PRE-1: Users must have added remarks on car. |
| **Postconditions:** | POST-1: Remark on the car will be displayed to user. |
| **Includes:** | UC-1.1, UC-1.2, UC-9.6, UC-7.8 |
| **Normal Flow:** | 1. User will select a car.<br>2. System will prompt user on "Car Details" page.<br>3. User clicks on "View remarks" button.<br>4. System will display all remarks on car to user. |
| **Alternative Flows:** | N/A. |
| **Exceptions:** | **1a.** If during any step the internet connection is lost, then the system will prompt user with the message ***"Internet connection lost."***<br>**4a.** During step 4 of normal flow, if there are no remarks on car the system will prompt user with the message "***No remarks available***". |
| **Business Rules:** | N/A. |
| **Assumptions:** | 1. User have installed the application.<br>2. User have successfully signed up the application.<br>3. User have basic knowledge of how to use the application. |

### 3.2.8 Module 8: Help guideline and settings

Below are the uses cases for Module-8 for Guidelines and settings.

**1. View guide about privacy and safety:**

**Table 84: View guide about privacy and safety**

| | |
|---|---|
| **Use Case ID:** | UC-8.1 |

| | |
|---|---|
| **Use Case Name:** | **View guide about privacy and safety** |
| **Actors:** | Buyers |
| **Description:** | This use case will be used to guide user about how they can achieve privacy and safety using this system. |
| **Level:** | Medium |
| **Trigger:** | By clicking on view safety guide option from the help menu. |
| **Preconditions:** | 1. Internet connection is available on the user's phone.<br>2. User is logged in to their account. |
| **Post conditions:** | System will navigate user to a new help and guideline page where all the detail of achieving safety and ensuring privacy will be shown to the user. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User clicks on the Help menu from the navigation bar.<br>2. User selects privacy and safety option from the drop down.<br>3. System navigates user to a new page. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | 1a. During any of the normal flow, if user lose internet connection a message "Internet connection is lost" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 2. View guide about seller ads:

**Table 85: View guide about seller ads**

| | |
|---|---|
| **Use Case ID:** | UC-8.2 |
| **Use Case Name:** | **View guide about seller ads** |
| **Actors:** | Buyers |
| **Description:** | This use case will be used to guide sellers about how they can post their cars' ad so they can sell them. |
| **Level:** | Medium |
| **Trigger:** | By clicking on view seller ad guide option from the help menu. |
| **Preconditions:** | 1. Internet connection is available on the user's phone.<br>2. User is logged in to their account. |
| **Post conditions:** | System will navigate user to a new page where user can view guide about seller ads. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User clicks on the Help menu from the navigation bar.<br>2. User selects Sellers ads option from the drop down.<br>3. System navigates user to a new page.<br>4. User can scroll to see different demo videos and written content about posting a seller ad. |

| | |
|---|---|
| **Alternative Flows:** | N/A |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 3. View functionality demo video:

**Table 86: View functionality demo video**

| | |
|---|---|
| **Use Case ID:** | UC-8.3 |
| **Use Case Name:** | **View functionality demo video** |
| **Actors:** | **Primary:** Buyers, sellers |
| **Description:** | This use case will be used to guide user about the functioning of the systems' major features. |
| **Level:** | Medium |
| **Trigger:** | By clicking on view functionality demo option from the help menu. |
| **Preconditions:** | 1. Internet connection is available on the user's phone.<br>2. User is logged in to their account. |
| **Post conditions:** | System will auto play a video about the functioning of the system. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User clicks on the Help menu from the navigation bar.<br>2. User selects functionality demo option from the drop down.<br>3. System navigates user to a new page.<br>4. User clicked on play video button. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | N/A |
| **Business Rules:** | 1. User has a fast speed internet connection. |
| **Assumptions:** | 1. User understands basics of the English language. |

### 4. View chatbots usage:

**Table 87: View chatbot usage**

| | |
|---|---|
| **Use Case ID:** | UC-8.4 |
| **Use Case Name:** | **View chatbots usage** |
| **Actors:** | Buyers, sellers |
| **Description:** | This use case will be used to guide user about the usage of chatbots, how they work and what sort of information they can provide. |

| | |
|---|---|
| **Level:** | High |
| **Trigger:** | By clicking on view chatbots usage option from the help menu. |
| **Preconditions:** | 1. Internet connection is available on the user's phone. |
| **Post conditions:** | System will display usage of chatbot to user. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. User clicks on the Help menu from the navigation bar.<br>2. User selects chatbots usage option from the drop down.<br>3. System navigates user to chatbots usage page. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 5. View how to edit an ad:

**Table 88: view how to edit an ad**

| | |
|---|---|
| **Use Case ID:** | UC-8.5 |
| **Use Case Name:** | **View how to edit an ad** |
| **Actors:** | Sellers |
| **Description:** | This use case will be used to guide user about how they can edit an ad which they have previously posted. |
| **Level:** | Medium |
| **Trigger:** | By clicking on view ad usage option from the help menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone. |
| **Post conditions:** | POST-1: System will show user a step by step procedure of editing an ad. |
| **Includes:** | N/A. |
| **Normal Flow:** | 1. User clicks on the Help menu from the navigation bar.<br>2. User selects view ad usage option from the drop down.<br>3. System navigates user to a new page.<br>4. User click on show detail option. |
| **Alternative Flows:** | 4a: During the 4th step of normal flow user selected play video option.<br>1. System navigates user to a new page.<br>2. User clicked on the video to play it. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 6. View how to delete an ad:

**Table 89: view how to delete an ad**

| | |
|---|---|
| **Use Case ID:** | UC-8.6 |
| **Use Case Name:** | **View how to delete an ad** |
| **Actors:** | **Primary:** Sellers |
| **Description:** | This use case will be used to guide user about how they can delete an ad which they have previously posted. |
| **Level:** | Medium |
| **Trigger:** | By clicking on view ad usage option from the help menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone. |
| **Post conditions:** | POST-1: System will show user a step by step procedure of deleting an ad. |
| **Includes:** | N/A. |
| **Normal Flow:** | 1. User clicks on the Help menu from the navigation bar.<br>2. User selects view ad usage option from the drop down.<br>3. System navigates user to a new page.<br>4. User click on **"show detail"** option. |
| **Alternative Flows:** | 4a: During the 4th step of normal flow user selected **"play video"** option.<br>1. System navigates user to a new page.<br>2. User clicked on the **"video"** to play it.<br>3. System played a video where all steps of deleting an ad were shown. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 7. View how to change font:

**Table 90: View how to change font**

| | |
|---|---|
| **Use Case ID:** | UC-8.7 |
| **Use Case Name:** | **View how to change font** |
| **Actors:** | **Primary:** Sellers, buyers |
| **Description:** | This use case will be used to guide user about how they can change font of the application. |
| **Level:** | Medium |
| **Trigger:** | By clicking on app usage option from the help menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone. |
| **Post conditions:** | POST-1: System will show user a step by step procedure of changing font size of the application. |
| **Includes:** | N/A. |

| | |
|---|---|
| **Normal Flow:** | 1. User clicks on the **"Help menu"** from the **"navigation bar".**<br>2. User selects "**view app usage"** option from the drop down.<br>3. System navigates user to a new page.<br>4. User click on **"show detail"** option. |
| **Alternative Flows:** | 4a: During the 4th step of normal flow user selected play video option.<br>1. System navigates user to a new page.<br>2. User clicked on the video to play it. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 8. Change color:

**Table 91: Change color**

| | |
|---|---|
| **Use Case ID:** | UC-8.8 |
| **Use Case Name:** | **Change colors** |
| **Actors:** | **Primary:** Sellers, buyers |
| **Description:** | This use case will be used to change colors of application. |
| **Level:** | Low |
| **Trigger:** | By clicking on change color option from the setting menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone. |
| **Post conditions:** | POST-1: Default colors of application will be changed with the user selected colors. |
| **Includes:** | N/A. |
| **Normal Flow:** | 1. User clicks on the **"setting menu"** from the **"navigation bar".**<br>2. User selects "**change colors"** option from the drop down.<br>3. System navigates user to a new page.<br>4. System asks user to **"select a new color"**.<br>5. User selects a color from available options.<br>6. System prompts ***"Are you sure you want to apply these changes?"***<br>7. User selects **'OK'**. |
| **Alternative Flows:** | 6a: During the 6th step of normal flow user selected cancel option.<br>1. System navigates user to a setting page without applying changes. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

## 9. Change font:

**Table 92: Change font**

| | |
|---|---|
| **Use Case ID:** | UC-8.9 |
| **Use Case Name:** | **Change font** |
| **Actors:** | **Primary:** Sellers, buyers |
| **Description:** | This use case will be used to change fonts size and style of application, to ensure usability and visibility according to users' convenience. |
| **Level:** | Medium |
| **Trigger:** | By clicking on "**change font**" option from the setting menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone. |
| **Post conditions:** | POST-1: Default font size and style of application will be changed with the user selected options. |
| **Includes:** | N/A. |
| **Normal Flow:** | 1. User clicks on the "**setting menu"** from the navigation bar.<br>2. User selects **"change fonts"** option from the drop down.<br>3. System navigates user to a new page.<br>4. System asks user to select a font size.<br>5. User selects a color from available options.<br>6. System prompts ***"Are you sure you want to apply these changes?"***<br>User selects **'OK'.** |
| **Alternative Flows:** | 6a: During the 6th step of normal flow user selected cancel option.<br>1. System navigates user to a setting page without applying changes. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

## 10. Deactivate account:

**Table 93: Deactivate account**

| | |
|---|---|
| **Use Case ID:** | UC-8.10 |
| **Use Case Name:** | **Deactivate account** |
| **Actors:** | **Primary:** Sellers, buyers |
| **Description:** | This use case will be used to deactivate the user account and delete all related details of that user from the system. |
| **Level:** | High |
| **Trigger:** | By clicking on "**deactivate**" option from the setting menu. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: User was registered to the application. |

| | |
|---|---|
| **Post conditions:** | POST-1: User account was deactivated and all related details were removed from the systems' database. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on the setting menu from the navigation bar.<br>2. User selects deactivate account option from the drop down.<br>3. System navigates user to a new page.<br>4. System asks user to select a reason for deactivation.<br>5. User selects an options from available options.<br>6. System prompts ***"Are you sure you want to deactivate your account?"*** User selects **'OK'.** |
| **Alternative Flows:** | 4a: During the 4th step of normal flow user selected others option.<br>1. System asks user to specify a reason of deactivation.<br>2. User typed in a reason.<br>3. System started from 6th step of normal flow.<br>6a: During the 6th step of normal flow user selected **'Cancel'.**<br>1. System navigates user to the main page, without deleting account. |
| **Exceptions:** | N/A |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 11. Enable notification:

**Table 94: Enable notification**

| | |
|---|---|
| **Use Case ID:** | UC-8.11 |
| **Use Case Name:** | **Enable notification** |
| **Actors:** | **Primary:** Sellers, buyers |
| **Description:** | This use case will be used to toggle between enabling and disabling in app notifications. |
| **Level:** | High |
| **Trigger:** | By clicking on enable in-app notification. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's phone.<br>PRE-2: User has an active account. |
| **Post conditions:** | POST-1: In app notifications will be enabled. |
| **Includes:** | UC-1.1, UC-1.2 |
| **Normal Flow:** | 1. User clicks on the "**setting menu"** from the **"navigation bar".**<br>2. User selects "**notification"** option from the drop down.<br>3. System navigates user to a new page.<br>4. User checked **"enable notification"** button. |
| **Alternative Flows:** | N/A |
| **Exceptions:** | N/A |

| | |
|---|---|
| **Business Rules:** | N/A |
| **Assumptions:** | 1. User understands basics of the English language. |

### 3.2.9 Module 9: Admin Management

Below are the uses cases for Module-9 for Admin Management.

1. **Add new AR model**:

**Table 95: Add new AR model**

| | |
|---|---|
| **Use Case ID:** | UC-9.1 |
| **Use Case Name:** | **Add new AR/VR car model** |
| **Actors:** | Admin |
| **Description:** | This use case will allow admin to upload new AR/VR car model for the users to view. |
| **Level:** | High |
| **Trigger:** | Admin clicks "**Upload AR/VR model**" button in actions. |
| **Preconditions:** | PRE-1: Internet connection is available on the user's device. |
| **Post conditions:** | System will notify admin with a success message and a new car model will be added to the existing car models. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. Admin clicks **upload AR/VR car model** button.<br>2. Admin selects AR/VR model to be uploaded.<br>3. Admin clicks **upload** button.<br>4. A success message is shown to the admin. |
| **Alternative Flows:** | 3a: if AR model fails to upload.<br>1. A retry message is shown to the admin.<br>2. Admin clicks retry button. |
| **Exceptions:** | 1a. During any of the normal flow, if admin lose internet connection a message "Internet connection is lost" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. Admin understands basics of the English language. |

2. **Delete AR car model**:

**Table 96: Delete AR car model**

| | |
|---|---|
| **Use Case ID:** | UC-9.2 |
| **Use Case Name:** | **Delete AR/VR car model** |
| **Actors:** | Admin |
| **Description:** | This use case will allow admin to delete AR car model form the existing car models. |
| **Level:** | High |

| | |
|---|---|
| **Trigger:** | Admin clicks "**Delete AR/VR model**" button in actions. |
| **Preconditions:** | PRE-1: Internet connection is available.<br>PRE-2: At least one model already exists. |
| **Post conditions:** | System will notify admin with a success message and a selected car model will be deleted from the existing car models. |
| **Includes:** | UC-9.1 |
| **Normal Flow:** | 1. Admin clicks **Delete AR/VR car model** button.<br>2. An alert message "are you sure you want to delete the model" appears.<br>3. Admin clicks "Yes".<br>4. A success message is shown to the admin. |
| **Alternative Flows:** | 3a: if the admin selects "No".<br>1: the process is exited, and model is not deleted.<br>4a: if AR model fails to delete due to any reason.<br>3. A retry message is shown to the admin.<br>4. Admin clicks retry button.<br>5. Normal flow resumes from step 2 |
| **Exceptions:** | 1a. During any of the normal flow, if admin lose internet connection a message "Internet connection is lost" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | N/A |

3. **Disable user account**:

**Table 97: Disable user account**

| | |
|---|---|
| **Use Case ID:** | UC-9.3 |
| **Use Case Name:** | **Disable user account.** |
| **Actors:** | Admin |
| **Description:** | This use case will allow admin to disable any user account if he wants to. |
| **Level:** | Medium |
| **Trigger:** | Admin clicks "**Disable account**" button for some user's profile. |
| **Preconditions:** | PRE-1: Internet connection is available.<br>PRE-2: At least one user with verified account already exists. |
| **Post conditions:** | System will notify admin with a success message and a selected user's account status will be changed to disabled. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. Admin selects a user's profile.<br>2. Admin clicks "**disable account**" from the available actions.<br>3. An alert message "Do you want to disable user account" appears.<br>4. Admin selects "yes" from the alert.<br>5. A success message is shown to the admin. |
| **Alternative Flows:** | 4a: if the admin selects "No".<br>1: the process is exited, and account is not disabled. |

| | |
|---|---|
| | 5a: if account fails to be disabled due to any reason.<br>6. A retry message is shown to the admin.<br>7. Admin clicks retry button.<br>8. Normal flow resumes from step 3 |
| **Exceptions:** | 1a. During any of the normal flow, if admin lose internet connection a message "Internet connection is lost" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. Admin understands basics of the English language. |

4. **Re-Enable user account**:

**Table 98: Re-enable user account**

| | |
|---|---|
| **Use Case ID:** | UC-9.4 |
| **Use Case Name:** | **Re-enable user account.** |
| **Actors:** | Admin |
| **Description:** | This use case will allow admin to re-enable any user account if it was disabled. |
| **Level:** | Medium |
| **Trigger:** | Admin clicks "**Enable account**" button for disabled user's profile. |
| **Preconditions:** | PRE-1: Internet connection is available.<br>PRE-2: the account must be disabled. |
| **Post conditions:** | System will notify admin with a success message and a selected user's account status will be changed from disabled to active. |
| **Includes:** | UC-9.3 |
| **Normal Flow:** | 1. Admin selects a user's profile from disabled profiles.<br>2. Admin clicks "**enable account**" from the available actions.<br>3. An alert message "Do you want to enable user account" appears.<br>4. Admin selects "yes" from the alert.<br>5. A success message is shown to the admin. |
| **Alternative Flows:** | 4a: if the admin selects "No".<br>1: the process is exited, and account is not enabled.<br>5a: if account fails to be enabled due to any reason.<br>1. A retry message is shown to the admin.<br>2. Admin clicks retry button.<br>3. Normal flow resumes from step 3 |
| **Exceptions:** | 1a. During any of the normal flow, if admin lose internet connection a message "Internet connection is lost" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | 2. Admin understands basics of the English language. |

5. **Warn user about issue**:

**Table 99: warn user about an issue**

| | |
|---|---|
| **Use Case ID:** | UC-9.5 |
| **Use Case Name:** | **Warn user about issue.** |
| **Actors:** | Admin |
| **Description:** | This use case will allow admin to warn user if any user reports another user. |
| **Level:** | Medium |
| **Trigger:** | Admin clicks "**warning**" button in reported user's profile. |
| **Preconditions:** | PRE-1: Internet connection is available.<br>PRE-2: The account must be reported. |
| **Post conditions:** | An email will be sent to the user with the warning message and admin will be notified with a success message. |
| **Includes:** | N/A |
| **Normal Flow:** | 1. Admin selects a user's profile from reported profiles.<br>2. Admin clicks "**issue warning**" from the available actions.<br>3. An alert message "Do you want to issue warning to user account" appears.<br>4. Admin selects "yes" from the alert.<br>5. A success message "**warning issued**" is shown to the admin. |
| **Alternative Flows:** | 4a: if the admin selects "No".<br>1: the process is exited, and warning is not issued to the user.<br>5a: if process fails due to any reason.<br>1. A retry message is shown to the admin.<br>2. Admin clicks retry button.<br>3. Normal flow resumes from step 3 |
| **Exceptions:** | 1a. During any of the normal flow, if admin lose internet connection a message "Internet connection is lost" will be shown. |
| **Business Rules:** | N/A |
| **Assumptions:** | 1. Admin understands basics of the English language. |

## 3.3 Specific Requirements

Below are the Functional requirements of all the modules of Car Bazar system:

## Module 1: User profiling

Following are the functional requirements of User profiling module:

### 3.3.1 Functional Requirement one:

**Table 100: Email for Signup**

| Identifier | **FR-1.1.1** |
|---|---|
| Title | Email for Signup |
| Requirement | User will enter valid email address that can only contain lower case alphabets, upper case alphabets, numeric values and only special that can occur are @ . _ |
| Source | Supervisor |
| Rationale | Users will be able to provide email address so that they can validate their accounts and login with it later. |
| Business Rule | Email is required and cannot be empty.<br>Users can only enter the specified characters. |
| Dependencies | N/A |
| Priority | High |

### 3.3.2 Functional Requirement two

**Table 101: Password for Signup**

| Identifier | **FR-1.1.2** |
|---|---|
| Title | Password for Signup |
| Requirement | User will enter password. The minimum length is 8 and maximum length is 50. The password must contain a digit. |
| Source | Supervisor |
| Rationale | Users will be able to provide password, which they will use to login later. |
| Business Rule | Password length can only be in the specified range.<br>Password is required and cannot be empty. |
| Dependencies | N/A |
| Priority | High |

### 3.3.3 Functional Requirement Three

**Table 102: Notification for Invalid Password**

| Identifier | **FR-1.1.3** |
|---|---|
| Title | Notification for Invalid Password |
| Requirement | System will display “Invalid Password”. If pattern for the password is not followed. |
| Source | Supervisor |
| Rationale | To provide feedback to the user that password is not matched with the pattern. |
| Business Rule | Password must contain a digit.<br>Minimum length of password is 8 characters. |
| Dependencies | FR-1.1.2 |
| Priority | Low |

**Table: Notification for Invalid Password.**

### 3.3.4 Functional Requirement Four

**Table 103: Notification for Invalid Email**

| Identifier | **FR-1.1.4** |
|---|---|
| Title | Notification for Invalid Email |
| Requirement | System will display “Invalid Email”. If pattern for email is not matched. |
| Source | Supervisor |
| Rationale | To provide feedback to the user that email is not matched with the pattern. |
| Business Rule | N/A |
| Dependencies | FR-1.1.1 |
| Priority | Low |

### 3.3.5 Functional Requirement Five

**Table 104: Confirm Password**

| Identifier | **FR-1.1.5** |
|---|---|
| Title | Confirm Password |
| Requirement | User will reenter password. The minimum length is 8 and maximum length is 50. The password must contain a digit |
| Source | Supervisor |
| Rationale | Users will be able to remember and confirm the password they entered. |
| Business Rule | Password length can only be in specified range.<br>Confirm password is required and cannot be empty. |
| Dependencies | FR-1.1.2 |
| Priority | High |

### 3.3.6 Functional Requirement Six

**Table 105: Password field does not match notification**

| Identifier | **FR-1.1.6** |
|---|---|
| Title | Password field does not match notification. |
| Requirement | System will display “Password and Confirm Password Mismatched” if the value in both the fields does not match. |
| Source | Supervisor |
| Rationale | To show proper notification and feedback to the user. |
| Business Rule | N/A |
| Dependencies | FR-1.1.2, FR-1.1.5 |
| Priority | Low |

### 3.3.7 Functional Requirement Seven

**Table 106: Select account type**

| Identifier | **FR-1.1.7** |
|---|---|
| Title | Select Account type |
| Requirement | User will select an account type using a radio button. One radio button contain text “Dealers” and second radio button will contain “Common Users” |
| Source | Supervisor |
| Rationale | Users will be able to provide different signup details according to their account type. |
| Business Rule | User must select one of the radio buttons. |
| Dependencies | N/A |
| Priority | High |

### 3.3.8 Functional Requirement eight

**Table 107: Send verification link to email**

| Identifier | **FR-1.3.1** |
|---|---|
| Title | Send verification link to Email |
| Requirement | System will send a link to the email that user provided while signing up. |
| Source | Supervisor |
| Rationale | Users will be able to verify their account so that they can use the functionality. |
| Business Rule | User cannot user all the functionality without verifying their email. |
| Dependencies | N/A |
| Priority | High |

### 3.3.9 Functional Requirement nine

**Table 108: Resend verification link button**

| Identifier | **FR-1.3.4** |
|---|---|
| Title | Resend verification link button |
| Requirement | User will click “Resend Verification link” to resend the link to the email user provided. |
| Source | Supervisor |
| Rationale | Users will be able to resend the link to his email if it was not received before |
| Business Rule | Link sent to the email must be opened by the user.<br>Email must be verified. |
| Dependencies | N/A |
| Priority | High |

### 3.3.10 Functional Requirement ten

**Table 109: Verification Success Notification**

| Identifier | **FR-1.3.5** |
|---|---|
| Title | Verification Success Notification |
| Requirement | System will display “Account Verified” message after the link in opened by the user which was sent to him/her. |
| Source | Supervisor |
| Rationale | To provide user with proper feedback. |
| Business Rule | N/A |
| Dependencies | FR 1.3.3 |
| Priority | Low |

### 3.3.11 Functional Requirement eleven

**Table 110: Send Change password link to email**

| Identifier | **FR-1.4.3** |
|---|---|
| Title | Send Change password link to email. |
| Requirement | System will send an email to the email the user provided. |
| Source | Supervisor |
| Rationale | To recover the password for a user. |
| Business Rule | N/A |
| Dependencies | FR 1.4.2 |
| Priority | High |

### 3.3.12 Functional Requirement twelve

**Table 111: New Password**

| Identifier | **FR-1.4.4** |
|---|---|
| Title | New Password |
| Requirement | User will enter password. The minimum length is 8 and maximum length is 50. The password must contain a digit. |
| Source | Supervisor |
| Rationale | Users will be able to provide password, which they will use to login again. |
| Business Rule | Password length can only be in the specified range.<br>Password is required and cannot be empty. |
| Dependencies | N/A |
| Priority | High |

### 3.3.13 Functional Requirement thirteen

**Table 112:Confirm password**

| Identifier | **FR-1.4.5** |
|---|---|

| | |
|---|---|
| Title | Confirm Password |
| Requirement | User will reenter password. The minimum length is 8 and maximum length is 50. The password must contain a digit |
| Source | Supervisor |
| Rationale | Users will be able to remember and confirm the password they entered. |
| Business Rule | Password length can only be in specified range.<br>Confirm password is required and cannot be empty. |
| Dependencies | FR-1.4.4 |
| Priority | High |

### 3.3.14 Functional Requirement fourteen

**Table 113: Notification for invalid password**

| Identifier | **FR-1.4.7** |
|---|---|
| Title | Notification for Invalid Password |
| Requirement | System will display “Invalid Password”. If pattern for the password is not followed. |
| Source | Supervisor |
| Rationale | To provide feedback to the user that password is not matched with the pattern. |
| Business Rule | Password must contain a digit.<br>Minimum length of password is 8 characters and maximum 50. |
| Dependencies | FR-1.4.4 |
| Priority | Low |

### 3.3.15 Functional Requirement fifteen

**Table 114: Password field does not match notification**

| Identifier | **FR-1.4.8** |
|---|---|
| Title | Password field does not match notification. |
| Requirement | System will display “Password and Confirm Password Mismatched” if the value in both the fields does not match. |
| Source | Supervisor |
| Rationale | To show proper notification and feedback to the user. |
| Business Rule | N/A |
| Dependencies | FR-1.4.4, FR-1.4.5 |
| Priority | Low |

### 3.3.16 Functional Requirement sixteen

**Table 115: Password Changed Notification**

| Identifier | **FR-1.4.8** |
|---|---|

| | |
|---|---|
| Title | Password Changed Notification |
| Requirement | System will display “Password Changed Successfully”. If provided information is correct and validated. |
| Source | Supervisor |
| Rationale | To show proper feedback to the users. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Low |

### 3.3.17 Functional Requirement seventeen

**Table 116: Confirm password**

| Identifier | **FR-1.5.3** |
|---|---|
| Title | Confirm Password |
| Requirement | User will reenter password. The minimum length is 8 and maximum length is 50. The password must contain a digit |
| Source | Supervisor |
| Rationale | Users will be able to remember and confirm the password they entered. |
| Business Rule | Password length can only be in specified range.<br>Confirm password is required and cannot be empty. |
| Dependencies | FR-1.5.2 |
| Priority | Medium |

### 3.3.18 Functional Requirement eighteen

**Table 117: Invalid old password**

| Identifier | **FR-1.5.4** |
|---|---|
| Title | Invalid old password |
| Requirement | User will display “Invalid old password” if user entered wrong old password |
| Source | Supervisor |
| Rationale | To provide users with proper feedback. |
| Business Rule | N/A |
| Dependencies | FR-1.5.1 |
| Priority | Low |

### 3.3.19 Functional Requirement nineteen

**Table 118: Mismatched new and confirmed password**

| Identifier | **FR-1.5.4** |
|---|---|
| Title | Mismatched new and confirmed password |
| Requirement | System will display “New and confirm password do not match” if both fields have different data. |
| Source | Supervisor |
| Rationale | To provide users with proper feedback. |

| | |
|---|---|
| Business Rule | N/A |
| Dependencies | FR-1.5.2, FR-1.5.3 |
| Priority | Low |

### 3.3.20 Functional Requirement twenty

**Table 119: Direct to files**

| Identifier | **FR-1.7.2** |
|---|---|
| Title | "Direct to files" |
| Requirement | System will direct user to the files window where he/she can select the photo he wants to upload. |
| Source | Supervisor |
| Rationale | User will be able to select the photo as a profile picture. |
| Business Rule | Users can only upload photos as profile picture.<br>Users can only select photos. |
| Dependencies | FR-1.7.1 |
| Priority | Medium |

### 3.3.21 Functional Requirement twenty-one

**Table 120: Select photo**

| Identifier | **FR-1.7.3** |
|---|---|
| Title | "Select photo" |
| Requirement | Users will be able to select photo which will be uploaded as profile picture of their account. |
| Source | Supervisor |
| Rationale | User will be able to select the photo as a profile picture. |
| Business Rule | Users can only upload photos as profile picture.<br>Users can only select photos.<br>Minimum Resolution of the photo can be 360x360<br>Maximum size of profile picture can be 1MB. |
| Dependencies | FR-1.7.1, FR 1.7.2 |
| Priority | Medium |

### 3.3.22 Functional Requirement twenty-two

**Table 121: Enter username to search**

| Identifier | **FR-1.8.1** |
|---|---|
| Title | Enter username to search |
| Requirement | Users will be able to enter text input in this field. Input can contain lower and upper-case characters. Maximum length of the field can be 50 characters. |
| Source | Supervisor |

| | |
|---|---|
| Rationale | User will be able to enter the name of the user he wants to search. |
| Business Rule | User can search without any input.<br>This field can be empty. |
| Dependencies | N/A |
| Priority | High |

### 3.3.23 Functional Requirement twenty-three

**Table 122: Other User's profile details**

| Identifier | **FR-1.9.2** |
|---|---|
| Title | Other User's profile details. |
| Requirement | System will show the detailed profile page of the clicked user after user clicks the profile icon. |
| Source | Supervisor |
| Rationale | User will be able to see the detailed page of another users profile |
| Business Rule | N/A |
| Dependencies | FR-1.9.1 |
| Priority | Medium |

### 3.3.24 Functional Requirement twenty-four

**Table 123: Invalid phone number notification**

| Identifier | **FR-1.10.2** |
|---|---|
| Title | Invalid phone number notification |
| Requirement | User will show a message of "Invalid phone number" if the pattern of the input data does not match the pattern. |
| Source | Supervisor |
| Rationale | To provide proper feedback to the user |
| Business Rule | Phone number can have maximum length of 11 digits.<br>Phone number can be empty. |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.25 Functional Requirement twenty-five

**Table 124: Enter phone number for editing**

| Identifier | **FR-1.11.1** |
|---|---|
| Title | Enter phone number for editing |
| Requirement | User will be able to enter phone number to edit. The number must 11 digits and cannot contain alphabets. |
| Source | Supervisor |
| Rationale | User will be able to provide his contact details. |
| Business Rule | Phone number can only be edited if its already added. |

| | |
|---|---|
| | Phone number can have maximum length of 11 digits.<br>Phone number can be empty. |
| Dependencies | FR-1.10.1 |
| Priority | Medium |

### 3.3.26 Functional Requirement twenty-six

**Table 125: Invalid phone number notification**

| Identifier | **FR-1.11.3** |
|---|---|
| Title | Invalid phone number notification |
| Requirement | User will show a message of "Invalid phone number" if the pattern of the input data does not match the pattern. |
| Source | Supervisor |
| Rationale | To provide proper feedback to the user |
| Business Rule | Phone number can have maximum length of 11 digits.<br>Phone number can be empty. |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.27 Functional Requirement twenty-seven

**Table 126: Increase following**

| Identifier | **FR-1.12.2** |
|---|---|
| Title | Increase following |
| Requirement | System will increase following of the user who followed another user and add profile to his following when they click on the 'Follow' button. |
| Source | Supervisor |
| Rationale | To provide user with the functionality of knowing which users are the following. |
| Business Rule | N/A |
| Dependencies | FR-1.12.1 |
| Priority | Medium |

### 3.3.28 Functional Requirement twenty-eight

**Table 127: Increase follower**

| Identifier | **FR-1.12.3** |
|---|---|
| Title | Increase follower |
| Requirement | System will increase followers of the user who is being followed by another user. |
| Source | Supervisor |
| Rationale | To provide user with the functionality of knowing which other users are the following them. |

| | |
|---|---|
| Business Rule | N/A |
| Dependencies | FR-1.12.1 |
| Priority | Medium |

### 3.3.29 Functional Requirement twenty-nine

**Table 128: Decrease following**

| Identifier | **FR-1.13.2** |
|---|---|
| Title | Decrease following |
| Requirement | System will decrease following of the user who unfollowed another user and delete profile from his following list when they click on the 'Unfollow' button. |
| Source | Supervisor |
| Rationale | To provide user with the functionality of knowing which users are the following. |
| Business Rule | N/A |
| Dependencies | FR-1.13.1 |
| Priority | Medium |

### 3.3.30 Functional Requirement thirty

**Table 129: Decrease follower**

| Identifier | **FR-1.13.3** |
|---|---|
| Title | Decrease follower |
| Requirement | System will decrease followers of the user who is being unfollowed by another user. |
| Source | Supervisor |
| Rationale | To provide user with the functionality of knowing which other users are the following them. |
| Business Rule | N/A |
| Dependencies | FR-1.13.1 |
| Priority | Medium |

### 3.3.31 Functional Requirement thirty-one

**Table 130: Sign in with social accounts**

| Identifier | **FR-1.14.1** |
|---|---|
| Title | Sign in with social accounts |
| Requirement | User will select a Facebook account sign in or google account sign in. |
| Source | Team member |
| Rationale | User will be able to select either google account or Facebook account for sign in. |
| Business Rule | N/A |
| Dependencies | N/A |

| | |
|---|---|
| Priority | Medium |

### 3.3.32 Functional Requirement thirty-two

**Table 131: Sign in with google account**

| Identifier | **FR-1.14.2** |
|---|---|
| Title | Sign in with google account |
| Requirement | System will Log in user using the details of google account. |
| Source | Team member |
| Rationale | User will be able to use system functionalities with their google account information. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.33 Functional Requirement thirty-three

**Table 132: Sign in with Facebook account**

| Identifier | **FR-1.14.3** |
|---|---|
| Title | Sign in with Facebook account |
| Requirement | System will Log in user using the details of Facebook account. |
| Source | Team member |
| Rationale | User will be able to use system functionalities with their Facebook account information. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.34 Functional Requirement thirty-four

**Table 133: Facebook login**

| Identifier | **FR-1.14.4** |
|---|---|
| Title | Facebook login |
| Requirement | System will redirect user to the login page of Facebook when Facebook account is not already logged in. |
| Source | Team member |
| Rationale | To allow user to use system functionality with their information provided through Facebook |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.35 Functional Requirement thirty-five

**Table 134: Google Login**

| Identifier | **FR-1.14.5** |
|---|---|
| Title | Google login |
| Requirement | System will redirect user to the login page of Google when Google account is not already logged in. |
| Source | Team member |
| Rationale | To allow user to use system functionality with their information provided through Google. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.36 Functional Requirement thirty-six

**Table 135: User's profile details**

| Identifier | **FR-1.15.2** |
|---|---|
| Title | User's profile details. |
| Requirement | System will show the details page of the user after user clicks the profile icon. |
| Source | Supervisor |
| Rationale | User will be able to see the detailed page of his profile |
| Business Rule | N/A |
| Dependencies | FR-1.15.1 |
| Priority | Medium |

## Module 2: Buyers and sellers Ads

Following are the functional requirements of Buyers and sellers Ads module:

### 3.3.37 Functional Requirement thirty-seven

**Table 136: Title of ad**

| Identifier | **FR-2.1.1** |
|---|---|
| Title | Title of ad. |
| Requirement | User will enter title of ad which can only contain small case alphabets, upper case alphabets and digits, length of the input field should be 5 to 40 characters. |
| Source | Team member. |
| Rationale | To get the idea of what the ad is about and for search ad purposes. |
| Business Rule | Input field cannot be empty.<br>User cannot enter the number of characters other than the specified range. |
| Dependencies | N/A |

| | |
|---|---|
| Priority | Medium. |

### 3.3.38 Functional Requirement thirty-eight

**Table 137: Model of the car**

| Identifier | **FR-2.1.2** |
|---|---|
| Title | Model of the car. |
| Requirement | User will enter model of the car which can only contain digits, length of input field is 4 characters. |
| Source | Team member. |
| Rationale | To get model of the car for filtering out in the searches. |
| Business Rule | Input field cannot be empty.<br>User cannot enter the number of digits other than the specified length of the field. |
| Dependencies | N/A |
| Priority | Medium. |

### 3.3.39 Functional Requirement thirty-nine

**Table 138: Price of the car**

| Identifier | **FR-2.1.3** |
|---|---|
| Title | Price of the car. |
| Requirement | User will enter price of the car which can only contain digits, length of input field is 4 to 20 characters. |
| Source | Supervisor. |
| Rationale | To get price of the car so, buyer can estimate the budget accordingly. |
| Business Rule | Input field cannot be empty.<br>User cannot enter the number of digits other than the specified range of the field. |
| Dependencies | N/A |
| Priority | Medium. |

### 3.3.40 Functional Requirement forty

**Table 139: Description of the ad**

| Identifier | **FR-2.1.4** |
|---|---|
| Title | Description of the ad. |
| Requirement | User will enter description of ad which can only contain small case alphabets, upper case alphabets and digits, length of the input field should be 50 to 1000 characters. |
| Source | Supervisor. |
| Rationale | To get more details of the car. |

| | |
|---|---|
| Business Rule | Input field cannot be empty.<br>User cannot enter the number of characters other than the specified range. |
| Dependencies | N/A |
| Priority | Medium. |

### 3.3.41 Functional Requirement forty-one

**Table 140: Upload ad button action**

| Identifier | **FR-2.1.5** |
|---|---|
| Title | **Upload ad** button action. |
| Requirement | When seller clicks on **upload ad** button then prompt seller with the message "Ad posted successfully" in the center of the screen. |
| Source | Supervisor. |
| Rationale | Seller should know that ad is successfully posted or not. |
| Business Rule | N/A. |
| Dependencies | FR-2.1.1, FR-2.1.2, FR-2.1.3, FR-2.1.4, FR-2.1.5 |
| Priority | High. |

### 3.3.42 Functional Requirement forty-two

**Table 141: Notify invalid model**

| Identifier | **FR-2.1.6** |
|---|---|
| Title | Notify invalid model. |
| Requirement | System will prompt user to enter model again in case of invalid model (Invalid model: Special characters or alphabets entered, Number characters other than specified range or empty) |
| Source | Team member. |
| Rationale | To notify user and prompt him/her to input valid model in the specified field. |
| Business Rule | N/A. |
| Dependencies | FR-2.1.3 |
| Priority | Medium. |

### 3.3.43 Functional Requirement forty-three

**Table 142: Notify invalid description**

| Identifier | **FR-2.1.7** |
|---|---|
| Title | Notify invalid description. |

| | |
|---|---|
| Requirement | System will prompt user to enter description again in case of invalid description (Invalid description: Number characters other than specified range or empty) |
| Source | Team member. |
| Rationale | To notify user and prompt him/her to input valid description in the specified field. |
| Business Rule | N/A. |
| Dependencies | FR-2.1.5 |
| Priority | Medium. |

### 3.3.44 Functional Requirement forty-four

**Table 143: Add video**

| Identifier | **FR-2.2.1** |
|---|---|
| Title | Add video |
| Requirement | User will be able to upload a video along with the ad. |
| Source | Team member |
| Rationale | To provide detail of car user want to purchase. |
| Business Rule | N/A |
| Dependencies | FR-1.2.3 |
| Priority | Medium |

### 3.3.45 Functional Requirement forty-five

**Table 144: Larger video size**

| Identifier | **FR-2.2.2** |
|---|---|
| Title | Larger video size |
| Requirement | System will show a message "***File size is larger than 50MB***", when a video of 50MB or larger will be posted in ad. |
| Source | Team member |
| Rationale | To limit the size of video to be uploaded with the ad. |
| Business Rule | BR-1: Video size will be 50MB or smaller. |
| Dependencies | FR-2.2.1 |
| Priority | Medium |

### 3.3.46 Functional Requirement forty-six

**Table 145: Poor Video quality**

| Identifier | **FR-2.2.3** |
|---|---|
| Title | Poor video quality |
| Requirement | System will show a message "***Video size is too small***", when a video of 100B or larger will be posted in ad. |

| | |
|---|---|
| Source | Team member |
| Rationale | To get a high-quality video when uploading an ad. |
| Business Rule | Video size will be 100B or larger. |
| Dependencies | FR-2.2.1 |
| Priority | Medium |

### 3.3.47 Functional Requirement forty-seven

**Table 146: Slow internet connection**

| Identifier | **FR-2.2.4** |
|---|---|
| Title | Slow internet connection |
| Requirement | System will show a message "***Poor internet connection, cannot upload video at the moment***", when internet is of poor quality and video cannot be uploaded |
| Source | Team member |
| Rationale | To ensure posting of a video ad. |
| Business Rule | N/A |
| Dependencies | FR-2.2.1 |
| Priority | Medium |

### 3.3.48 Functional Requirement forty-eight

**Table 147: Download video**

| Identifier | **FR-2.3.1** |
|---|---|
| Title | Download video |
| Requirement | System will be able to download video in the ad. |
| Source | Team member |
| Rationale | To download the video. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.49 Functional Requirement forty-nine

**Table 148: Not enough space for video ad in device**

| Identifier | **FR-2.3.2** |
|---|---|
| Title | Not enough space for video ad in device |
| Requirement | System will show user a message "***There is not enough space in the system to download this video***" when user try to download the video in the ad. |
| Source | Team Member |
| Rationale | To tell user that they have not enough space in their device left to download the video. |
| Business Rule | N/A |

| | |
|---|---|
| Dependencies | FR-2.3.1 |
| Priority | Medium |

### 3.3.50 Functional Requirement fifty

**Table 149: Camera or gallery access**

| Identifier | **FR-2.4.1** |
|---|---|
| Title | Camera or gallery access |
| Requirement | When user click on upload images system will ask user to choose from gallery or camera. |
| Source | Supervisor |
| Rationale | To choose an option for uploading images either from gallery or camera. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.51 Functional Requirement fifty-one

**Table 150: Storage permission**

| Identifier | **FR-2.4.5** |
|---|---|
| Title | Storage permission |
| Requirement | System shall ask user to permit access of storage. |
| Source | Supervisor |
| Rationale | To allow system to access of pictures that are located in the users' smart phone. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.52 Functional Requirement fifty-two

**Table 151: Allow Storage access**

| Identifier | **FR-2.4.6** |
|---|---|
| Title | Allow Storage access |
| Requirement | User shall allow system to access its files and later used to upload them to site. |
| Source | Supervisor |
| Rationale | To allow system to access of pictures that are located in the users' smart phone. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.53 Functional Requirement fifty-three

**Table 152: Deny Storage access**

| Identifier | **FR-2.4.7** |
|---|---|
| Title | Deny Storage access |
| Requirement | User shall not allow system to access its files. |
| Source | Supervisor |
| Rationale | To stop system from accessing media files located in the users' system. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.54 Functional Requirement fifty-four

**Table 153: Allow camera access**

| Identifier | **FR-2.4.9** |
|---|---|
| Title | Allow camera access |
| Requirement | User shall allow camera access so that pictures can be taken and used to make a 360° ad. |
| Source | Supervisor |
| Rationale | To take images of the cars from camera so they can be stitched together and a 360° ad be made. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.55 Functional Requirement fifty-five

**Table 154: Deny camera access**

| Identifier | **FR-2.4.10** |
|---|---|
| Title | Deny camera access |
| Requirement | User shall deny system to access its camera and take pictures. |
| Source | Supervisor |
| Rationale | To stop system from accessing camera so not to take pictures from it. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.56 Functional Requirement fifty-six

**Table 155: Open post buyer ad page**

| Identifier | **FR-2.5.2** |
|---|---|
| Title | Open post buyer ad page |
| Requirement | System will open a page when user click on "**post buyer ad**" button. |
| Source | Team member |
| Rationale | To post details about the ad to get a response from the buyers. |
| Business Rule | N/A |
| Dependencies | FR-1.2.3 |
| Priority | Medium |

### 3.3.57 Functional Requirement fifty-seven

**Table 156: Upload image**

| Identifier | **FR-2.5.3** |
|---|---|
| Title | Upload image |
| Requirement | User will be able to click on "**Upload images**" button. |
| Source | Team member |
| Rationale | To provide buyers with a reference image when eliciting their requirement for the car. |
| Business Rule | N/A |
| Dependencies | FR-1.2.3 |
| Priority | Medium |

### 3.3.58 Functional Requirement fifty-eight

**Table 157: Add ad details**

| Identifier | **FR-2.5.4** |
|---|---|
| Title | Add ad details |
| Requirement | User will be able to add a description of the car they want to buy. |
| Source | Team member |
| Rationale | To post details about the ad to get a response from the buyers. |
| Business Rule | N/A |
| Dependencies | FR-1.2.3, FR-2.5.2 |
| Priority | Medium |

### 3.3.59 Functional Requirement fifty-nine

**Table 158: Upload ad**

| **Identifier** | **FR-2.5.5** |
|---|---|
| Title | Upload ad |
| Requirement | User will be able to post a buyer ad and other users can see their ad. |
| Source | Team member |
| Rationale | To upload ad on the system, to get response from other users. |
| Business Rule | N/A |
| Dependencies | FR-1.2.3, FR-2.5.2 |
| Priority | Medium |

### 3.3.60 Functional Requirement sixty

**Table 159: Show detail page**

| Identifier | **FR-2.11.2** |
|---|---|
| Title | Show detail page |
| Requirement | System will show user a page where all details of the ad are shown to the user. |
| Source | Team member |
| Rationale | To view the details of the car user is trying to purchase. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.61 Functional Requirement sixty-one

**Table 160: Ad link expired**

| Identifier | **FR-2.11.3** |
|---|---|
| Title | Ad link expired |
| Requirement | System will tell user that ad link has expired, and they cannot view this ad. |
| Source | Team member |
| Rationale | To tell user that they cannot view details of the desired car. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

**Table: Ad link expired**

### 3.3.62 Functional Requirement sixty-two

**Table 161: Cannot view ad**

| Identifier | **FR-2.11.4** |
|---|---|
| Title | Cannot view ad |
| Requirement | System will show a message "***You cannot view this ad, please refresh your page or check internet connection.***" |
| Source | Team member |
| Rationale | To tell user that their internet connection is poor and they cannot view the page at the current time. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.63 Functional Requirement sixty-three

**Table 162: View image in ad**

| Identifier | **FR-2.12.1** |
|---|---|
| Title | View image in ad |
| Requirement | User will be able to view image in the ad provided by the seller. |
| Source | Team member |
| Rationale | To view the image |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.64 Functional Requirement sixty-four

**Table 163: Error loading image**

| Identifier | **FR-2.12.2** |
|---|---|
| Title | Error loading image |
| Requirement | System will show user a message "There is some problem in loading this image, check your internet connection or refresh page". |
| Source | Team member |
| Rationale | To let user, know that image cannot be viewed at the current time. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.65 Functional Requirement sixty-five

**Table 164: View default image**

| Identifier | **FR-2.12.3** |
|---|---|
| Title | View default image |
| Requirement | System will show a default image to user for the ads where seller have not posted any image for the car. |
| Source | Team member |
| Rationale | To view a default image and maintain a consistent view of the system |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.66 Functional Requirement sixty-six

**Table 165: Save ad to system**

| Identifier | **FR-2.13.1** |
|---|---|
| Title | Save ad to system |
| Requirement | User will be able to bookmark an ad to their profile so that they can visit it later and view its details. |
| Source | Team member |
| Rationale | To bookmark users' favorite ads |
| Business Rule | N/A |
| Dependencies | FR-1.2.3 |
| Priority | Medium |

### 3.3.67 Functional Requirement sixty-seven

**Table 166: Add saved ad to list**

| Identifier | **FR-2.13.2** |
|---|---|
| Title | Add saved ad to list |
| Requirement | System will add the saved ad to the list of the ads user have associated with their profile. List of saved ad will grow in size by one. |
| Source | Team member |
| Rationale | To add a new ad to the saved list |
| Business Rule | N/A |
| Dependencies | FR-1.2.3 |
| Priority | Medium |

**Table: Add saved ad to list**

### 3.3.68 Functional Requirement sixty-eight

**Table 167: Problem saving ad**

| Identifier | **FR-2.13.3** |
|---|---|
| Title | Problem saving ad |
| Requirement | If user has pressed 'Save ad' button, and they lost internet connection before saving this information to the server: system will respond with, problem saving ad popup to the user. |
| Source | Team member |
| Rationale | To gracefully handle the problem of losing internet connection. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.69 Functional Requirement sixty-nine

**Table 168: Play button of video player**

| Identifier | **FR-2.15.1** |
|---|---|
| Title | Play button of video player |
| Requirement | There will be a play button in the center of the video thumbnail in the ad details page. |
| Source | Team Member. |
| Rationale | This button will enable user to start video on ad details page. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | high. |

### 3.3.70 Functional Requirement seventy

**Table 169: Getting path of video to play**

| Identifier | **FR-2.15.2** |
|---|---|
| Title | Getting path of video to play |
| Requirement | System will take the path of the video of the ad from the database and give it to the video player. |
| Source | Team Member. |
| Rationale | To load video into video player by getting its path from the database. |
| Business Rule | N/A. |
| Dependencies | 2.15.1 |
| Priority | Medium. |

### 3.3.71 Functional Requirement seventy-one

**Table 170: Loading the video**

| Identifier | **FR-2.15.3** |
|---|---|
| Title | Loading the video |
| Requirement | System will load the video into video player of Car Bazar from the path from the database. |
| Source | Supervisor. |
| Rationale | To load the specific video into video player for user to view more details about the product. |
| Business Rule | N/A. |
| Dependencies | 2.15.2 |
| Priority | Medium. |

### 3.3.72 Functional Requirement seventy-two

**Table 171: Starting Video**

| Identifier | **FR-2.15.4** |
|---|---|
| Title | Starting Video |
| Requirement | System will start the video of the product details in the video player. |
| Source | Team Member. |
| Rationale | To start the video after loading. |
| Business Rule | N/A. |
| Dependencies | 2.15.3 |
| Priority | Medium. |

### 3.3.73 Functional Requirement seventy-three

**Table 172: Stop Video**

| Identifier | **FR-2.15.5** |
|---|---|
| Title | Stop Video |
| Requirement | System will stop the video once its timeline reaches the end. |
| Source | Supervisor. |
| Rationale | To Stop the video when user have viewed the video completely. |
| Business Rule | Video must be in play mode to get it stopped. |
| Dependencies | 2.15.4 |
| Priority | Low. |

### 3.3.74 Functional Requirement seventy-four

**Table 173: Reset the video player**

| Identifier | **FR-2.15.6** |
|---|---|
| Title | Reset the video player |
| Requirement | System will reset the video player to start the video from the start again. |
| Source | Supervisor |
| Rationale | To put the video to the initial state to start the video again if user want to watch video again. |
| Business Rule | N/A. |
| Dependencies | 2.15.5 |
| Priority | Low. |

### 3.3.75 Functional Requirement seventy-five

**Table 174: Pause the video player**

| Identifier | **FR-2.16.1** |
|---|---|
| Title | Pause the video player |
| Requirement | System will pause the video when user taps on the video or the pause button of video player. |
| Source | Supervisor |
| Rationale | User can pause the video to view a specific scene in detail. |
| Business Rule | The video must be in play mode to pause. |
| Dependencies | 2.15.4 |
| Priority | Medium. |

### 3.3.76 Functional Requirement seventy-six

**Table 175: Pause button icon**

| Identifier | **FR-2.16.2** |
|---|---|
| Title | Pause button icon |
| Requirement | System will change the bottom left icon of the video player to pause icon when video is paused. |
| Source | Supervisor. |
| Rationale | To change to icon of the video player according to the state of the video. |
| Business Rule | Video must be in the paused state. |
| Dependencies | 2.16.1 |
| Priority | Low. |

### 3.3.77 Functional Requirement seventy-seven

**Table 176: Resume video**

| Identifier | **FR-2.17.1** |
|---|---|
| Title | Resume video |
| Requirement | System will start the video from where it is paused when user taps on the video or the play button of video player. |
| Source | Supervisor. |
| Rationale | To resume the video from the point where it was paused. |
| Business Rule | Video must be in paused state to resume. |
| Dependencies | 2.16.1 |
| Priority | Medium. |

### 3.3.78 Functional Requirement seventy-eight

**Table 177: Button icon on resume.**

| Identifier | **FR-2.17.2** |
|---|---|
| Title | Button icon on resume. |
| Requirement | System will change the bottom left icon of the video player to play icon when video is resumed. |
| Source | Supervisor. |
| Rationale | To change to icon of the video player according to the state of the video. |
| Business Rule | Video must be in the playing mode. |
| Dependencies | 2.17.1 |
| Priority | Low. |

### 3.3.79 Functional Requirement seventy-nine

**Table 178: Click on delete ad button**

| Identifier | **FR-2.18.1** |
|---|---|
| Title | Click on delete ad button |
| Requirement | User will be able to click on "**Delete ad**" button, from the detail page of the ad. |
| Source | Team member |
| Rationale | To delete the ad from the system. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.80 Functional Requirement eighty

**Table 179: Delete Confirmation**

| Identifier | **FR-2.18.2** |
|---|---|

| | |
|---|---|
| Title | Delete Confirmation |
| Requirement | System will show user a Delete confirmation box asking "***Are you sure you want to delete this ad?***" |
| Source | Team member |
| Rationale | To make sure that deletion of ad is not by mistake. |
| Business Rule | N/A |
| Dependencies | FR-2.18.1 |
| Priority | High |

### 3.3.81 Functional Requirement eighty-one

**Table 180: Confirm delete ad**

| Identifier | **FR-2.18.3** |
|---|---|
| Title | Confirm delete ad |
| Requirement | User will be able to click on "***Yes***" when asked for the confirmation of deletion of their ad. |
| Source | Team member |
| Rationale | To remove ad from the system |
| Business Rule | N/A |
| Dependencies | FR-2.18.1 |
| Priority | Medium |

### 3.3.82 Functional Requirement eighty-two

**Table 181: Deny deleting ad**

| Identifier | **FR-2.18.4** |
|---|---|
| Title | Deny deleting ad |
| Requirement | User will be able to click on "No" when asked for the confirmation of deletion of their ad. |
| Source | Team member |
| Rationale | To avoid any mistaken deletion of ads from the system. |
| Business Rule | N/A |
| Dependencies | FR-2.18.1 |
| Priority | Medium |

### 3.3.83 Functional Requirement eighty-three

**Table 182: Delete ad from list**

| Identifier | **FR-2.18.5** |
|---|---|
| Title | Delete ad from list |
| Requirement | System will remove the deleted ad from the list of ads in the profile of the user who posted that ad. |
| Source | Team member |
| Rationale | To remove ad from the system database permanently |

| | |
|---|---|
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.84 Functional Requirement eighty-four

**Table 183: Click on update ad button**

| Identifier | **FR-2.19.1** |
|---|---|
| Title | Click on update ad button |
| Requirement | User will be able to click on the "**Update ad**" button in the details page of that ad. |
| Source | Team member |
| Rationale | To update any information in the ad |
| Business Rule | N/A |
| Dependencies | FR-1.2.3 |
| Priority | Medium |

### 3.3.85 Functional Requirement eighty-five

**Table 184: Update fields**

| Identifier | **FR-2.19.2** |
|---|---|
| Title | Update fields |
| Requirement | System will make all fields of posting an ad editable, so that user can change any desired from them. |
| Source | Team member |
| Rationale | To update the information user has provided in the ad. |
| Business Rule | N/A |
| Dependencies | FR-2.19.1 |
| Priority | Medium |

### 3.3.86 Functional Requirement eighty-six

**Table 185: Save updates**

| Identifier | **FR-2.19.3** |
|---|---|
| Title | Save updates |
| Requirement | System will show "**save changes**" button visible to user once they have updated any fields in the original ad. |
| Source | Team member |
| Rationale | To ensure saving the updates in the ad. |
| Business Rule | BR-1: At least one field must be updated to make save changes button visible |
| Dependencies | FR-1.2.3, FR-2.19.1, FR-2.19.2 |
| Priority | High |

### 3.3.87 Functional Requirement eighty-seven

**Table 186: Changes saved**

| Identifier | **FR-2.19.5** |
|---|---|
| Title | Changes saved |
| Requirement | System will show user a message "***Changes have been saved to the system***" |
| Source | Team member |
| Rationale | To tell user that operation has been successfully performed. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.88 Functional Requirement eighty-eight

**Table 187: Saving changes interrupted**

| Identifier | **FR-2.19.6** |
|---|---|
| Title | Saving changes interrupted |
| Requirement | System will show user a message "***There was a problem saving changes to the system, please try again later***". |
| Source | Team member |
| Rationale | To handle any internet problem during saving an ad. |
| Business Rule | BR-1: User must have an internet connection with the uploading speed of at least 0.2Mbps. |
| Dependencies | N/A |
| Priority | High |

### 3.3.89 Functional Requirement eighty-nine

**Table 188: Rating an ad**

| Identifier | **FR-2.20.1** |
|---|---|
| Title | Rating an ad |
| Requirement | User will be able to rate an ad on the basis of the accuracy of the information provided in that ad. |
| Source | Team member |
| Rationale | To provide a feedback about the ad. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.90 Functional Requirement ninety

**Table 189: Rating recorded**

| Identifier | **FR-2.20.3** |
|---|---|
| Title | Rating recorded |
| Requirement | System will show user a message "***Your rating response has been recorded, thank you!***", when user is done rating. |
| Source | Team member |
| Rationale | To tell user that rating has been done successfully |
| Business Rule | N/A |
| Dependencies | FR-2.20.1, FR-2.20.2 |
| Priority | High |

### 3.3.91 Functional Requirement ninety-one

**Table 190: View saved ad list**

| Identifier | **FR-2.21.1** |
|---|---|
| Title | View saved ad list |
| Requirement | User will be able to click on the "**Bookmarked ads**" button in their profile to view all the ads they have saved. |
| Source | Team member |
| Rationale | To view them all the ads a user has bookmarked. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.92 Functional Requirement ninety-two

**Table 191: View saved items**

| Identifier | **FR-2.21.2** |
|---|---|
| Title | View saved items |
| Requirement | System will show all the saved ads list, sorted by the date. Viewing most recently saved at the top of the list. |
| Source | Team member |
| Rationale | To view all the items that have been saved to the system. |
| Business Rule | BR-1: All ads will be sorted by the ad, showing most recently saved at the top. |
| Dependencies | FR-2.21.1 |
| Priority | High |

### 3.3.93 Functional Requirement ninety-three

**Table 192: Delete saved ad**

| Identifier | **FR-2.22.2** |
|---|---|

| | |
|---|---|
| Title | Delete saved ad |
| Requirement | System will delete an ad which user has saved earlier, removing one specific item from that list, and decreasing list by one in size. |
| Source | Team member |
| Rationale | To delete the ad from the users' saved list of ads |
| Business Rule | N/A |
| Dependencies | FR-1.2.3, FR-2.22.2 |
| Priority | Medium |

## Module 3: Data Acquisition

Following are the functional requirements of Data Acquisition module:

### 3.3.94 Functional Requirement ninety-four

**Table 193: Search ad**

| Identifier | **FR-3.1.1** |
|---|---|
| Title | Search ad |
| Requirement | System will direct user to the "ad search page" when user clicks on "Search Ad" button. |
| Source | Team member |
| Rationale | To enable user to search for the ads. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.95 Functional Requirement ninety-five

**Table 194: Input Search string**

| Identifier | **FR-3.1.2** |
|---|---|
| Title | Input Search string |
| Requirement | User will enter the search string that can contain small case alphabets, upper case alphabets digits and special characters, length of the input field should be 5 to 50 characters. |
| Source | Team member. |
| Rationale | To get the input string from user. |
| Business Rule | Input field cannot be empty.<br>User cannot enter the number of characters other than the specified range. |
| Dependencies | N/A. |
| Priority | High. |

### 3.3.96 Functional Requirement ninety-six

**Table 195: Format search string**

| Identifier | **FR-3.2.1** |
|---|---|
| Title | Format search string |
| Requirement | System will format the search string in the required match able form when user clicks on “search ad” button. |
| Source | Supervisor |
| Rationale | To convert the search string in to required match able form. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.97 Functional Requirement ninety-seven

**Table 196: Search in data sources**

| Identifier | **FR-3.3.1** |
|---|---|
| Title | Search in data sources |
| Requirement | System will search for data in the specified websites when user clicks on “search ad” button. |
| Source | Team member |
| Rationale | To get the data for further operations. |
| Business Rule | N/A |
| Dependencies | N/A. |
| Priority | High. |

### 3.3.98 Functional Requirement ninety-eight

**Table 197: Match data with input string**

| Identifier | **FR-3.4.1** |
|---|---|
| Title | Match data with input string. |
| Requirement | System will match the data in data sources with the formatted input string. |
| Source | Supervisor. |
| Rationale | To get the data relevant to the input string. |
| Business Rule | N/A |
| Dependencies | FR-3.2.1, FR-3.3.1 |
| Priority | High. |

### 3.3.99 Functional Requirement ninety-nine

**Table 198: Parse Data**

| Identifier | **FR-3.5.1** |
|---|---|

| | |
|---|---|
| Title | Parse Data |
| Requirement | System will convert raw data into required structured form for data cleansing. |
| Source | Team member |
| Rationale | To Structure data for fast further operations. |
| Business Rule | N/A |
| Dependencies | FR-3.2.1, FR-3.3.1, FR-3.4.1 |
| Priority | High. |

### 3.3.100 Functional Requirement hundred

**Table 199: Extract data**

| Identifier | **FR-3.6.1** |
|---|---|
| Title | Extract data |
| Requirement | System will extract the meaningful data from the matched data. |
| Source | Supervisor. |
| Rationale | To get the meaningful data from the raw data. |
| Business Rule | N/A |
| Dependencies | FR-3.2.1, FR-3.3.1, FR-3.4.1, FR-3.5.1 |
| Priority | High. |

### 3.3.101 Functional Requirement hundred-one

**Table 200: Store data**

| Identifier | **FR-3.6.2** |
|---|---|
| Title | Store data |
| Requirement | System will store the extracted data temporarily in a file. |
| Source | Team member |
| Rationale | Data will be stored in a temporary file for filtering and displaying to user. |
| Business Rule | N/A |
| Dependencies | FR-3.2.1, FR-3.3.1, FR-3.4.1, FR-3.5.1 |
| Priority | High. |

### 3.3.102 Functional Requirement hundred-two

**Table 201: Filtering data**

| Identifier | **FR-3.7.1** |
|---|---|
| Title | Filtering data. |
| Requirement | System will clean (remove incorrect, incomplete and redundant) data by checking the temporary file in an order. |
| Source | Team member |

| | |
|---|---|
| Rationale | To remove the ambiguous data. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High. |

### 3.3.103 Functional Requirement hundred-three

**Table 202:Display data to user**

| Identifier | **FR-3.8.1** |
|---|---|
| Title | Display data to user. |
| Requirement | System will display all ads to the user in the designated area by getting all ads from the temporary file in an order. |
| Source | Team member |
| Rationale | To display search relevant ads to the user. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High. |

## Module 4: Car Searches

Following are the functional requirements of Car Searches module:

### 3.3.104 Functional Requirement hundred-four

**Table 203: "Select Min input" for price range**

| Identifier | **FR-4.1.1** |
|---|---|
| Title | "Select Min input" for price range |
| Requirement | User will select minimum price. This field will contain predefined prices. Field will be labeled with "From price" text. |
| Source | Supervisor |
| Rationale | Users will be able to select price for which they want to search cars. |
| Business Rule | Predefined unit for price is "lac"<br>Users can also enter his own price range.<br>Field can be left unselected. |
| Dependencies | N/A |
| Priority | High |

### 3.3.105 Functional Requirement hundred-five

**Table 204: "Select Max input" for price range**

| Identifier | **FR-4.1.2** |
|---|---|
| Title | "Select Max input" for price range |

| | |
|---|---|
| Requirement | User will select maximum price. This field will contain predefined values. Field will be labeled with “To price” text. |
| Source | Supervisor |
| Rationale | Users will be able to enter maximum price for which they want to search cars. |
| Business Rule | Predefined unit for price is “lac”<br>Users can also enter his own price range.<br>Field can be left empty. |
| Dependencies | N/A |
| Priority | High |

### 3.3.106 Functional Requirement hundred-six

**Table 205: “Invalid price” notification**

| Identifier | **FR-4.1.3** |
|---|---|
| Title | “Invalid price” notification |
| Requirement | System will display an alert of “invalid price range” if user enter larger value in min price and smaller value in max price input |
| Source | Supervisor |
| Rationale | To provide users with proper feedback. |
| Business Rule | N/A |
| Dependencies | FR-4.1.1, FR-4.1.2 |
| Priority | Low |

### 3.3.107 Functional Requirement hundred-seven

**Table 206: Select “From input” for model**

| Identifier | **FR-4.2.1** |
|---|---|
| Title | Select “From input” for model |
| Requirement | Users will be able to select minimum model year from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting minimum model for searching. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | High |

### 3.3.108 Functional Requirement hundred-eight

**Table 207: Select "to input" for model**

| Identifier | **FR-4.2.2** |
|---|---|
| Title | Select "to input" for model |
| Requirement | Users will be able to select maximum model year from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting maximum model for searching. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | High |

### 3.3.109 Functional Requirement hundred-eight

**Table 208: "Invalid model input" notifications**

| Identifier | **FR-4.2.3** |
|---|---|
| Title | "Invalid model input" notifications. |
| Requirement | System will display an alert of "invalid model range" if user selects larger value in "From" input and smaller value in "To" model input. |
| Source | Supervisor |
| Rationale | To provide users with proper feedback. |
| Business Rule | N/A. |
| Dependencies | FR-4.2.1, FR-4.2.2 |
| Priority | High |

### 3.3.110 Functional Requirement hundred-nine

**Table 209: "Select city" for city search**

| Identifier | **FR-4.3.1** |
|---|---|
| Title | "Select city" for city search |
| Requirement | Users will be able to select city from a dropdown list of all the cities in Pakistan. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting city to search for cars. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |

| | |
|---|---|
| Dependencies | N/A |
| Priority | High |

### 3.3.111 Functional Requirement Hundred-Ten

**Table 210: "Select Area" for city search**

| Identifier | **FR-4.3.2** |
|---|---|
| Title | "Select Area" for city search |
| Requirement | Users will be able to select area from a dropdown list of all the areas in selected city. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting area from selected city to search for cars. |
| Business Rule | Field can be left empty.<br>Dropdown field will only be populated when user selects a city. |
| Dependencies | FR-4.3.1 |
| Priority | Medium |

### 3.3.112 Functional Requirement hundred-twelve

**Table 211: "Select city" for Registration city search**

| Identifier | **FR-4.4.1** |
|---|---|
| Title | "Select city" for Registration city search |
| Requirement | Users will be able to select city from a dropdown list of all the cities. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting city of registration to search for cars. |
| Business Rule | Field can be left empty. |
| Dependencies | N/A |
| Priority | High |

### 3.3.113 Functional Requirement hundred-thirteen

**Table 212: "Search city" in dropdown menu**

| Identifier | **FR-4.4.2** |
|---|---|
| Title | "Search city" in dropdown menu. |

| | |
|---|---|
| Requirement | Users will be able to write keywords to search for city in dropdown. The input can only contain alphabets. |
| Source | Supervisor |
| Rationale | To provide users with functionality of searching and selecting in dropdown instead of scrolling. |
| Business Rule | Field can be left empty. |
| Dependencies | FR-4.4.1 |
| Priority | Low |

### 3.3.114 Functional Requirement hundred-fourteen

**Table 213: Select "From input" for Engine Capacity**

| Identifier | **FR-4.5.1** |
|---|---|
| Title | Select "From input" for Engine Capacity |
| Requirement | Users will be able to select minimum Engine Capacity from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting minimum engine capacity for searching. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | High |

### 3.3.115 Functional Requirement hundred-fifteen

**Table 214: Select "to input" for Engine capacity**

| Identifier | **FR-4.5.2** |
|---|---|
| Title | Select "to input" for Engine capacity |
| Requirement | Users will be able to select maximum engine capacity from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting maximum engine capacity for searching. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | High |

### 3.3.116 Functional Requirement hundred-sixteen

**Table 215: Invalid Engine capacity" notifications**

| Identifier | **FR-4.5.3** |
|---|---|
| Title | "Invalid Engine capacity" notifications. |
| Requirement | System will display an alert of "invalid engine capacity" if user selects larger value in "From" input and smaller value in "To" model input. |
| Source | Supervisor |
| Rationale | To provide users with proper feedback. |
| Business Rule | N/A. |
| Dependencies | FR-4.5.1, FR-4.5.2 |
| Priority | Low |

### 3.3.117 Functional Requirement hundred-seventeen

**Table 216: Select "Category" for Category**

| Identifier | **FR-4.6.1** |
|---|---|
| Title | Select "Category" for Category |
| Requirement | Users will be able to select old or new from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting category or cars that can be old or new. |
| Business Rule | Field can be left empty<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | High |

### 3.3.118 Functional Requirement hundred-eighteen

**Table 217:Select "From input" for Mileage**

| Identifier | **FR-4.7.1** |
|---|---|
| Title | Select "From input" for Mileage |
| Requirement | Users will be able to select minimum mileage from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting minimum mileage for searching. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |

| | |
|---|---|
| Priority | High |

### 3.3.119 Functional Requirement hundred-nineteen

**Table 218:Select "to input" for mileage**

| Identifier | **FR-4.7.2** |
|---|---|
| Title | Select "to input" for mileage |
| Requirement | Users will be able to select maximum mileage from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting maximum mileage for searching. |
| Business Rule | Field can be left empty.<br>Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | High |

### 3.3.120 Functional Requirement hundred-twenty

**Table 219:"Invalid mileage range" notifications.**

| Identifier | **FR-4.7.3** |
|---|---|
| Title | "Invalid mileage range" notifications. |
| Requirement | System will display an alert of "invalid mileage range" if user selects larger value in "From" input and smaller value in "To" model input. |
| Source | Supervisor |
| Rationale | To provide users with proper feedback. |
| Business Rule | N/A. |
| Dependencies | FR-4.7.1, FR-4.7.2 |
| Priority | Low |

### 3.3.121 Functional Requirement hundred-twenty-one

**Table 220: Select "Color" for Color search**

| Identifier | **FR-4.8.1** |
|---|---|
| Title | Select "Color" for Color search |
| Requirement | Users will be able to select color from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting color of the car to search |
| Business Rule | Field can be left empty |

| | |
|---|---|
| | Users can only select from the dropdown menu. |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.122 Functional Requirement hundred-twenty-two

**Table 221: Select "Transmission" for transmission type search.**

| Identifier | **FR-4.9.1** |
|---|---|
| Title | Select "Transmission" for transmission type search. |
| Requirement | Users will be able to select manual or auto from dropdown. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting transmission type of the car to search |
| Business Rule | Field can be left empty<br>Users can only select from auto or manual. |
| Dependencies | N/A |
| Priority | Medium |

### 3.3.123 Functional Requirement hundred-twenty-three

**Table 222:Search make**

| Identifier | **FR-4.10.1** |
|---|---|
| Title | Search make |
| Requirement | Users will be able to write keywords to search for make of the cars. Cars related to the search will appear in drop down. The input can contain alphanumeric values. |
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting make of the car. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.124 Functional Requirement hundred-twenty-four

**Table 223: Select make from dropdown**

| Identifier | **FR-4.4.2** |
|---|---|
| Title | Select make from dropdown. |
| Requirement | Users will be able to select make of the car from the search results of the keywords. |

| | |
|---|---|
| Source | Supervisor |
| Rationale | To provide users with functionality of selecting the car they want to search |
| Business Rule | N/A |
| Dependencies | FR-4.10.1 |
| Priority | High |

## Module 5: AR VR Tour

Following are the functional requirements of AR VR Tour module:

### 3.3.125 Functional Requirement hundred-twenty-five

**Table 224:View car in AR**

| Identifier | **FR-5.1.1** |
|---|---|
| Title | View car in AR |
| Requirement | User will be able to view simulation cars in augmented reality |
| Source | Team Member |
| Rationale | To show car in real time environment as user is viewing car in physical location through camera. |
| Business Rule | Users phone should support AR. |
| Dependencies | N/A. |
| Priority | High. |

### 3.3.126 Functional Requirement One hundred-twenty-six

**Table 225: AR tour Button**

| Identifier | **FR-5.1.2** |
|---|---|
| Title | AR tour Button. |
| Requirement | There will be a “AR tour” button in the menu bar of the application. |
| Source | Team Member. |
| Rationale | To enable user to view specific AR model of the cars. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | High. |

**Table: AR tour Button**

### 3.3.127 Functional Requirement hundred-twenty-seven

**Table 226: AR tour Button Action**

| Identifier | **FR-5.1.3** |
|---|---|
| Title | AR tour Button Action |

| | |
|---|---|
| Requirement | When user clicks on “AR tour” Button then system will direct user to the page with all the AR models. |
| Source | Team member. |
| Rationale | User can view any AR model of the cars |
| Business Rule | N/A. |
| Dependencies | FR-5.1.2 |
| Priority | High. |

### 3.3.128 Functional Requirement One hundred-twenty-eight

**Table 227: Search AR Model**

| Identifier | **FR-5.1.4** |
|---|---|
| Title | Search AR Model |
| Requirement | User will be able to search for certain car title to view its AR model. |
| Source | Supervisor. |
| Rationale | To enable user to search AR model from available AR models. |
| Business Rule | N/A. |
| Dependencies | FR-5.1.3 |
| Priority | Medium. |

### 3.3.129 Functional Requirement One hundred-twenty-nine

**Table 228: Render AR model on full screen**

| Identifier | **FR-5.1.7** |
|---|---|
| Title | Render AR model on full screen. |
| Requirement | System will render AR model on full screen when user click on model thumbnail. |
| Source | Supervisor. |
| Rationale | To enable user to view AR model. |
| Business Rule | Users mobile should support AR. |
| Dependencies | N/A. |
| Priority | High. |

### 3.3.130 Functional Requirement One hundred-thirty

**Table 229: Rotate AR model left**

| Identifier | **FR-5.2.1** |
|---|---|
| Title | Rotate AR model left |
| Requirement | This will provide user with the ability to rotate AR model to left and see it from the other side. |
| Source | Team member. |
| Rationale | To make the view of the model easier and provide a complete picture of model. |

| | |
|---|---|
| Business Rule | The model should stay intact and pixels should not collapse. |
| Dependencies | FR-5.1.7 |
| Priority | Medium. |

### 3.3.131 Functional Requirement One hundred-thirty-one

**Table 230: Rotate AR model right**

| Identifier | **FR-5.3.1** |
|---|---|
| Title | Rotate AR model right |
| Requirement | This will provide user with the ability to rotate AR model to right and see it from the other side. |
| Source | Team member. |
| Rationale | To make the view of the model easier and provide a complete picture of model. |
| Business Rule | The model should stay intact and pixels should not collapse. |
| Dependencies | FR-5.1.7 |
| Priority | Medium. |

**Table: Rotate AR model left**

### 3.3.132 Functional Requirement One hundred-thirty-two

**Table 231:Zoom in AR model action**

| Identifier | **FR-5.4.2** |
|---|---|
| Title | Zoom in AR model action |
| Requirement | The system will zoom in AR model when user pinches out on AR model with his/her fingers. |
| Source | Team member. |
| Rationale | To provide zoomed picture of specific part of AR model. |
| Business Rule | The model should stay intact and pixels should not collapse. |
| Dependencies | FR-5.1.7 |
| Priority | Medium. |

### 3.3.133 Functional Requirement One hundred-thirty-three

**Table 232: Zoom out AR model action**

| Identifier | **FR-5.5.2** |
|---|---|
| Title | Zoom out AR model action |
| Requirement | The system will zoom out AR model when user pinches in on AR model with his/her fingers. |
| Source | Team member. |
| Rationale | To provide zoomed out picture of AR model. |
| Business Rule | The model should stay intact and pixels should not collapse. |
| Dependencies | FR-5.1.7, FR-5.4.2 |
| Priority | Medium. |

### 3.3.134 Functional Requirement One hundred-thirty-four

**Table 233: Save model button**

| Identifier | **FR-5.6.1** |
|---|---|
| Title | Save model button. |
| Requirement | There will be a “save model” button in the more options field of the AR model |
| Source | Supervisor. |
| Rationale | To provide user with the option to save model to view it afterwards. |
| Business Rule | N/A. |
| Dependencies | FR-5.1.5 |
| Priority | Medium. |

### 3.3.135 Functional Requirement One hundred-thirty-five

**Table 234: Save model button action**

| Identifier | **FR-5.6.2** |
|---|---|
| Title | Save model button action |
| Requirement | AR model will be added to the saved models of user’s profile when user clicks on “Save model” button. |
| Source | Supervisor. |
| Rationale | To add AR model to the saved model section of user profile. |
| Business Rule | N/A. |
| Dependencies | FR-5.1.5, FR-5.6.1 |
| Priority | Medium. |

### 3.3.136 Functional Requirement One hundred-thirty-six

**Table 235: Switch color dropdown menu.**

| Identifier | **FR-5.7.1** |
|---|---|
| Title | Switch color dropdown menu. |
| Requirement | There will be a **dropdown menu** in the designated area of full screen rendered AR model to switch color. |
| Source | Supervisor. |
| Rationale | To provide user with option to switch AR model to different colors. |
| Business Rule | N/A. |
| Dependencies | FR-5.1.7 |
| Priority | Medium. |

### 3.3.137 Functional Requirement one hundred thirty-seven

**Table 236: Switch color.**

| Identifier | **FR-5.7.2** |
|---|---|

| | |
|---|---|
| Title | Switch color. |
| Requirement | System will switch color of the AR model when user select certain color from the dropdown menu. |
| Source | Supervisor. |
| Rationale | To enable user to view AR model in different available colors. |
| Business Rule | User can view AR model only in colors that are available in dropdown menu. |
| Dependencies | FR-5.1.7, FR-5.7.1 |
| Priority | Medium. |

### 3.3.138 Functional Requirement hundred thirty-eight

**Table 237: Comment input field**

| Identifier | **FR-5.8.1** |
|---|---|
| Title | Comment input field. |
| Requirement | User will enter comment which can only contain small case alphabets, upper case alphabets and digits, length of the input field should be 50 to 1000 characters. |
| Source | Supervisor. |
| Rationale | To provide user with the option to write comment on AR model. |
| Business Rule | Input field cannot be empty.<br>User cannot enter the number of characters other than the specified range. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.139 Functional Requirement hundred thirty-nine

**Table 238: Post comment button**

| Identifier | **FR-5.8.2** |
|---|---|
| Title | Post comment button. |
| Requirement | There will be a “Post comment” button below the comment input field to add comment to specific AR model. |
| Source | Supervisor. |
| Rationale | To provide user with the option to post comment. |
| Business Rule | N/A. |
| Dependencies | FR-5.8.1 |
| Priority | Medium. |

### 3.3.140 Functional Requirement hundred-forty

**Table 239: Notify added comment**

| Identifier | **FR-5.8.3** |
|---|---|
| Title | Notify added comment. |

| | |
|---|---|
| Requirement | User's comment will be placed below the specific AR model when user clicks on "Post Comment" button. |
| Source | Supervisor. |
| Rationale | To notify user and place comment on the AR model. |
| Business Rule | N/A. |
| Dependencies | FR-5.8.2 |
| Priority | Medium. |

### 3.3.141 Functional Requirement hundred-forty-one

**Table 240: Saved model section**

| Identifier | **FR-5.9.1** |
|---|---|
| Title | Saved model section |
| Requirement | There will be a saved model section in the details page of the user's profile. |
| Source | Supervisor. |
| Rationale | To provide user with the option to view the model that s/he has recently saved. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.142 Functional Requirement hundred forty-two

**Table 241: View saved model**

| Identifier | **FR-5.9.2** |
|---|---|
| Title | View saved model |
| Requirement | System will direct user to the AR model details page when user clicks on certain AR model in **saved models.** |
| Source | Supervisor. |
| Rationale | To enable user to view AR model in detail that s/he has recently saved. |
| Business Rule | N/A. |
| Dependencies | FR-5.6.2, FR-5.9.1 |
| Priority | Medium. |

### 3.3.143 Functional Requirement hundred forty-three

**Table 242: Dislike icon Action**

| Identifier | **FR-5.10.2** |
|---|---|
| Title | Dislike icon Action. |
| Requirement | The number of dislikes on the AR model on detail page will be incremented by 1 when user clicks on dislike icon. |
| Source | Supervisor. |

| | |
|---|---|
| Rationale | To enable user to give negative rating if something is wrong with the AR model. |
| Business Rule | N/A. |
| Dependencies | FR-5.10.1 |
| Priority | Low. |

### 3.3.144 Functional Requirement forty-four

**Table 243: Like icon Action**

| Identifier | **FR-5.11.2** |
|---|---|
| Title | Like icon Action. |
| Requirement | The number of Likes on the AR model on detail page will be incremented by 1 when user clicks on Like icon. |
| Source | Supervisor. |
| Rationale | To enable user to give positive response to AR model. |
| Business Rule | N/A. |
| Dependencies | FR-5.11.1 |
| Priority | Low. |

### 3.3.145 Functional Requirement hundred forty-five

**Table 244: Unsave Model**

| Identifier | **FR-5.12.2** |
|---|---|
| Title | Unsave Model |
| Requirement | Specific AR model will be removed from the saved model section when user clicks on **Unsave Model button.** |
| Source | Supervisor. |
| Rationale | User can remove specific AR model from the saved models section when it is no more needed. |
| Business Rule | N/A. |
| Dependencies | FR-5.6.2, FR-5.12.1 |
| Priority | Low. |

### 3.3.146 Functional Requirement hundred forty-six

**Table 245: View model in VR**

| Identifier | **FR-5.13.1** |
|---|---|
| Title | View model in VR |
| Requirement | When one model that is entered into the system by the admin; a user can view it using the VR box. |
| Source | Supervisor. |
| Rationale | To view a car model in the VR-box to have a real life experience of that model. |
| Business Rule | N/A. |
| Dependencies | N/A |

| | |
|---|---|
| Priority | Low. |

### 3.3.147 Functional Requirement hundred forty-seven

**Table 246: Check VR box connectivity**

| Identifier | **FR-5.13.2** |
|---|---|
| Title | Check VR box connectivity |
| Requirement | When a user presses the 'View in VR' button system checks for the successful connection of VR box. |
| Source | Team member |
| Rationale | To check if the VR box was either connected to the mobile device or not, and view the model in it. |
| Business Rule | N/A. |
| Dependencies | FR-5.13.2 |
| Priority | Low. |

### 3.3.148 Functional Requirement hundred forty-eight

**Table 247: Place model in the garage**

| Identifier | **FR-5.13.3** |
|---|---|
| Title | Place model in the garage |
| Requirement | When a user presses "**view in VR**" button system first convert the screen from portrait mode to the landscape mode and then places a car model in the Virtual garage. |
| Source | Team member |
| Rationale | A car model will be placed in the garage to provide user a real look and feel of the car. |
| Business Rule | N/A. |
| Dependencies | FR-5.13.2 |
| Priority | Low. |

### 3.3.149 Functional Requirement hundred forty-nine

**Table 248: Move left and right around car**

| Identifier | **FR-5.13.4** |
|---|---|
| Title | Move left and right around car |
| Requirement | User can move around the car in the left and right direction using the VR box's controllers. |
| Source | Team member |
| Rationale | To allow user to have a look at the car from the car from the left and right side |
| Business Rule | N/A. |
| Dependencies | FR-5.13.2 |
| Priority | Low. |

### 3.3.150 Functional Requirement hundred fifty

**Table 249: Move back and forth around model.**

| Identifier | **FR-5.13.5** |
|---|---|
| Title | Move back and forth around model. |
| Requirement | User can move back and forth to have a closer or far look at the car model. |
| Source | Team member |
| Rationale | To make user able to view at the car model from different perspective. |
| Business Rule | N/A. |
| Dependencies | FR-5.13.2 |
| Priority | High |

### 3.3.151 Functional Requirement hundred fifty-one

**Table 250: View interior of the car**

| Identifier | **FR-5.14.1** |
|---|---|
| Title | View interior of the car |
| Requirement | When a user is viewing a car model in VR box they can switch from car exterior to the interior of the car. |
| Source | Supervisor |
| Rationale | To help user to view at the inside details of a car model. |
| Business Rule | N/A. |
| Dependencies | FR-5.13.1 |
| Priority | High |

### 3.3.152 Functional Requirement hundred fifty-two

**Table 251: Exit VR mode**

| Identifier | **FR-5.13.2** |
|---|---|
| Title | Exit VR mode |
| Requirement | When a user presses the ‘exit VR mode” system will redirect user to the app’s page where user was directed to the VR mode and change screen display from landscape to portrait mode. |
| Source | Team member |
| Rationale | To exit VR mode and continue system usage. |
| Business Rule | N/A. |
| Dependencies | FR-5.13.1 |
| Priority | Low. |

## Module 6: Car chatbot

Following are the functional requirements of “Car chatbot” module:

### 3.3.153 Functional Requirement hundred fifty-three

**Table 252: Send greetings**

| Identifier | **FR-6.1.3** |
|---|---|
| Title | Send greetings |
| Requirement | System will send a greeting message to the user saying "***Hope you are doing great; how may I help you?***" |
| Source | Supervisor |
| Rationale | This will be used to greet a user when they are trying to start a conversation |
| Business Rule | N/A |
| Dependencies | FR-6.1.1, FR-6.1.2 |
| Priority | Medium |

### 3.3.154 Functional Requirement hundred fifty-four

**Table 253: Show options**

| Identifier | **FR-6.1.4** |
|---|---|
| Title | Show options |
| Requirement | System will send different options to select from one, after it is done greeting the user. |
| Source | Team member |
| Rationale | This will make it easy for the user to interact with the system |
| Business Rule | N/A |
| Dependencies | FR-6.1.3 |
| Priority | Medium |

### 3.3.155 Functional Requirement hundred fifty-five

**Table 254: Tapping microphone**

| Identifier | **FR-6.2.2** |
|---|---|
| Title | Tapping microphone |
| Requirement | User will be able to tap on the microphone button, to record an audio message. |
| Source | Supervisor |
| Rationale | This will be used to open the microphone to record the message |
| Business Rule | N/A |
| Dependencies | FR-6.2.1 |
| Priority | Low |

### 3.3.156 Functional Requirement hundred fifty-six

**Table 255:Ask for microphone access**

| Identifier | **FR-6.2.3** |
|---|---|
| Title | Ask for microphone access |
| Requirement | System will ask for the access of microphone when user tap on the microphone button. |
| Source | Team Member |
| Rationale | This will be used to ask for the permission to use microphone in the app. |
| Business Rule | N/A |
| Dependencies | FR-6.2.2 |
| Priority | Medium |

### 3.3.157 Functional Requirement hundred fifty-seven

**Table 256: Allow microphone access**

| Identifier | **FR-6.2.4** |
|---|---|
| Title | Allow microphone access |
| Requirement | User will allow system to use its microphone for the purpose of recording audio messages |
| Source | Team members |
| Rationale | This will be used to give system access to use the microphone. |
| Business Rule | N/A |
| Dependencies | FR-6.2.3 |
| Priority | Medium |

### 3.3.158 Functional Requirement hundred fifty-eight

**Table 257: Deny microphone access**

| Identifier | **FR-6.2.5** |
|---|---|
| Title | Deny microphone access |
| Requirement | User will deny the access of microphone for the purpose of its recording messages |
| Source | Team member |
| Rationale | This will be used to deny the access of microphone for the system |
| Business Rule | N/A |
| Dependencies | FR-6.2.5 |
| Priority | Medium |

### 3.3.159 Functional Requirement hundred fifty-nine

**Table 258: Record Audio message**

| Identifier | **FR-6.2.6** |
|---|---|
| Title | Record Audio message |
| Requirement | User will keep a finger over the microphone button in the keyboard until it has done speaking. |
| Source | Supervisor |
| Rationale | This will be used to record the audio message |
| Business Rule | N/A |
| Dependencies | FR-6.2.4 |
| Priority | Medium |

### 3.3.160 Functional Requirement hundred sixty

**Table 259: Convert speech to text**

| Identifier | **FR-6.2.7** |
|---|---|
| Title | Convert speech to text |
| Requirement | System will convert the message user has recorded into the text form, once user release their finger from the microphone button. |
| Source | Supervisor |
| Rationale | This will be used to convert Audio into the text format |
| Business Rule | N/A |
| Dependencies | FR-6.2.4, FR-6.2.6 |
| Priority | Medium |

### 3.3.161 Functional Requirement hundred sixty-one

**Table 260: Press send button**

| Identifier | **FR-6.2.8** |
|---|---|
| Title | Press send button |
| Requirement | User will be able to press the send button once the audio is converted to text by the system. |
| Source | Team Member |
| Rationale | This will be used to send the query to the chatbot |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | High |

### 3.3.162 Functional Requirement hundred sixty-two

**Table 261: Send query**

| Identifier | **FR-6.2.9** |
|---|---|

| | |
|---|---|
| Title | Send query |
| Requirement | When user presses ‘enter’: this query will be sent to the system for a response. |
| Source | Supervisor |
| Rationale | This will be used to send a query to the chatbot |
| Business Rule | N/A |
| Dependencies | FR-6.2.8 |
| Priority | Medium |

### 3.3.163 Functional Requirement hundred sixty-three

**Table 262: Process query**

| Identifier | **FR-6.2.10** |
|---|---|
| Title | Process query |
| Requirement | System will show a message on the screen “***Please wait, while we are processing your query***” when user has pressed enter. |
| Source | Team member |
| Rationale | This will be used to tell user that query is being processed. |
| Business Rule | N/A |
| Dependencies | FR-6.2.8, FR-6.2.9 |
| Priority | Medium |

### 3.3.164 Functional Requirement hundred sixty-four

**Table 263: Respond to query**

| Identifier | **FR-6.2.11** |
|---|---|
| Title | Respond to query |
| Requirement | System will respond to the audio message a user has send to the system. |
| Source | Supervisor |
| Rationale | To respond to the problem user has contacted chatbot for. |
| Business Rule | N/A |
| Dependencies | FR-6.2.10 |
| Priority | High |

### 3.3.165 Functional Requirement hundred sixty-five

**Table 264: Select car information option**

| Identifier | **FR-6.4.1** |
|---|---|
| Title | Select car information option |
| Requirement | User will be able to select “Give car information” option from the system after system has greeted the user. |
| Source | Team member |

| | |
|---|---|
| Rationale | This will be used to provide user information about the cars |
| Business Rule | N/A |
| Dependencies | FR-6.1.3 |
| Priority | Medium |

### 3.3.166 Functional Requirement hundred sixty-six

**Table 265: Ask for car information**

| Identifier | **FR-6.4.2** |
|---|---|
| Title | Ask for car information |
| Requirement | System will ask the user about the car, whose information they are looking for. |
| Source | Team member |
| Rationale | This will be used by the system to be specific about the car while providing information |
| Business Rule | N/A |
| Dependencies | FR-6.4.1 |
| Priority | Medium |

### 3.3.167 Functional Requirement hundred sixty-seven

**Table 266: Give car information**

| Identifier | **FR-6.4.3** |
|---|---|
| Title | Give car information |
| Requirement | System will give user all the information about the car they are looking for. |
| Source | Supervisor |
| Rationale | This will give user all the information this system has about the particular model of the car. |
| Business Rule | N/A |
| Dependencies | FR-6.4.1 |
| Priority | Medium |

### 3.3.168 Functional Requirement hundred sixty-eight

**Table 267: No car information**

| Identifier | **FR-6.4.4** |
|---|---|
| Title | No car information |
| Requirement | System will respond with ***"I have no knowledge about this model of car, could you please try searching something else?"*** |
| Source | Supervisor |

| | |
|---|---|
| Rationale | This will be used to tell user that this piece of information is not a part of system's knowledge. |
| Business Rule | N/A |
| Dependencies | FR-6.4.1 |
| Priority | Low |

### 3.3.169 Functional Requirement hundred sixty-nine

**Table 268: perform another action**

| Identifier | **FR-6.4.5** |
|---|---|
| Title | Perform another action |
| Requirement | System will prompt user to perform another action after it has responded to the previous one. |
| Source | Supervisor |
| Rationale | This will be used to make system interactive, by keeping user busy. |
| Business Rule | N/A |
| Dependencies | FR-6.1.4 |
| Priority | High |

### 3.3.170 Functional Requirement hundred seventy

**Table 269: Select car bazar information option**

| Identifier | **FR-6.7.1** |
|---|---|
| Title | Select car bazar information option |
| Requirement | User will be able to select "Car bazar information" option from the system after system has greeted the user. |
| Source | Team member |
| Rationale | This will be used to provide all the in depth details of the car bazaar system. |
| Business Rule | N/A |
| Dependencies | FR-6.1.3 |
| Priority | Medium |

### 3.3.171 Functional Requirement hundred seventy-one

**Table 270: Give car bazaar information**

| Identifier | **FR-6.7.2** |
|---|---|
| Title | Give car bazaar information |
| Requirement | System will give information of the car bazaar system to the user |
| Source | Team member |

| | |
|---|---|
| Rationale | This will be used to give details of the car bazar system to the user |
| Business Rule | N/A |
| Dependencies | FR-6.6.1 |
| Priority | Medium |

### 3.3.172 Functional Requirement hundred seventy-two

**Table 271: End conversation**

| Identifier | **FR-6.8.1** |
|---|---|
| Title | End conversation |
| Requirement | User will type any ending conversation words like 'Goodbye', 'Bye', 'See you later'. System will consider it the end of conversation. |
| Source | Team member |
| Rationale | This will be used to end the conversation with the chatbot by user. |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Low |

### 3.3.173 Functional Requirement hundred seventy-three

**Table 272:End conversation response**

| Identifier | **FR-6.8.2** |
|---|---|
| Title | End conversation response |
| Requirement | System will respond users ending conversation remarks with "***It was fun talking to you, see you later ☺***" |
| Source | Supervisor |
| Rationale | To end the conversation with user |
| Business Rule | N/A |
| Dependencies | N/A |
| Priority | Low |

## Module 7: Car Recommender

Following are the functional requirements of Car Recommender module:

### 3.3.174 Functional Requirement hundred seventy-four

**Table 273: Car Recommendation button.**

| Identifier | **FR-7.1.1** |
|---|---|
| Title | Car Recommendation button. |
| Requirement | There will be a **Car Recommendation** option in the main menu. |

| | |
|---|---|
| Source | Team member. |
| Rationale | To provide user with the option to see the best car for him/her. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.175 Functional Requirement hundred seventy-five

**Table 274:View Best Car**

| Identifier | **FR-7.1.2** |
|---|---|
| Title | View Best Car |
| Requirement | System will display the best car to user when user clicks on "View Best Car" button. |
| Source | Team member. |
| Rationale | To provide user with the option of viewing the best car on the site. |
| Business Rule | N/A. |
| Dependencies | FR-7.1.1 |
| Priority | Medium. |

### 3.3.176 Functional Requirement hundred seventy-six

**Table 275:View Best brand button**

| Identifier | **FR-7.2.1** |
|---|---|
| Title | View Best brand button. |
| Requirement | There will be a "View best brand" button in the "Car Recommendation" menu. |
| Source | Team member. |
| Rationale | To provide user with the option of viewing best brand on the site. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.177 Functional Requirement hundred seventy-seven

**Table 276: View Best Brand**

| Identifier | **FR-7.2.2** |
|---|---|
| Title | View Best Brand |
| Requirement | System will display the best car brand to user when user clicks on "View Best Brand" button. |
| Source | Supervisor. |

| | |
|---|---|
| Rationale | User will be able to see the best car brand for him/her. |
| Business Rule | N/A. |
| Dependencies | FR-7.2.1 |
| Priority | Medium. |

### 3.3.178 Functional Requirement hundred seventy-eight

**Table 277: Best by price button**

| Identifier | **FR-7.3.1** |
|---|---|
| Title | Best by price button. |
| Requirement | There will be a “Best by price” button in the “Car Recommendation” menu. |
| Source | Team member. |
| Rationale | To provide user with the option of viewing best car with respect to the input price. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.179 Functional Requirement hundred seventy-nine

**Table 278:Ask for price range**

| Identifier | **FR-7.3.2** |
|---|---|
| Title | Ask for price range. |
| Requirement | System will ask user for the price range of the car when user clicks on “best by price” button. |
| Source | Supervisor. |
| Rationale | To get price range from user to recommend best car by price range. |
| Business Rule | Price cannot be a negative value. |
| Dependencies | FR-7.3.1 |
| Priority | Medium. |

### 3.3.180 Functional Requirement hundred eighty

**Table 279: Display best car by price**

| Identifier | **FR-7.3.3** |
|---|---|
| Title | Display best car by price. |
| Requirement | System will display user with the best car according to the input price when user clicks on “view best car by price” button. |
| Source | Team member. |

| | |
|---|---|
| Rationale | User will be able to see the best car with respect to the input price. |
| Business Rule | N/A. |
| Dependencies | FR-7.3.1, FR-7.3.2 |
| Priority | Medium. |

### 3.3.181 Functional Requirement hundred eighty-one

**Table 280: Best by car model button**

| Identifier | **FR-7.4.1** |
|---|---|
| Title | Best by car model button. |
| Requirement | There will be a “Best by model” button in the “Car Recommendation” menu. |
| Source | Team member. |
| Rationale | To provide user with the option of viewing best car with respect to the input model. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.182 Functional Requirement hundred eighty-two

**Table 281:Display best car by model**

| Identifier | **FR-7.4.3** |
|---|---|
| Title | Display best car by model. |
| Requirement | System will display user with the best car according to the input model when user clicks on “view best car by model” button. |
| Source | Team member. |
| Rationale | User will be able to see the best car with respect to the input model. |
| Business Rule | N/A. |
| Dependencies | FR-7.4.1, FR-7.4.2 |
| Priority | Medium. |

### 3.3.183 Functional Requirement hundred eighty-three

**Table 282: Best by car mileage button**

| Identifier | **FR-7.5.1** |
|---|---|
| Title | Best by car mileage button. |
| Requirement | There will be a “Best by mileage” button in the “Car Recommendation” menu. |

| | |
|---|---|
| Source | Team member. |
| Rationale | To provide user with the option of viewing best car with respect to the input mileage. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.184 Functional Requirement hundred eighty-four

**Table 283:Ask for car mileage**

| Identifier | **FR-7.5.2** |
|---|---|
| Title | Ask for car mileage. |
| Requirement | System will ask user for the mileage of the car when user clicks on “best by mileage” button. |
| Source | Supervisor. |
| Rationale | To get car mileage from user to recommend best car by mileage. |
| Business Rule | Car mileage cannot be a negative value. |
| Dependencies | FR-7.5.1 |
| Priority | Medium. |

### 3.3.185 Functional Requirement hundred eighty-five

**Table 284:Display best car by mileage**

| Identifier | **FR-7.5.3** |
|---|---|
| Title | Display best car by mileage. |
| Requirement | System will display user with the best car according to the input mileage when user clicks on “view best car by mileage” button. |
| Source | Team member. |
| Rationale | User will be able to see the best car with respect to the input mileage. |
| Business Rule | N/A. |
| Dependencies | FR-7.5.1, FR-7.5.2 |
| Priority | Medium. |

### 3.3.186 Functional Requirement hundred eighty six

**Table 285:Best by re-sale button**

| Identifier | **FR-7.6.1** |
|---|---|
| Title | Best by re-sale button. |
| Requirement | There will be a “View best by re-sale” button in the “Car Recommendation” menu. |

| | |
|---|---|
| Source | Team member. |
| Rationale | To provide user with the option of viewing best car according to its by re-sale. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.187 Functional Requirement hundred eighty seven

**Table 286:Display best car by re-sale**

| Identifier | **FR-7.6.2** |
|---|---|
| Title | Display best car by re-sale. |
| Requirement | System will display user with the best car according to the re-sale when user clicks on “Best by re-sale” button. |
| Source | Team member. |
| Rationale | User will be able to see the best car with respect to the re-sale of that car. |
| Business Rule | N/A. |
| Dependencies | FR-7.6.1 |
| Priority | Medium. |

### 3.3.188 Functional Requirement hundred eighty-eight

**Table 287:Vote up car**

| Identifier | **FR-7.7.1** |
|---|---|
| Title | Vote up car |
| Requirement | System will change the color of the vote icon when user clicks on “vote up” button. |
| Source | Team member. |
| Rationale | To indicates user that the car is voted up. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.189 Functional Requirement hundred eighty-nine

**Table 288:Increment number of votes**

| Identifier | **FR-7.7.2** |
|---|---|
| Title | Increment number of votes. |
| Requirement | The total number of votes on a car will be incremented by one when user clicks on “vote up” button. |
| Source | Team member. |
| Rationale | To increment the number of votes when user vote a car. |

| | |
|---|---|
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.190 Functional Requirement hundred ninety

**Table 289:Add remarks**

| Identifier | **FR-7.8.2** |
|---|---|
| Title | Add remarks. |
| Requirement | System will prompt user with the pre-defined remarks when user clicks on “add remarks” button. |
| Source | Team member. |
| Rationale | To enable user to add pre-defined remarks about car. |
| Business Rule | N/A. |
| Dependencies | FR-7.8.1 |
| Priority | Medium. |

### 3.3.191 Functional Requirement hundred ninety-one

**Table 290:Add remarks with user’s account**

| Identifier | **FR-7.8.3** |
|---|---|
| Title | Add remarks with user’s account. |
| Requirement | System will add the selected remarks to the car post with the user account when user clicks on any of the pre-defined remarks. |
| Source | Supervisor. |
| Rationale | To add remarks to car with the specific user’s account. |
| Business Rule | User can select only one compliment/remark out of all pre-defined compliments/remarks. |
| Dependencies | FR-7.8.1, FR-7.8.2 |
| Priority | Medium. |

### 3.3.192 Functional Requirement hundred ninety-two

**Table 291:Update remarks button**

| Identifier | **FR-7.9.1** |
|---|---|
| Title | Update remarks button. |
| Requirement | There will be an “update remarks” button in the car post with the user who have already been added a remark. |
| Source | Team member. |
| Rationale | To provide user with the option of updating remark about a car. |
| Business Rule | N/A. |

| | |
|---|---|
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.193 Functional Requirement hundred ninety-three

**Table 292: Update remarks**

| Identifier | **FR-7.9.2** |
|---|---|
| Title | Update remarks. |
| Requirement | System will update the remarks on the car with the user's account when user select another remark from the pre-defined remarks. |
| Source | Team member. |
| Rationale | To update the remarks on the car with the user's account. |
| Business Rule | User can select only one compliment/remark out of all pre-defined compliments/remarks. |
| Dependencies | FR-7.9.1 |
| Priority | Medium. |

### 3.3.194 Functional Requirement hundred ninety-four

**Table 293:View remarks of a car**

| Identifier | **FR-7.10.1** |
|---|---|
| Title | View remarks of a car. |
| Requirement | System will display all remarks about a car to a user when user clicks on "View Remarks" button. |
| Source | Team member. |
| Rationale | To provide user with the option of viewing all remarks on a car. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

## Module 8: Help guidelines and settings

Following are the functional requirements of "Help guidelines and settings" module:

### 3.3.195 Functional Requirement hundred ninety-five

**Table 294: View privacy and safety guide**

| Identifier | **FR-8.1.2** |
|---|---|
| Title | View privacy and safety guide |
| Requirement | System will show a privacy and safety guide to the user when they click on "**View privacy and safety guide**". |
| Source | Team member |

| | |
|---|---|
| Rationale | To Show user a guide for the privacy and safety. |
| Business Rule | N/A. |
| Dependencies | FR-8.1.1 |
| Priority | High. |

### 3.3.196 Functional Requirement hundred ninety-six

**Table 295: Redirect to profile**

| Identifier | **FR-8.1.3** |
|---|---|
| Title | Redirect to profile |
| Requirement | System will redirect user to the setting menu of their profile when they want to apply those privacy settings to their user profile. |
| Source | Team member. |
| Rationale | To apply the settings and privacy guideline in the user profile. |
| Business Rule | N/A. |
| Dependencies | FR-8.1.1 |
| Priority | High. |

### 3.3.197 Functional Requirement hundred ninety-seven

**Table 296: Click on View seller ads guide**

| Identifier | **FR-8.2.1** |
|---|---|
| Title | Click on View seller ads guide |
| Requirement | User will be able to click on "**View Guide about seller ads**" from the help menu in their profile. |
| Source | Team member. |
| Rationale | To view about the seller ads, their purpose and how they can be posted. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | High. |

### 3.3.198 Functional Requirement hundred ninety-eight

**Table 297:View seller ads guide**

| Identifier | **FR-8.2.2** |
|---|---|
| Title | View seller ads guide |
| Requirement | System will show a seller ads guide to the user when they click on "**View Guide about seller ads**". |
| Source | Team member. |
| Rationale | To Show user a guide for the seller ads. |

| | |
|---|---|
| Business Rule | N/A. |
| Dependencies | FR-8.2.1 |
| Priority | High. |

### 3.3.199 Functional Requirement hundred ninety-nine

**Table 298: Redirect to post seller ads page**

| Identifier | **FR-8.2.3** |
|---|---|
| Title | Redirect to post seller ads page |
| Requirement | System will redirect user to the post seller ads page so that they can post their own seller ads in an efficient way. |
| Source | Team member. |
| Rationale | To apply the seller ads guidelines for posting a new ad. |
| Business Rule | N/A. |
| Dependencies | FR-8.2.1 |
| Priority | High. |

### 3.3.200 Functional Requirement two hundred

**Table 299:Click on View chatbots usage**

| Identifier | **FR-8.4.1** |
|---|---|
| Title | Click on View chatbots usage |
| Requirement | User will be able to click on "**View Guide about chatbots usage**" from the help menu in their profile. |
| Source | Team member |
| Rationale | To view the guide for usage of the chatbots |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.201 Functional Requirement Two-hundred-one

**Table 300: View chatbot usage and guide**

| Identifier | **FR-8.4.2** |
|---|---|
| Title | View chatbot usage and guide |
| Requirement | System will show a chatbots usage guide to the user when they click on "**View chatbots usage guide**". |
| Source | Team member |
| Rationale | To Show user a guide for the chatbots and its usage |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.202 Functional Requirement Two-hundred-two

**Table 301: Click on view how to edit an ad**

| Identifier | **FR-8.5.1** |
|---|---|
| Title | Click on view how to edit an ad |
| Requirement | User will be able to click on "**View how to edit an ad**" from the help menu in their profile. |
| Source | Team member |
| Rationale | To view the process of editing an ad. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.203 Functional Requirement Two-hundred-three

**Table 302:View guide for editing an ad**

| Identifier | **FR-8.5.2** |
|---|---|
| Title | View guide for editing an ad |
| Requirement | System will show an ad editing guide to the user when they click on "**View how to edit an ad**". |
| Source | Team member |
| Rationale | To Show user a guide for editing the ad they have already posted. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.204 Functional Requirement Two-hundred-four

**Table 303:Redirect to ad editing page**

| Identifier | **FR-8.5.3** |
|---|---|
| Title | Redirect to ad editing page |
| Requirement | System will redirect user to the page where all posted ads will e shown, so as to make it easy for the user to follow the steps along |
| Source | Team member |
| Rationale | To apply the guidelines for editing an ad. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.205 Functional Requirement Two-hundred-five

**Table 304:View guide for deleting an ad**

| Identifier | **FR-8.6.2** |
|---|---|
| Title | View guide for deleting an ad |
| Requirement | System will show an ad deleting guide to the user when they click on "**View how to delete an ad**". |
| Source | Team member |
| Rationale | To Show user a guide for deleting the ad they have already posted. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.206 Functional Requirement Two-hundred-six

**Table 305: Redirect to ad deleting page**

| Identifier | **FR-8.6.3** |
|---|---|
| Title | Redirect to ad deleting page |
| Requirement | System will redirect user to the page where all posted ads will be shown, so as to make it easy for the user to follow the steps along |
| Source | Team member |
| Rationale | To apply the guidelines for deleting an ad. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.207 Functional Requirement Two-hundred-seven

**Table 306: View guide for changing font of the application**

| Identifier | **FR-8.7.2** |
|---|---|
| Title | View guide for changing font of the application |
| Requirement | System will show a font changing guide to the user when they click on "**View how to change fonts of the application**". |
| Source | Team member |
| Rationale | To Show user a guide for changing the fonts of their application. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.208 Functional Requirement Two-hundred-eight

**Table 307: Redirect to font changing settings page**

| Identifier | **FR-8.7.3** |
|---|---|
| Title | Redirect to font changing settings page |
| Requirement | System will redirect user to the page where a user can change the font of their application will be shown, so as to make it easy for the user to follow the steps along |
| Source | Team member |
| Rationale | To apply the guidelines for changing fonts of the application |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.209 Functional Requirement Two-hundred-nine

**Table 308: View guide for usage of reality car models**

| Identifier | **FR-8.8.2** |
|---|---|
| Title | View guide for usage of reality car models |
| Requirement | System will show a reality car models usage guide to the user when they click on "**View Reality car models guide**". |
| Source | Team member |
| Rationale | To Show user a guide for the usage and advantages of the reality car models. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.210 Functional Requirement Two-hundred-ten

**Table 309:Redirect to reality car models page**

| Identifier | **FR-8.8.3** |
|---|---|
| Title | Redirect to reality car models page |
| Requirement | System will redirect user to the page where all reality car models will be shown, so as to make it easy for the user to follow the steps along |
| Source | Team member |
| Rationale | To have a look at the advantages and benefits of the reality car models. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.211 Functional Requirement Two-hundred-eleven

**Table 310:Click on view photo tips**

| Identifier | **FR-8.9.1** |
|---|---|
| Title | Click on view photo tips |
| Requirement | User will be able to click on "**View photo tips**" from the help menu in their profile. |
| Source | Team member |
| Rationale | To view the tips for uploading images for the purpose of making a 360-aerial panorama. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.212 Functional Requirement Two-hundred-twelve

**Table 311:Redirect to ad seller ads page**

| Identifier | **FR-8.9.3** |
|---|---|
| Title | Redirect to ad seller ads page |
| Requirement | System will redirect user to the page where they can post their own seller ad, so as to make it easy for the user to follow the steps along |
| Source | Team member |
| Rationale | To apply the tips learnt in posting a seller ad. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.213 Functional Requirement Two-hundred-thirteen

**Table 312:View color settings**

| Identifier | **FR-8.10.2** |
|---|---|
| Title | View color settings |
| Requirement | System will show a color changing settings page when user clicks on "**Change color**" button from the settings menu. |
| Source | Team member |
| Rationale | To change the colors of the application according to the choice of the user. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.214 Functional Requirement Two-hundred-fourteen

**Table 313:Allow color changes**

| Identifier | **FR-8.10.5** |
|---|---|
| Title | Allow color changes |
| Requirement | User will be able to click on "**Save changes**" button when system ask for the confirmation of saving those application color details. |
| Source | Team member |
| Rationale | To change the color of the entire application |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.215 Functional Requirement Two Hundred-fifteen

**Table 314: View fonts settings**

| Identifier | **FR-8.11.2** |
|---|---|
| Title | View fonts settings |
| Requirement | System will show a font changing settings page when user clicks on "**Change font**" button from the settings menu. |
| Source | Team member |
| Rationale | To change the fonts of the application according to the choice of the user. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.216 Functional Requirement Two Hundred-sixteen

**Table 315:Select a font size**

| Identifier | **FR-8.11.3** |
|---|---|
| Title | Select a font size |
| Requirement | User will be able to select a font style to change for the entire application. |
| Source | Team member |
| Rationale | To change the font of the application. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.217 Functional Requirement Two Hundred-seventeen

**Table 316:Permit font style change**

| Identifier | **FR-8.11.4** |
|---|---|
| Title | Permit font style change |
| Requirement | When user will select a font style from available styles to apply for the entire application system will ask user "***Are you sure you want to apply these changes?***" |
| Source | Team member |
| Rationale | To make sure that the font style changes are not accidental in the application. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.218 Functional Requirement Two Hundred-eighteen

**Table 317:Allow font changes**

| Identifier | **FR-8.11.5** |
|---|---|
| Title | Allow font changes |
| Requirement | User will be able to click on "**Save changes**" button when system ask for the confirmation of saving those application font style details. |
| Source | Team member |
| Rationale | To change the font of the entire application |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.219 Functional Requirement two hundred nineteen

**Table 318: Deny font style changes**

| Identifier | **FR-8.11.6** |
|---|---|
| Title | Deny font style changes |
| Requirement | User will be able to click on "**Discard changes**" button when system ask for the confirmation of saving those application font style details. |
| Source | Team member |
| Rationale | To cancel changing of application font styles. |
| Business Rule | N/A. |
| Dependencies | N/A |
| Priority | High. |

### 3.3.220 Functional Requirement two hundred twenty

**Table 319:Deactivate account.**

| Identifier | **FR-8.12.2** |
|---|---|
| Title | Deactivate account. |
| Requirement | System will direct user to the **detail deactivation** page when user clicks on **deactivate account** button. |
| Source | Team member. |
| Rationale | To enable user to delete his/her profile from the application. |
| Business Rule | N/A. |
| Dependencies | 8.12.1 |
| Priority | Low. |

### 3.3.221 Functional Requirement two hundred twenty-one

**Table 320: Reason to deactivate account**

| Identifier | **FR-8.12.3** |
|---|---|
| Title | Reason to deactivate account. |
| Requirement | System will prompt user with the different reasons to deactivate account in the form or checkboxes, in the **detail deactivation** page. |
| Source | Team member. |
| Rationale | To enable user to add details about the reason of deactivation. |
| Business Rule | User can select only one option from the provided options in the form of checkboxes. |
| Dependencies | 8.1.2 |
| Priority | Low. |

### 3.3.222 Functional Requirement two hundred twenty-two

**Table 321: Deactivate confirmation**

| Identifier | **FR-8.12.4** |
|---|---|
| Title | Deactivate confirmation |
| Requirement | System will prompt user with the alert dialog message “Are you sure you want to deactivate your account?” when user clicks on **deactivate account** button, in the **detail deactivation** page. |
| Source | Team member. |
| Rationale | To confirm that user wants to remove his/her profile. |
| Business Rule | N/A. |
| Dependencies | 8.12.2, 8.12.3 |
| Priority | Low. |

### 3.3.223 Functional Requirement two hundred twenty-three

**Table 322:Enable notification checkbox**

| Identifier | **FR-8.13.1** |
|---|---|
| Title | Enable notification checkbox |
| Requirement | There will be an **Enable notification** checkbox in the setting section of the user's profile. |
| Source | Team member. |
| Rationale | To provide user with the option to enable app notification. |
| Business Rule | N/A. |
| Dependencies | N/A/ |
| Priority | Medium. |

### 3.3.224 Functional Requirement two hundred twenty-four

**Table 323: Enable notification**

| Identifier | **FR-8.13.2** |
|---|---|
| Title | Enable notification |
| Requirement | App notifications will be activated when user checks the **Enable notification** checkbox. |
| Source | Team member. |
| Rationale | User should be informed about the specific latest recommended ads through notification. |
| Business Rule | N/A. |
| Dependencies | 8.13.1 |
| Priority | Medium. |

## Module 9: Admin Management

Following are the functional requirements of Admin Management module:

### 3.3.225 Functional Requirement two hundred twenty-five

**Table 324: Upload AR/VR car model**

| Identifier | **FR-9.1.1** |
|---|---|
| Title | Upload AR/VR car model |
| Requirement | System will prompt admin to add AR/VR car model from the file storage when admin clicks on "Upload AR/VR car model" button. |
| Source | Team member. |
| Rationale | To provide admin of the application the option to upload new AR/VR car models. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | High. |

### 3.3.226 Functional Requirement Two hundred twenty-six

**Table 325:Add model to the application**

| Identifier | **FR-9.1.2** |
|---|---|
| Title | Add model to the application. |
| Requirement | System will add AR/VR car model to the application when admin selects an AR/VR model from files by clicking "upload" button. |
| Source | Team member. |
| Rationale | To upload new AR/VR car model to the application. |
| Business Rule | N/A |
| Dependencies | FR-9.1.1 |
| Priority | High. |

### 3.3.227 Functional Requirement Two hundred twenty-seven

**Table 326:Model successfully uploaded**

| Identifier | **FR-9.1.3** |
|---|---|
| Title | Model successfully uploaded. |
| Requirement | System will prompt admin with the message "AR/VR car model successfully uploaded" if model is successfully uploaded. |
| Source | Team member. |
| Rationale | To indicate that the model is successfully uploaded. |
| Business Rule | N/A. |
| Dependencies | FR-9.1.1, FR-9.1.2 |
| Priority | Medium. |

### 3.3.228 Functional Requirement two hundred twenty eight

**Table 327: Error while uploading model**

| Identifier | **FR-9.1.4** |
|---|---|
| Title | Error while uploading model. |
| Requirement | System will prompt admin with the alert dialog message "There was an error in uploading AR car model" with a **retry button** if there is an error in uploading AR car model. |
| Source | Team member. |
| Rationale | To indicate error while uploading AR/VR car model. |
| Business Rule | N/A. |
| Dependencies | FR-9.1.1, FR-9.1.2 |
| Priority | Medium. |

### 3.3.229 Functional Requirement Two hundred twenty-nine

**Table 328:Delete AR/VR car model**

| Identifier | **FR-9.2.1** |
|---|---|
| Title | Delete AR/VR car model |
| Requirement | System will prompt admin with an alert message “Are you sure want to delete the model?” when admin clicks on “Delete AR car model” button. |
| Source | Team member. |
| Rationale | To provide admin of application the option of deleting AR car model. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.230 Functional Requirement two hundred thirty

**Table 329: Positive selection on delete alert message**

| Identifier | **FR-9.2.2** |
|---|---|
| Title | Positive selection on delete alert message. |
| Requirement | AR car model will be removed from the application when admin clicks on “Yes” in alert message. |
| Source | Team member. |
| Rationale | To confirm the deletion of AR car model. |
| Business Rule | N/A. |
| Dependencies | FR-9.2.1 |
| Priority | Medium. |

### 3.3.231 Functional Requirement two hundred thirty one

**Table 330: Negative selection on delete alert message**

| Identifier | **FR-9.2.3** |
|---|---|
| Title | Negative selection on delete alert message. |
| Requirement | Alert message will be destroyed when admin clicks on “No” in alert message. |
| Source | Team member. |
| Rationale | To cancel the deletion of AR car model. |
| Business Rule | N/A. |
| Dependencies | FR-9.2.1 |
| Priority | Medium. |

### 3.3.232 Functional Requirement two hundred thirty-two

**Table 331: Disable user account**

| Identifier | **FR-9.3.1** |
|---|---|
| Title | Disable user account. |
| Requirement | System will prompt admin with an alert message “Are you sure want to disable user account?” when admin clicks on “Disable user account” button in user profile. |
| Source | Team member. |
| Rationale | To provide admin of the application the option of disabling the user’s account. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.233 Functional Requirement two hundred thirty-three

**Table 332:Positive selection on disable user alert message**

| Identifier | **FR-9.3.2** |
|---|---|
| Title | Positive selection on disable user alert message. |
| Requirement | User’s account will be disabled when admin clicks on “Yes” in alert message. |
| Source | Team member. |
| Rationale | To confirm the disable of user’s account. |
| Business Rule | N/A. |
| Dependencies | FR-9.3.1 |
| Priority | Medium. |

### 3.3.234 Functional Requirement two hundred thirty-four

**Table 333:Negative selection on disable user alert message**

| Identifier | **FR-9.3.3** |
|---|---|
| Title | Negative selection on disable user alert message. |
| Requirement | Alert message will be destroyed when admin clicks on “No” in alert message. |
| Source | Team member. |
| Rationale | To cancel the disable of user’s account. |
| Business Rule | N/A. |
| Dependencies | FR-9.3.1 |
| Priority | Medium. |

### 3.3.235 Functional Requirement two hundred thirty-five

**Table 334"Issue warning to user**

| Identifier | **FR-9.5.1** |
|---|---|
| Title | Issue warning to user. |
| Requirement | System will prompt admin with an alert message “Are you sure want to issue warning to user?” when admin clicks on “Issue warning to user” reported user’s profiles section. |
| Source | Team member. |
| Rationale | To provide admin of the application the option of issuing warning to user’s account. |
| Business Rule | N/A. |
| Dependencies | N/A. |
| Priority | Medium. |

### 3.3.236 Functional Requirement two hundred thirty-six

**Table 335:Positive selection on issue warning alert message**

| Identifier | **FR-9.5.2** |
|---|---|
| Title | Positive selection on issue warning alert message. |
| Requirement | A warning will be issued to user’s account when admin clicks on “Yes” in alert message. |
| Source | Team member. |
| Rationale | To confirm the issuance of warning user’s account. |
| Business Rule | N/A. |
| Dependencies | FR-9.5.1 |
| Priority | Medium. |

## 3.4 Non-Functional Requirements

Following are the non-functional requirements of the Car Bazar system:

### 3.4.1 Performance:

**3.4.1.1 Scrapping website:** On the peak load of 500 users, system will scrap one website in maximum 60 seconds against one query.

**3.4.1.2 Chat bot query response time:** Chatbot must respond to the queries of after 5 seconds of user typing their query and pressing enter.

### 3.4.2 Reliability:

**3.4.2.1 Scrapper Reliability:** The rate of failure occurrence per search query will be 1/100: Failure means system failed to fetch any results with any query applied. System must be restarted to correct the failure.

**3.4.2.2 Updating roll back:** Updating an ad will roll back all updated details when a update fails to commit.

**3.4.2.3 Fetched Results accuracy:** The accuracy of the fetched results for the scrapped data is at least 90%.

### 3.4.3 Usability:

**3.4.3.1 Font and color changes:** Product font and color changes capability will make system easy to use and soothing for eyes.

# 4 Design and Architecture

The following parts of Software Design Description (SDD) report should be included in this chapter.

## 4.1 System Architecture

The system architecture is the collection of components and their interfaces to develop the system. To develop "Car Bazar" we have used hybrid architecture which further include three different types of architectures within it: **Client-Server, Layered architecture and Model-View-Controller**.

**Hybrid architecture was selected because of the nature of the product, as "Car Bazar**" is a web and a mobile application and allows moving of data in a flexible way as demands providing users more options for data deployment and use. Use of the layered architecture within hybrid layer divides the design into pieces and make the development easy and efficient for the users. Client-Server architecture suits the need of the "Car Bazar". A client (seller or buyer) can get their desired services through the mobile or the web application from the "Car Bazar" server. Model-view-controller distribute the functionality of front-end backend and their mutual corporation using a controller to provide an efficient system.

Below is the System architecture diagram of “Car Bazar”:

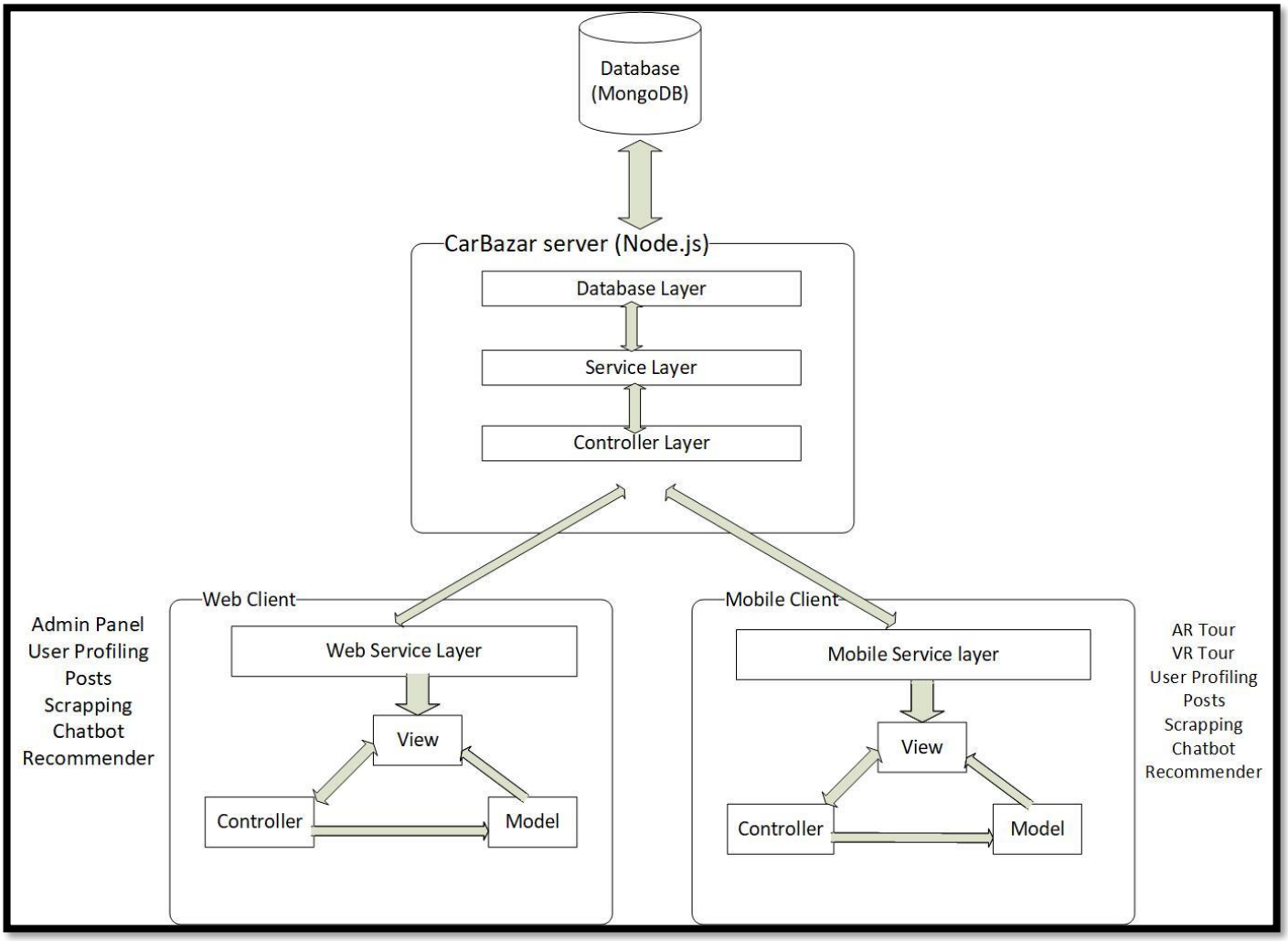


**Figure 10: Architecture Diagram for Car Bazaar**

## 4.2 Data Representation

Below is described how the major data or system entities are stored and organized.

## 4.1 Data dictionary

Data dictionaries for our systems are:

### 4.1.1 User:


```
{
   "_id": {
      "$oid": "5f09d29f173e8d2a81e5f75c"
   },
   "following": [],
```

"followers": [{
"$oid": "5eccf64147351a133824fc03"
}],
"verified": true,
"role": "subscriber",
"Reported": [],
"disabled": false,
"adminVerified": false,
"AdsNumber": false,
"name": "Aon Raza",
"email": "aonraza399@gmail.com",
"salt": "2b342350-aef1-11ea-bfcc-855cb2ebc45a",
"hashed_password": "62ce88f42a576a1e50821c434b76059886a92d90",
"phone": "03367833788",
"created": {
"$date": {
"$numberLong": "1590670785182"
}
},
"__v": {
"$numberInt": "0"
},
"verifyAccountLink": "",
"photo": "https://i.ibb.co/8BPPKsM/upload-f081683f64f3fc710ce40210d760b201.jpg",
"resetPasswordLink":
"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJfaWQiOiI1ZWNmYjVjMTMzNTgwYTAwMDRjMzcyMTciLCJpc3MiOiJOT0RFQVBJIiwiaWF0IjoxNTkyMjMxODc4fQ.qXOSXKGGA6Gu9CTkeE4KNleyxfoXIRI7VEzbixOa_ss"
}

### 4.1.2 Cars:

This model is for seller post for the user to first select car make form the option available so he can be provided with all the models available for that specific make. All the cars with their make and models will be stored in this model.

{
"_id": {
"$oid": "5f09d068173e8d2a81e5f758"
},
"likes": [],
"dislikes": [],
"comments": [],
"make": "Suzuki",
"model": "Alto",
"version": "ECO-S",
"__v": {
"$numberInt": "0"
}
}

### 4.1.3 Seller Post:


```
{
   "_id": {
      "$oid": "5f09d0fa173e8d2a81e5f759"
   },
   "photo":
["http://res.cloudinary.com/carbazar/image/upload/v1590598162/xfxasxmh214xqhbhmxsz.jpg",
"http://res.cloudinary.com/carbazar/image/upload/v1590598164/rnweopjli5r7lz4ylyzm.jpg",
"http://res.cloudinary.com/carbazar/image/upload/v1590598165/mwhmqx97pbgdm6po4cih.jpg"],
   "video": [],
   "likes": [],
   "savedBy": [{
      "$oid": "5ed006adefa2e00004768b27"
   }],
   "Reported": [],
   "status": "active",
   "published": true,
   "title": "mypost",
   "city": "Bhalwal",
   "make": "Toyota",
   "model": "Prius",
   "registration_city": "Mianwali",
   "registration_year": "1982",
   "mileage": "400,000 - 450,000",
   "exterior_color": "Indigo",
   "body": "sadad",
   "price": "111111111111111",
   "engine_type": "petrol",
   "transmission": "automatic",
   "assembly": "local",
   "engine_capacity": "1600",
   "condition": "Used",
   "created": {
      "$date": {
         "$numberLong": "1590597597440"
      }
   },
   "postedBy": {
      "$oid": "5eccf64147351a133824fc03"
   },
   "__v": {
      "$numberInt": "1"
   },
   "updated": {
      "$date": {
         "$numberLong": "1590598159941"
      }
   }
}
```

### 4.1.4 Buyer Post:


```
{
  "_id": {
    "$oid": "5f09cfc2173e8d2a81e5f757"
  },
  "photo": ["https://i.ibb.co/ggNFm0X/upload-b734f73a5fe5b9568b2f7b61185cd319.jpg"],
  "savedBy": [{
    "$oid": "5ecfb5c133580a0004c37217"
  }],
  "Reported": [],
  "status": "active",
  "title": "mypost",
  "city": "Attock",
  "make": "Suzuki",
  "model": "undefined",
  "registration_year": "2017",
  "mileage": "250,000 - 300,000",
  "price": "50,000  - 100,000",
  "engine_capacity": "1300",
  "created": {
    "$date": {
      "$numberLong": "1590595872855"
    }
  },
  "postedBy": {
    "$oid": "5eccf64147351a133824fc03"
  },
  "__v": {
    "$numberInt": "2"
  },
  "updated": {
    "$date": {
      "$numberLong": "1590597239638"
    }
  }
}
```


### 4.1.5 AR Models:


```
{
  "_id": {
    "$oid": "5f09cf65173e8d2a81e5f756"
  },
  "name": "BMW",
  "likes": [],
  "dislikes": [],
  "comments": []
}
```

### 4.1.6 Report Posts:


```
{
   "_id": {
      "$oid": "5f09d173173e8d2a81e5f75a"
   },
   "text": "Doesnot exist",
   "__v": {
      "$numberInt": "0"
   },
   "author": {
      "id": {
         "$oid": "5eccf64147351a133824fc03"
      },
      "username": "Khizar"
   }
}
```


### 4.1.7 Stats:


```
{
   "_id": {
      "$oid": "5f09d24e173e8d2a81e5f75b"
   },
   "visited": {
      "$date": {
         "$numberLong": "1594062151637"
      }
   },
   "name": "pkw",
   "__v": {
      "$numberInt": "0"
   }
}
```


### 4.1.8 Reviews:


```
{
 "_id": {
      "$oid": "5f09cca4173e8d2a81e5f754" },
   "title": "best car",
   "description": "",
   "priceReview": {
      "$numberInt": "3"
   },
   "modelReview": {
      "$numberInt": "5"
   },
   "brandReview": {
      "$numberInt": "5"
   },
```

```
  "mileageReview": {
    "$numberInt": "3"
  },
  "familiarity": "I owned this car",
  "__v": {
    "$numberInt": "0"
  },
  "author": {
    "id": {
      "$oid": "5ecfb5c133580a0004c37217"
    },
    "username": "Aon Raza"
  },
  "car": {
    "$oid": "5eccfae747351a133824fcc9"
  }
}
```


## 4.2 Process Flow/Representation

Process flow representation is the flow of the system's features and the way they in which all the features interact with each other. Below are the major processes of the "Car Bazar" and interaction between different parts of the system:

### 4.2.1 Buyers and Sellers ads

To post a buyer or a seller ad a user will open the 'Car Bazar' app, provide their credentials and login to the system. From the home page user will be able to select either of the two options from posting a seller ad or posting a buyer ad.

Below is the activity diagram of buyer and seller ad:

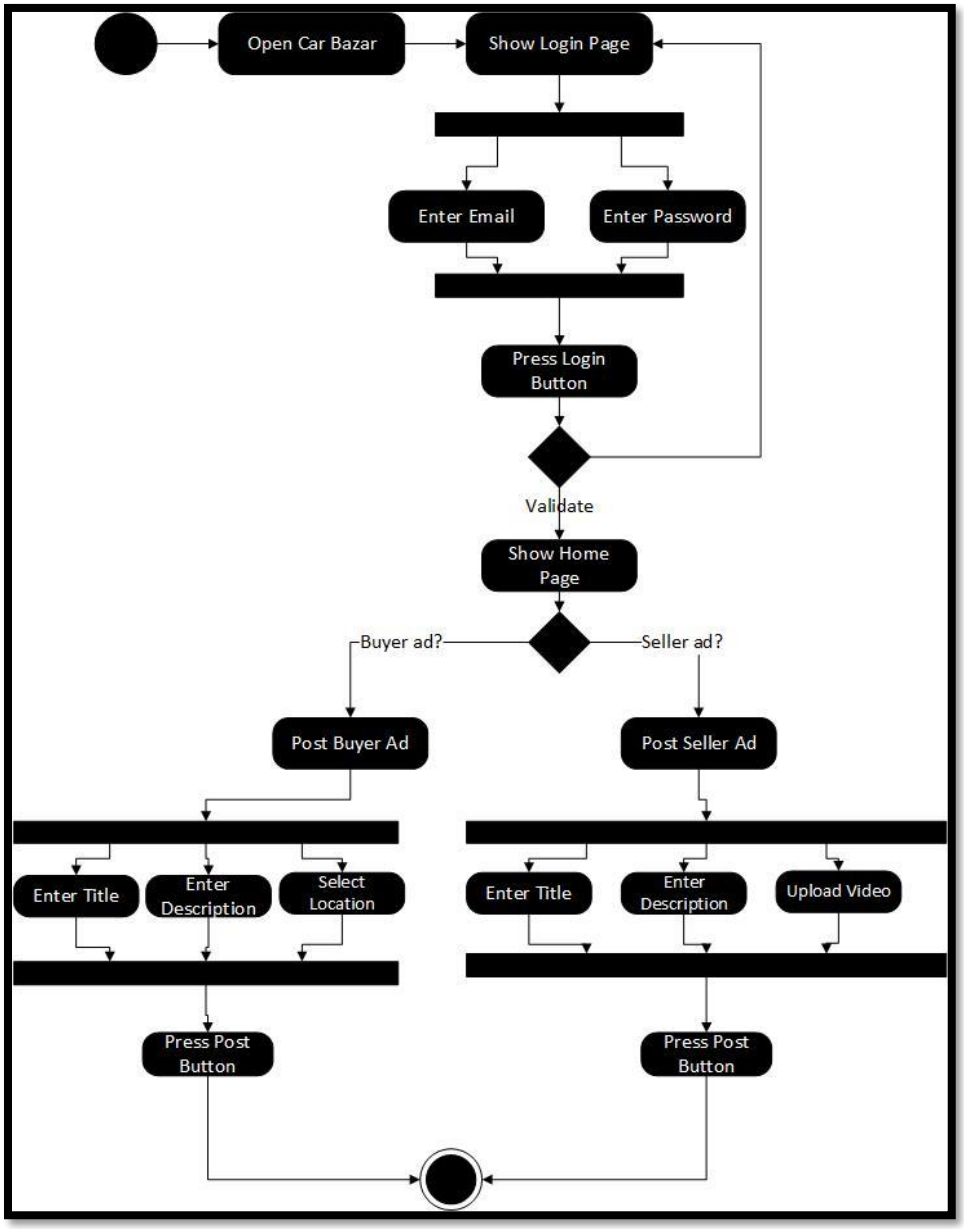


**Figure 11: Activity Diagram (Ads)**

### 4.2.2 AR-Tour:

To view a car ad in AR a user will open the 'Car Bazar' app, provide their credentials and login to the system. On the landing page user will select the AR-tour option which will navigate user to a new page having the options of: select AR-Model, view saved models. After searching an AR-model system will fetch all the records against the user query in the form of a list. User will be

able to select any of them which can be zoomed in, zoomed out, rotated in left or right direction and the colors of the models can be switched.
Below is the activity diagram for AR-Tour:

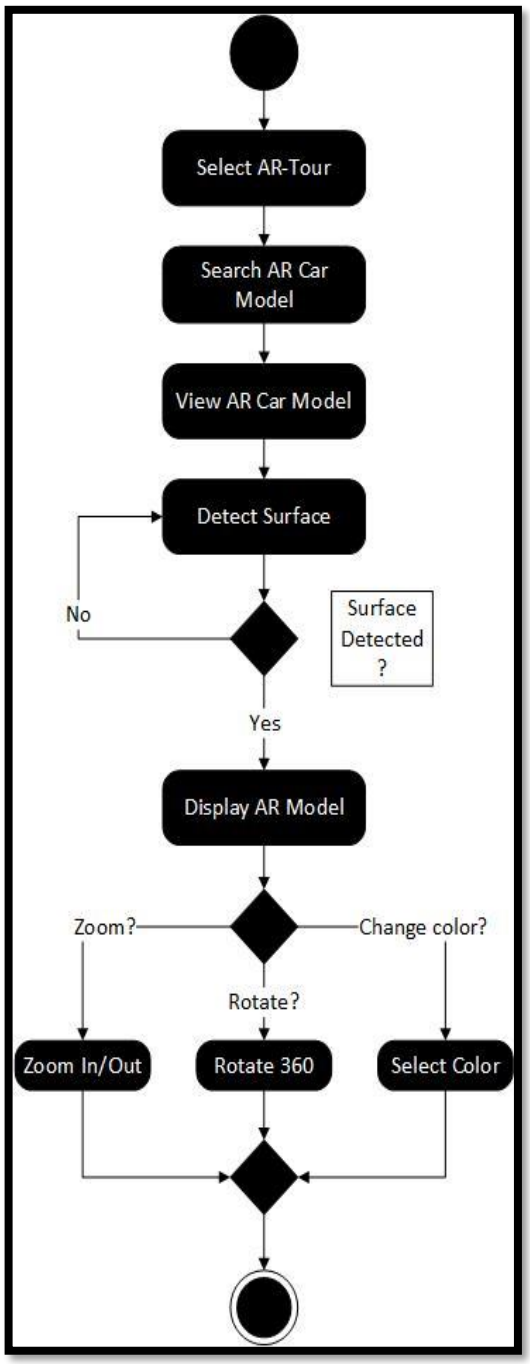


**Figure 12: Activity Diagram (AR-Tour)**

### 4.2.3 Car Recommendation:

User will login to the "Car Bazar" providing their credentials. On the landing page user will select the 'Recommendations' page. User will ask the system to recommend them a car on the basis of brands, by price, by model, by mileage and on the basis of the re-sale.
Below is the activity diagram of Car Recommendation:

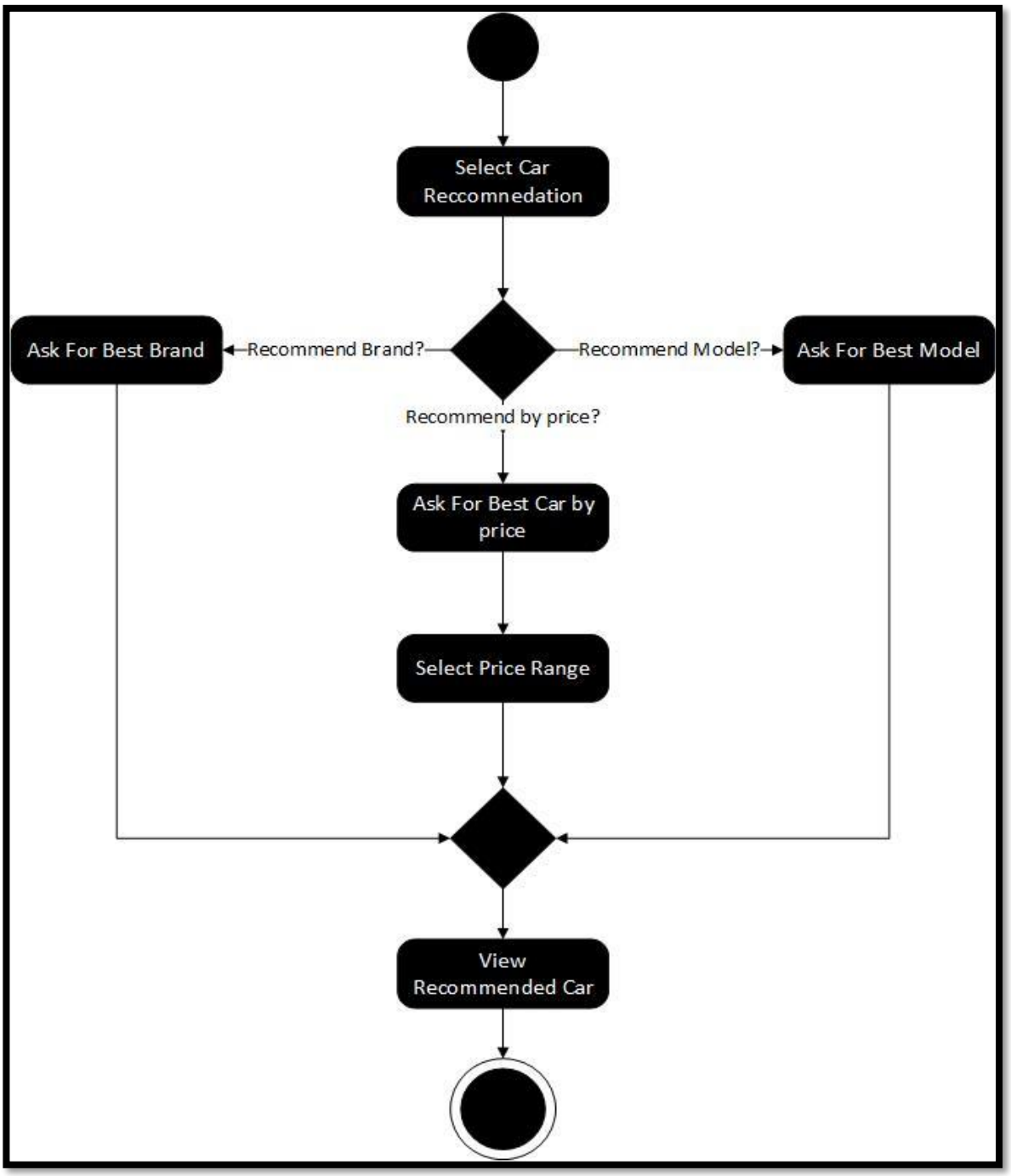


**Figure 13: Activity Diagram (Recommender)**

### 4.2.4 Admin management:

From the main screen Admin will be able to select from either option of manage users and view verification requests. In the manage users panel an admin can disable or re-enable a user account or they can warn a user about any prohibited activity within the system.
Below is the activity diagram for Admin management:

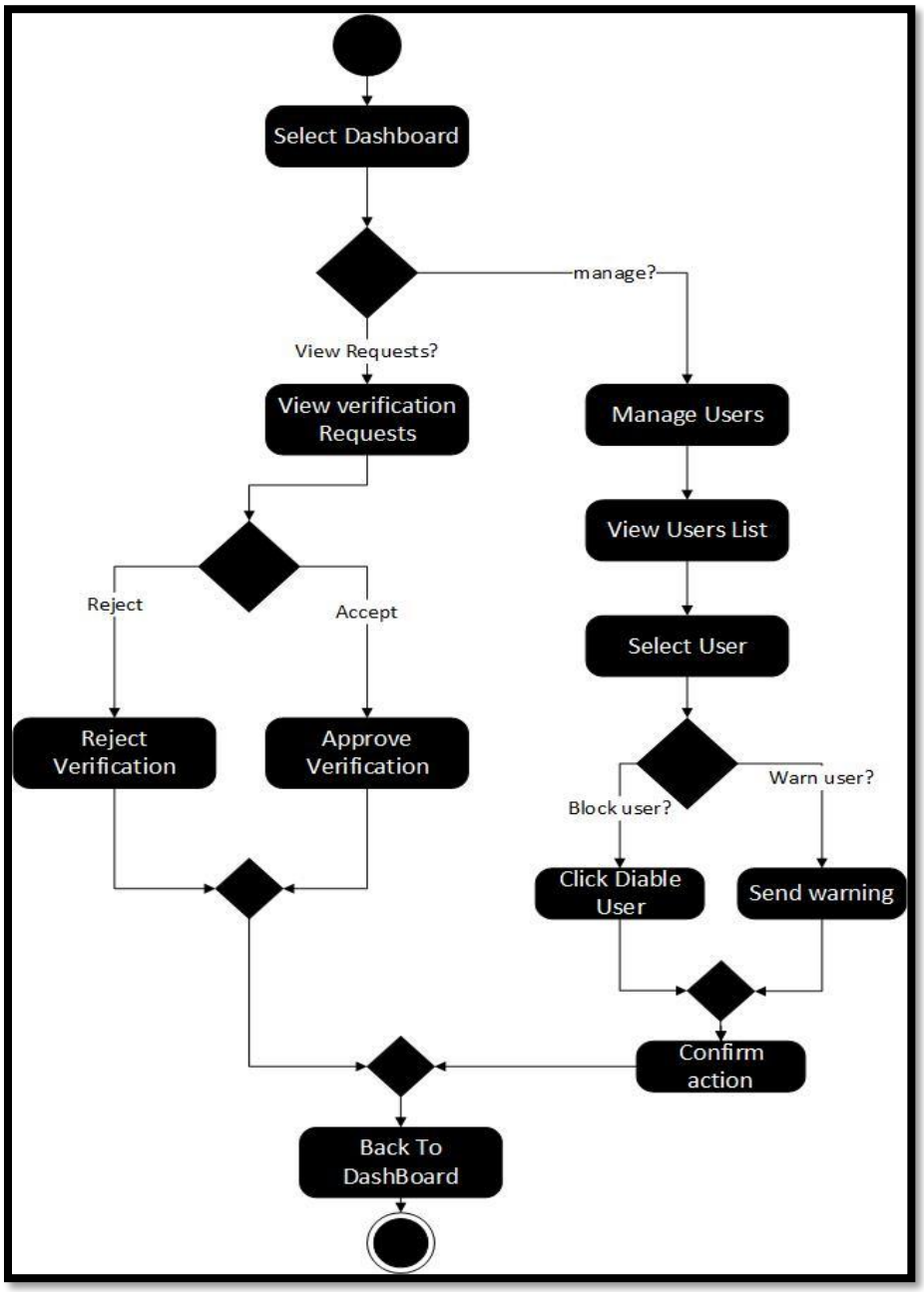


**Figure 14: Activity Diagram (Admin Management)**

### 4.2.5 VR-Tour:

On the mobile application of 'Car Bazar' user will search for the car models that could be viewable in VR. This selection of 'VR view' takes user to a new page where different options of searching for VR models, selection of a model to be viewed in VR. When user select a model and presses 'View in VR' checks for a VR box connection and places a 3D model of a car in a virtual garage. User can view interior and exterior of the model while pressing controller buttons of the VR box. Below is the activity diagram of VR-Tour:

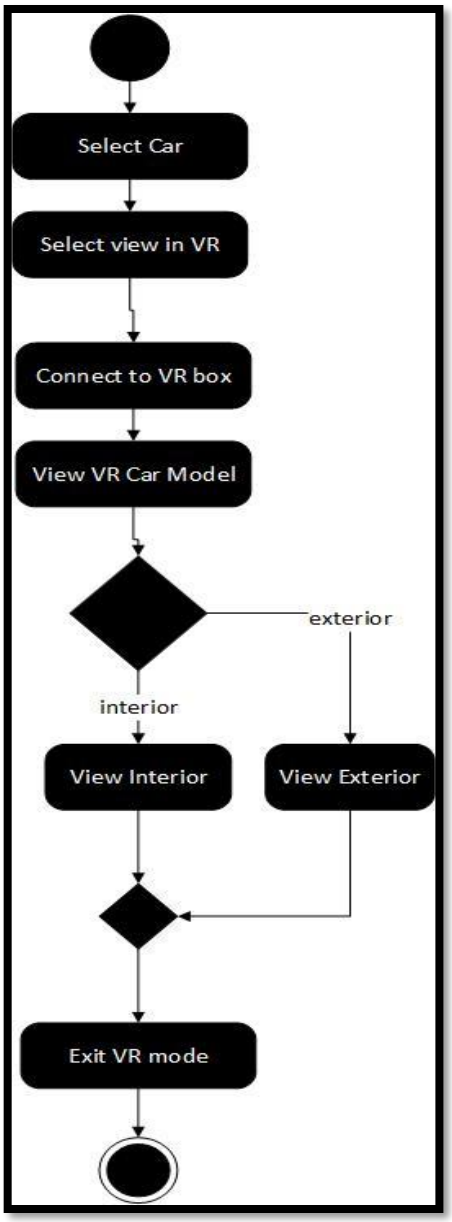


**Figure 15: Activity Diagram (VR-Tour)**

### 4.2.6 Searching:

A user can perform a search of a car from the 'Car Bazar' system. This search can be performed by providing a car model, make year, adding their price range the fuel type and the transmission

type of a car model. When user specifies their requirement, system fetches related car details. Any car search result can be viewed by the user. Users can watch the video ad, save that ad into their account or they can contact seller using email.
Below is the activity diagram of Searching:

### 4.2.7 Chatbot:

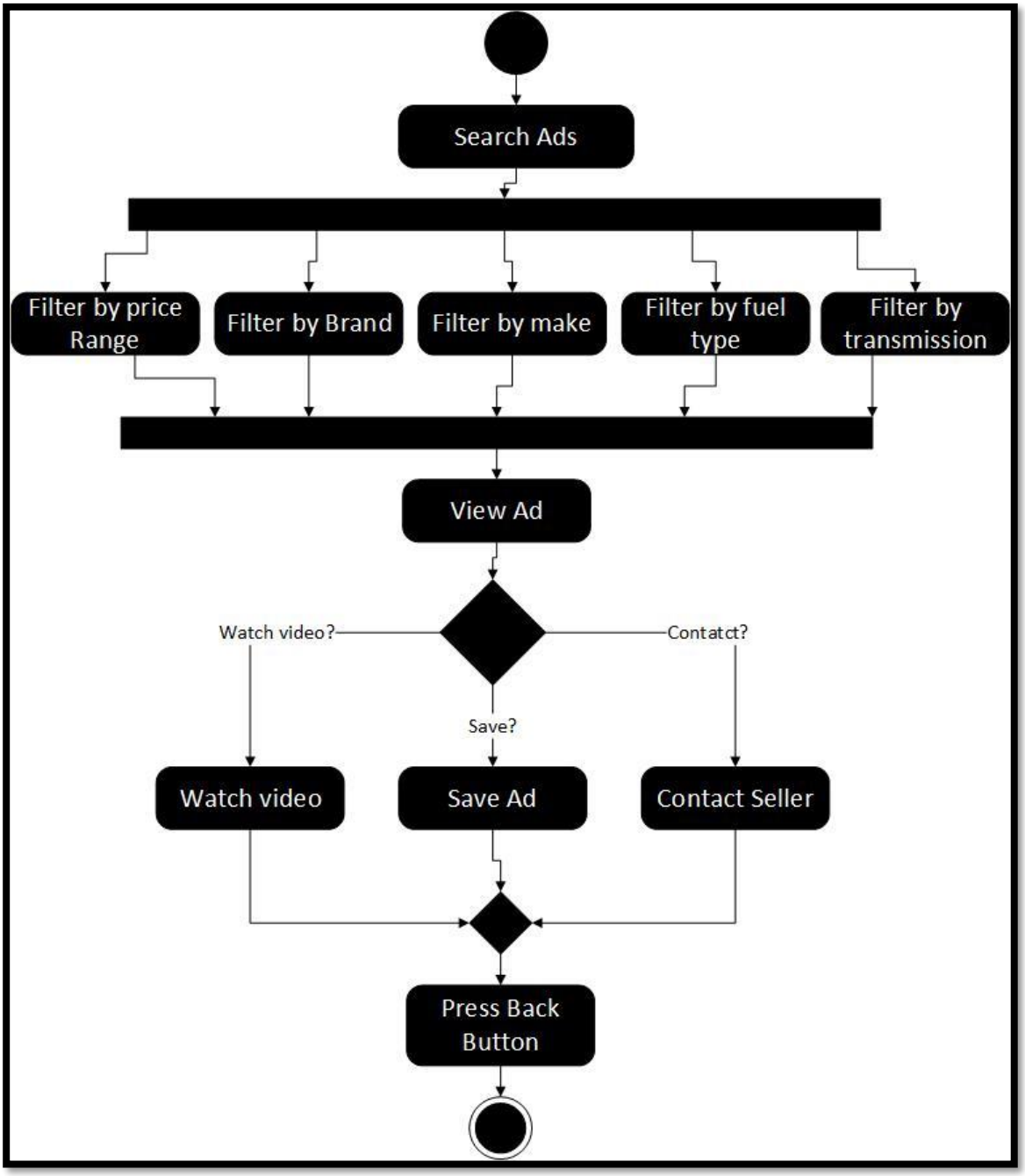


**Figure 16: Activity Diagram (Searching)**

User can start conversation with the chatbot and ask about the information of a specific car or the information about the system functionalities. User can ask for the car model or the specific price range and can view the car details if available. After viewing the car details or the system details the conversation can be ended.
Below is the activity diagram of Chatbot:

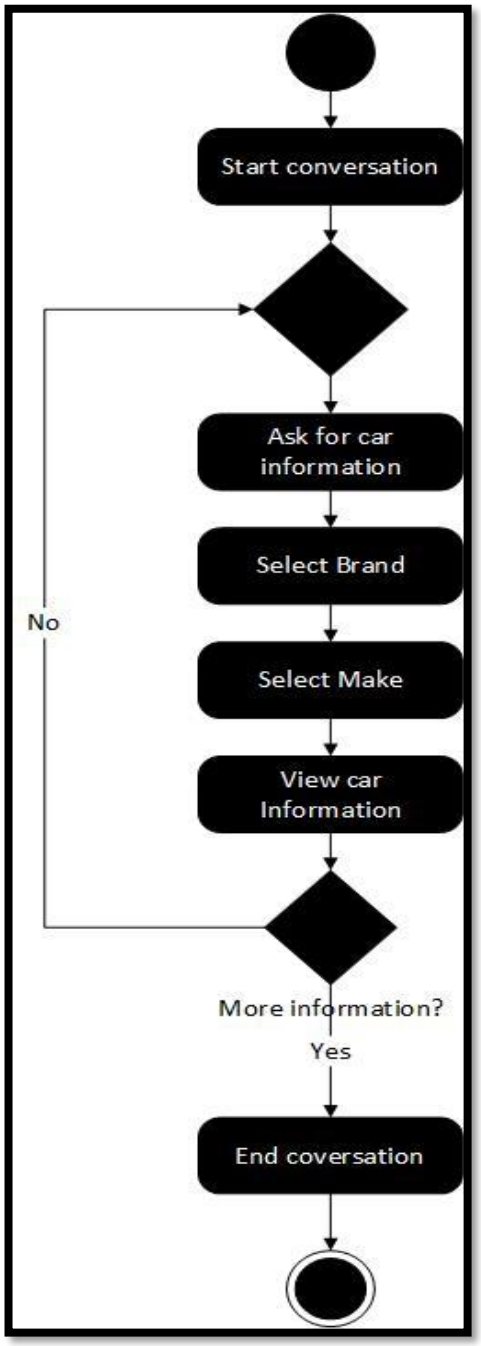


**Figure 17: Activity Diagram (Chatbot)**

## 4.3 Design Models

Below are the descriptions and the diagrams that are necessary according to the nature of the Car Bazar system:

### 4.1 Class diagram

Class diagram of Car Bazar show all the attributes and behaviors of major entities used for the development of this system. System has two major roles: Users and admins. Users are further divided into two sub-categories common users and company profile which differ from each other on the basis of the functions they can perform. Admins will be given the authority to monitor a user account and if suspected to perform any task that violates the privacy policy of the system: their account could be suspended. Admins further can re-enable a user account if they find user to be guilty of their actions. Admins can add, update or delete the details of car that will be used for recommendation purpose. They can also add or delete the AR car models that are visible to end users.

Users can post either a seller or buyer ad: to perform this functionality system depicts different behavior to the user. Scrapper class will be used to fetch the data from internet sources and formatted to show it to user.

Below is the detailed class diagram of Car Bazar system:

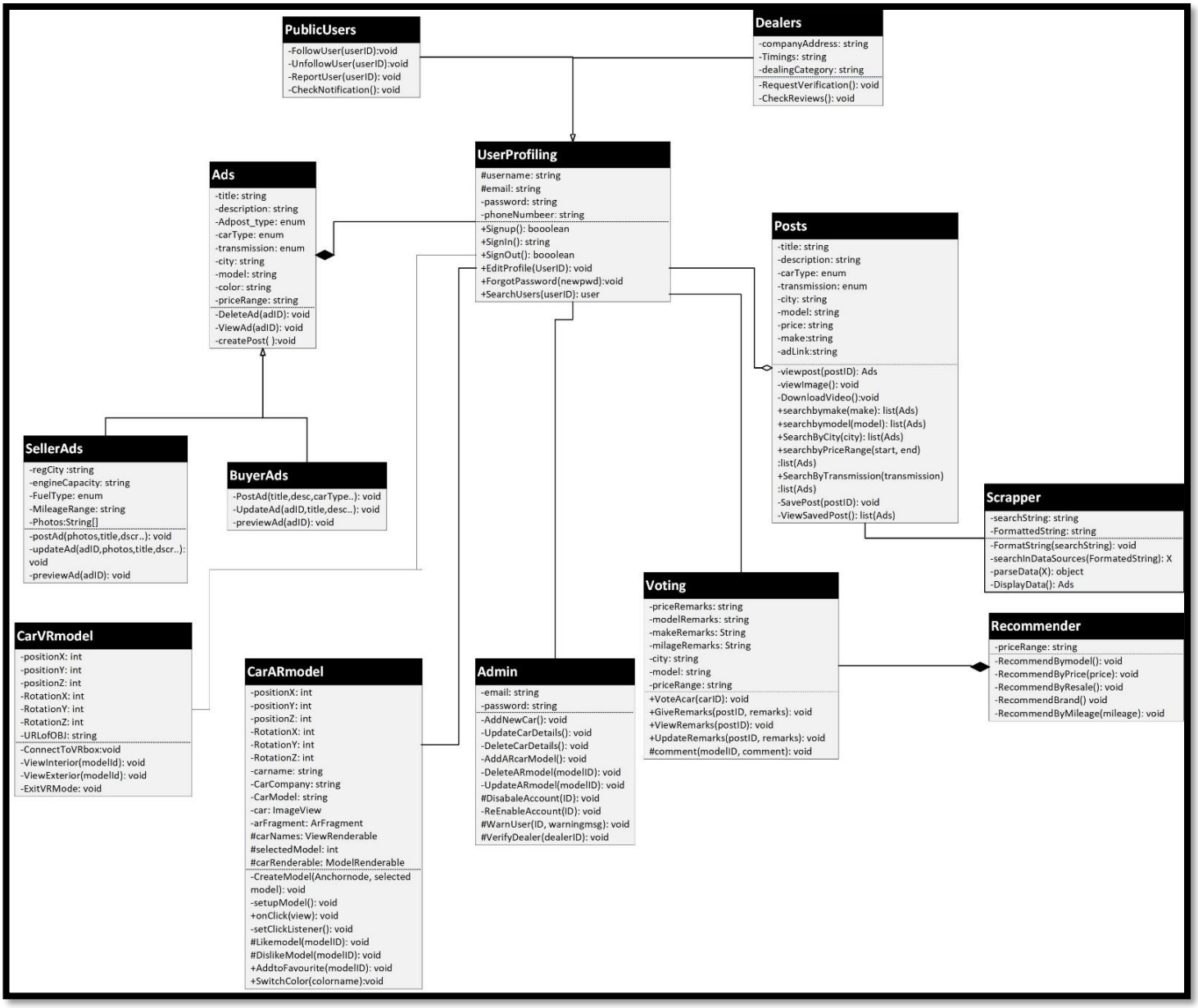


**Figure 18: Class diagram Car Bazar**

## 4.2 Sequence diagrams:

Below are the sequence diagrams of major functionality of the system and their descriptions:

### 4.2.1 Searching:

A user who have access to their registered 'Car Bazar' system can search cars by clicking on the search bars where searchPost class methods will be called that allows users to search by priceRange, by model, city of the car registration, city where that car can be found of all of them at once. This search string will scrapper class to run and format the search string, then search in the data sources for the best results against that query and parse data and then displaying it back to the user.
Below is the sequence diagram of the Searching:

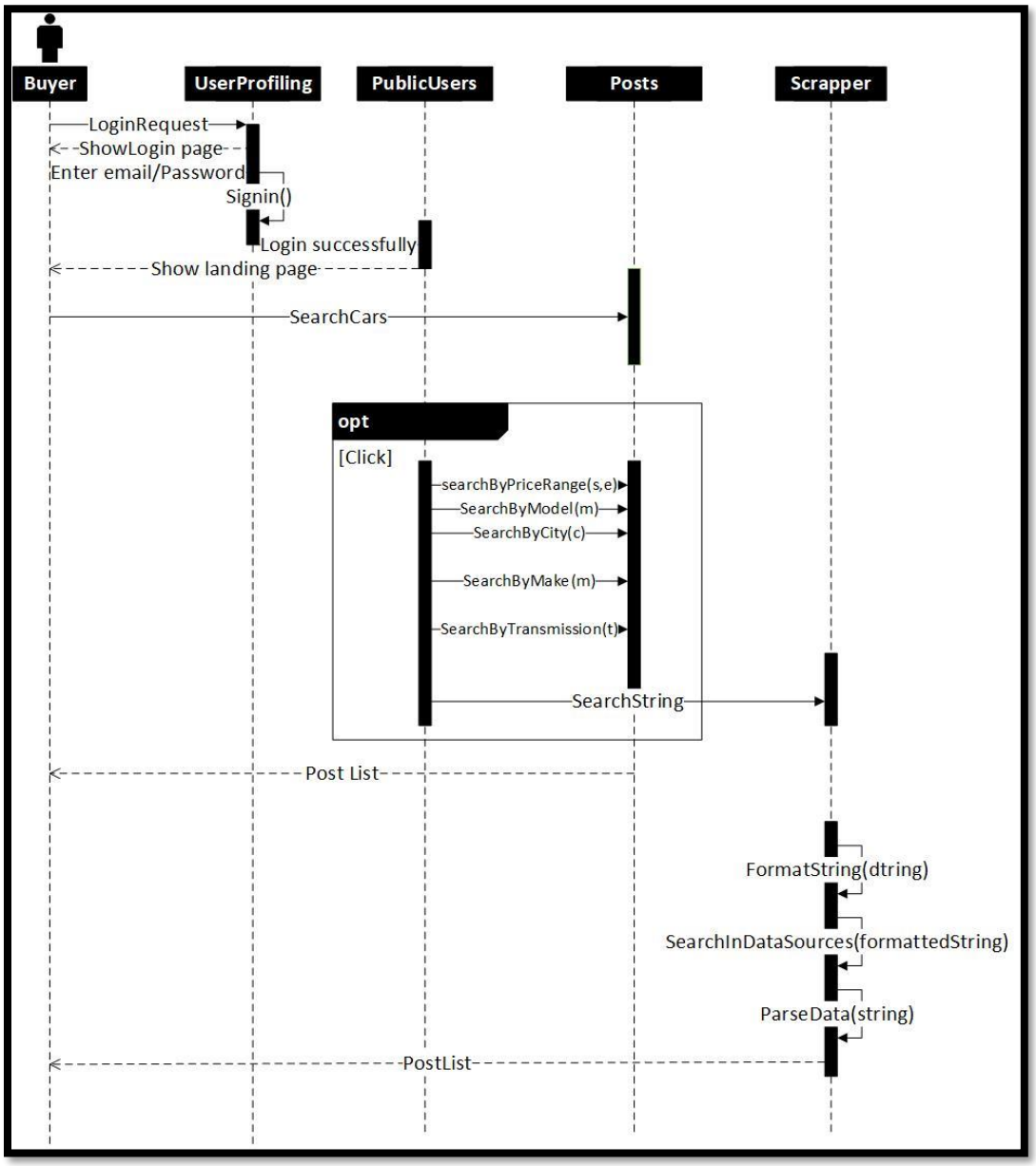


**Figure 19: Sequence Diagram (Searching)**

### 4.2.2 AR-Tour:

To view an AR model a user must have access to their 'Car Bazar' account via mobile phone. User will send a login request to the user profiling class which on success be connected to public users' class. On showing a landing page, users can invoke method of creating Model which renders a model from the database to be viewed to user. While viewing a model in AR it first detects a surface on which a model will be placed. When a surface is detected user can call onClick method which will place selected model on the screen. User can request to switch colors of car models by tapping on the color of the model. Below is the sequence diagram of the AR-Tour:

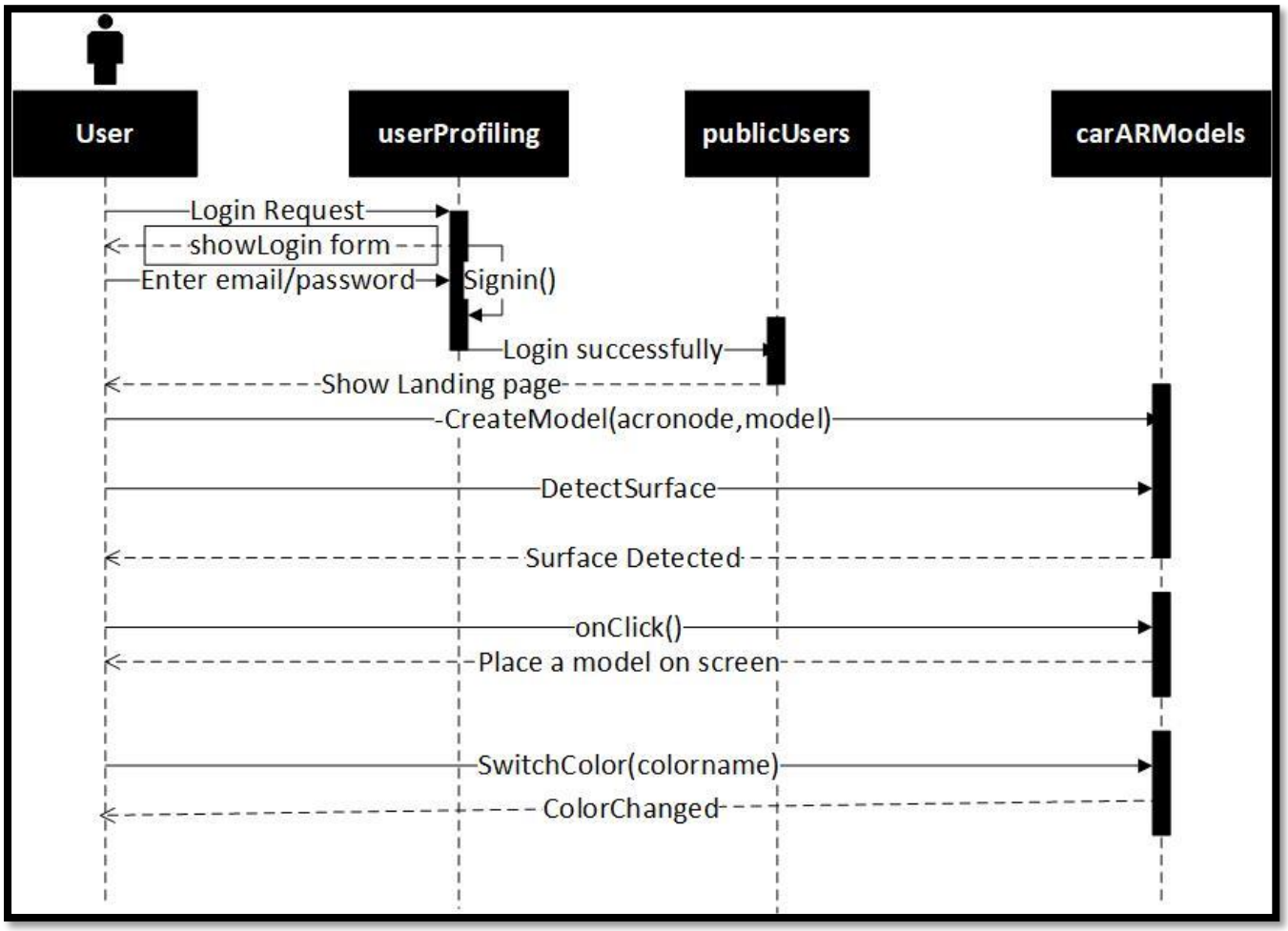


**Figure 20: Sequence Diagram (AR-Tour)**

### 4.2.3 Post Ads:

Any registered user of 'Car Bazar' who have access to their account can post seller or buyer ads on the basis of their roles defined at the registration level. Users will be shown a Page where they can post and ad by calling PostAd method providing the necessary details for that ad. After adding all necessary details in the forms postAd() will be called which will finally store the ad in the system database and make it available for other users to search it.
Below is the sequence diagram of posting and ad:

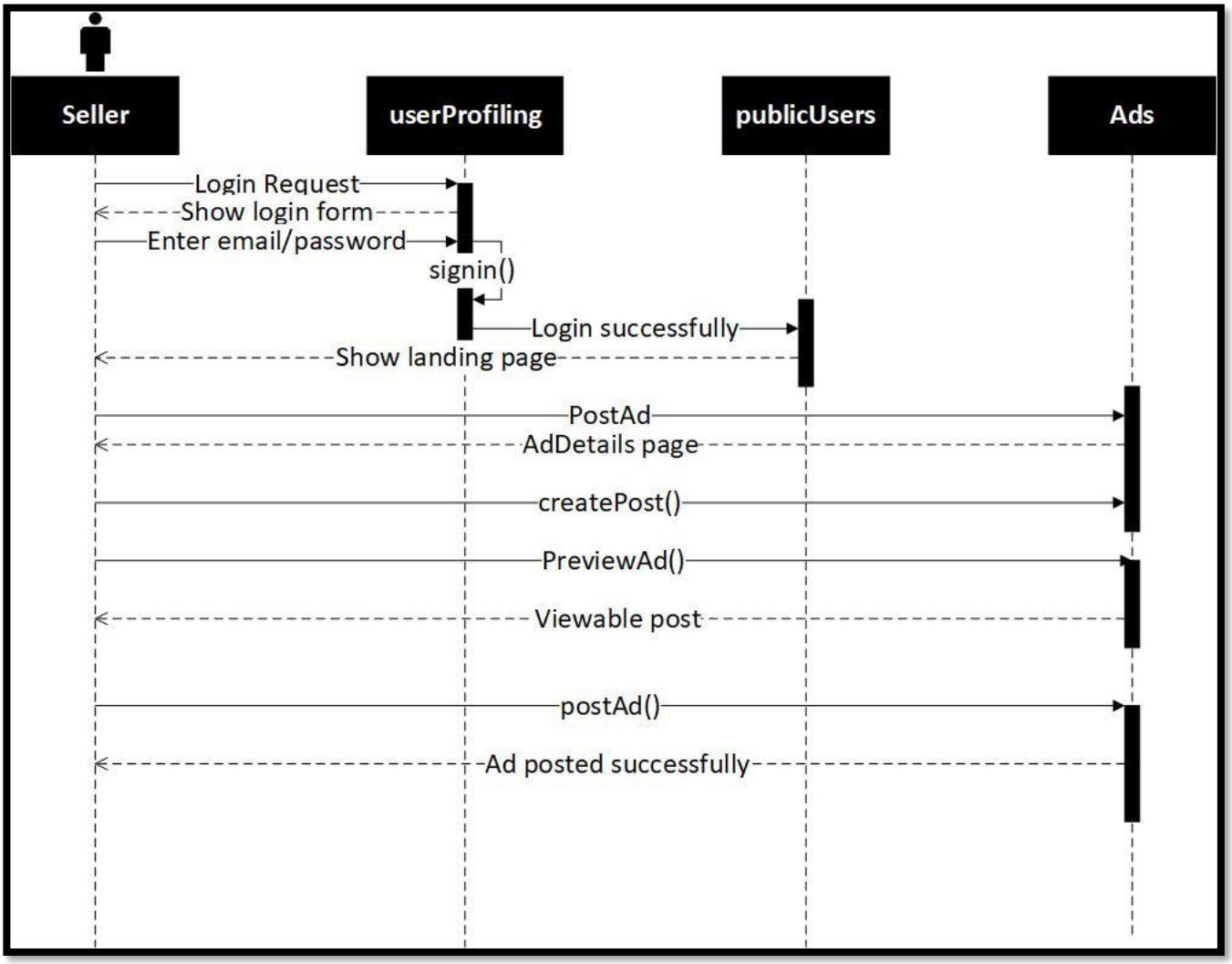


**Figure 21: Sequence Diagram (Post ads)**

### 4.2.4 Recommender:

Any user that have a valid 'Car Bazar' and have access to that account can select the recommendation page from their main menu. On the recommend cars options user can select an option like brand, price, model or mileage on whose basis a best car model will be selected for that user and shown to the user.
Below is the sequence diagram of recommender:

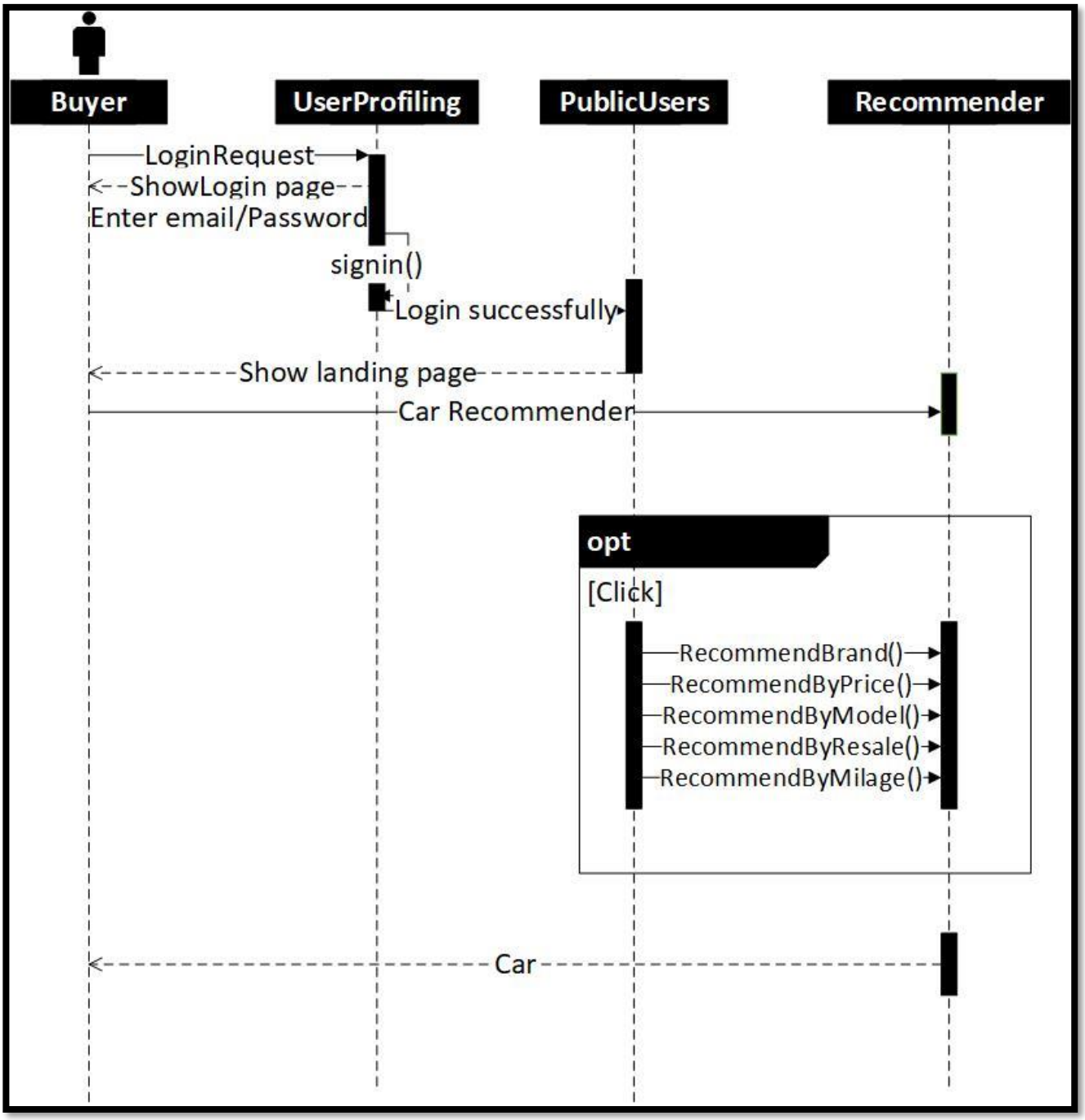


**Figure 22: Sequence Diagram (Recommender)**

### 4.2.5 Chatbot:

A chatbot will be there to assist users about the system usage and the information of cars. This chatbot will be available for the registered users that have access to their 'Car Bazar' account. On the chatbot screen if a user wants to start conversation with a chatbot they can send them a Hello message, which will be responded with the pre-defined answers from the chatbot. Users will be provided with the functionality of asking system usage and about a car information. Users can also end conversation with the chatbot.
Below is the sequence diagram of Chatbot:

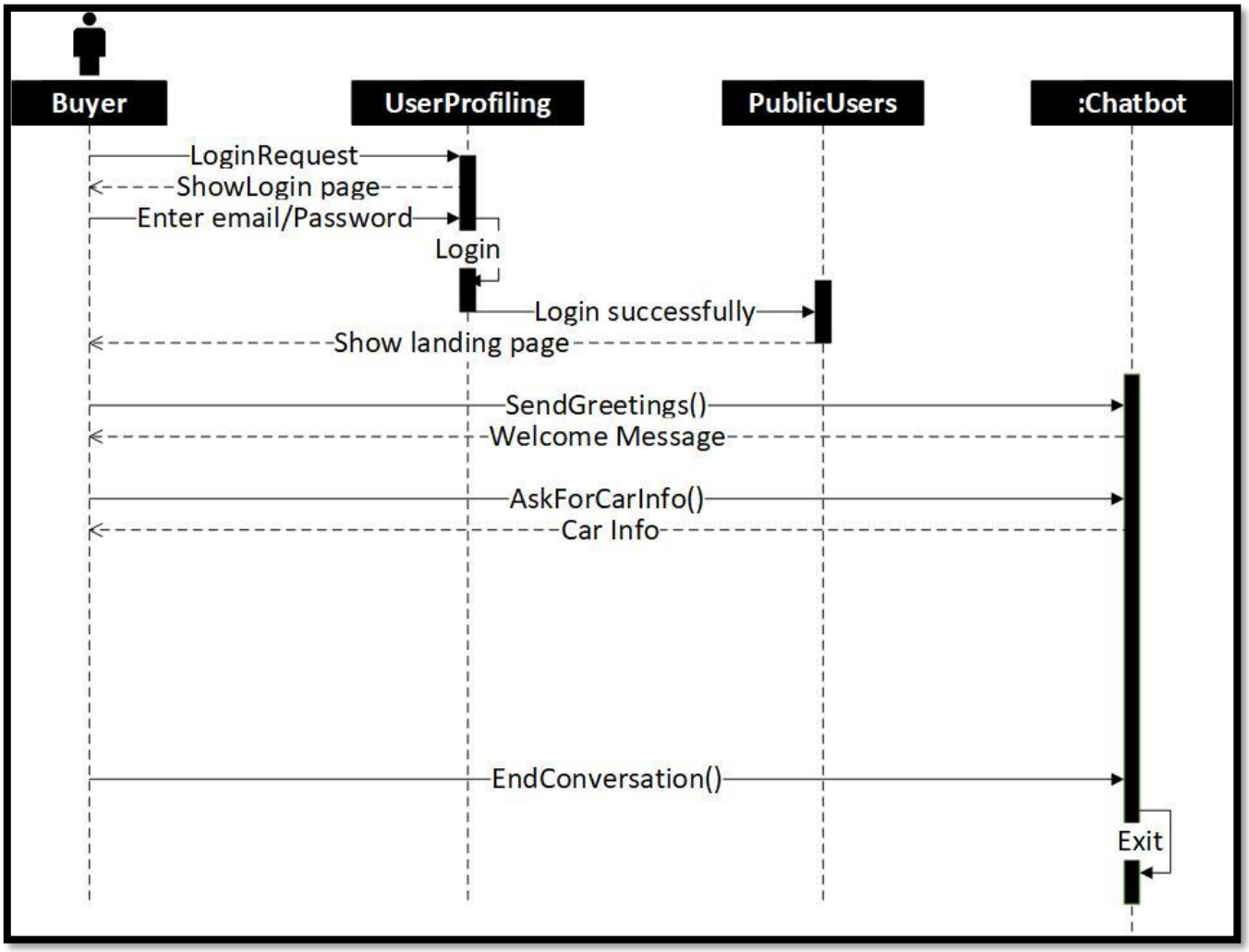


**Figure 23: Sequence Diagram (Chatbot)**

# 5 Algorithm & Implementation

Below is the summary algorithm for each function listed in procedural description language (PDL) or pseudo code.

## 5.1 Email sending API(Twilo sendGrid):

```
const sgMail = require('@sendgrid/mail');
sgMail.setApiKey(process.env.SENDGRID_API_KEY);

Message = {
  to: test@example.com',
  from: 'test@example.com',
  subject: 'Sending with SendGrid is Fun',
  text: 'and easy to do anywhere, even with Node.js',
  html: '<strong>and easy to do anywhere, even with Node.js</strong>',
}
sgMail.send(Message);
```

## 5.2 Getting last location API:

```
fusedLocationClient.getLastLocation()
        .addOnSuccessListener(this, new OnSuccessListener<Location>() {
            @Override
            public void onSuccess(Location location) {
                // Got last known location. In some rare situations this can be null.
                if (location != null) {
                    // Logic to handle location object
                }
            }
        });
private FusedLocationProviderClient fusedLocationClient;

@Override
protected void onCreate(Bundle savedInstanceState) {
    // ...

    fusedLocationClient = LocationServices.getFusedLocationProviderClient(this);
}
```

### 5.3 Scrapping (using beautifulsoup):

Create a list of web scrapped pages

For every url in a list of urls

initialize BeautifulSoup object with url information
Find the html tags with all the data that we want to scrape

initialize lists to organize scraped data into categories

Allocate the scraped data to the appropriate categories

Set up pattern to only grab the information that we need

Use these patterns to clean the data that we scraped to grab what we need and replace the values in our categories with these cleaned values

return cleaned data back

### 5.4 Python Server (Flask Api):

```
from flask import Flask
from flask_cors import CORS

app = flask.Flask(__name__)
app.config["DEBUG"] = True
CORS(app)


@app.route('route', methods=['GET'])
def Function():
    return something

app.run()
```

## 5.1 User Interface

Below are the screen images for the web view of the system:

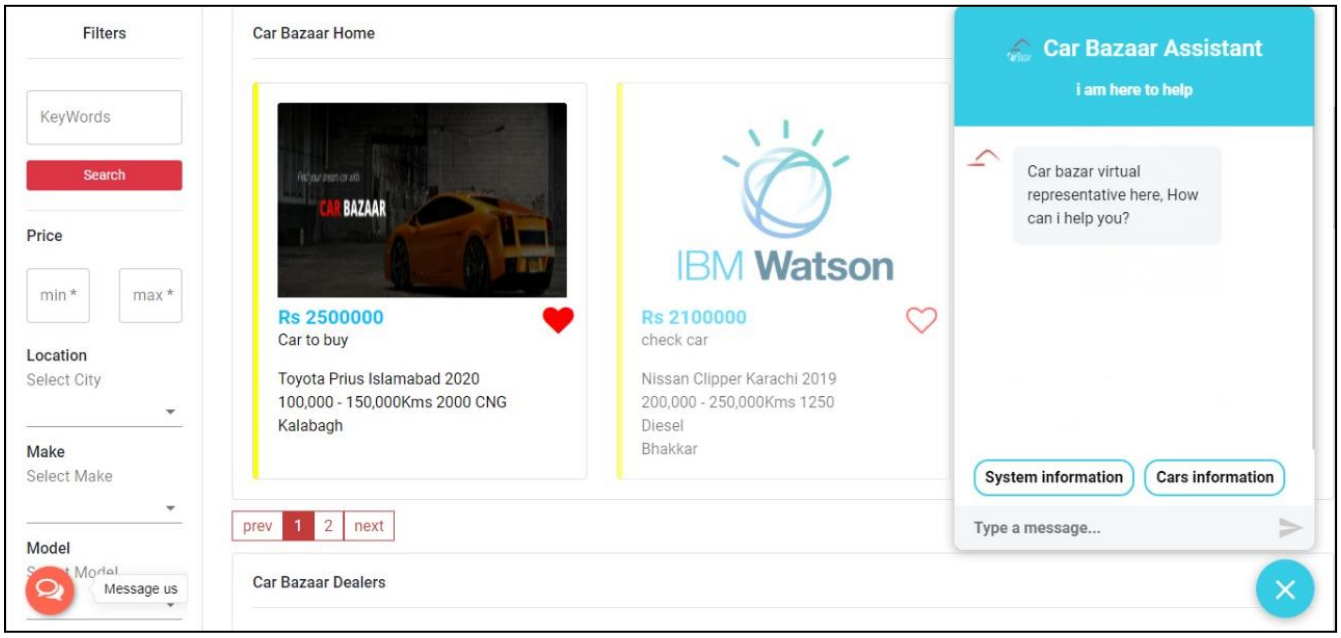


**Figure 24: screen image for home-screen (Web view)**

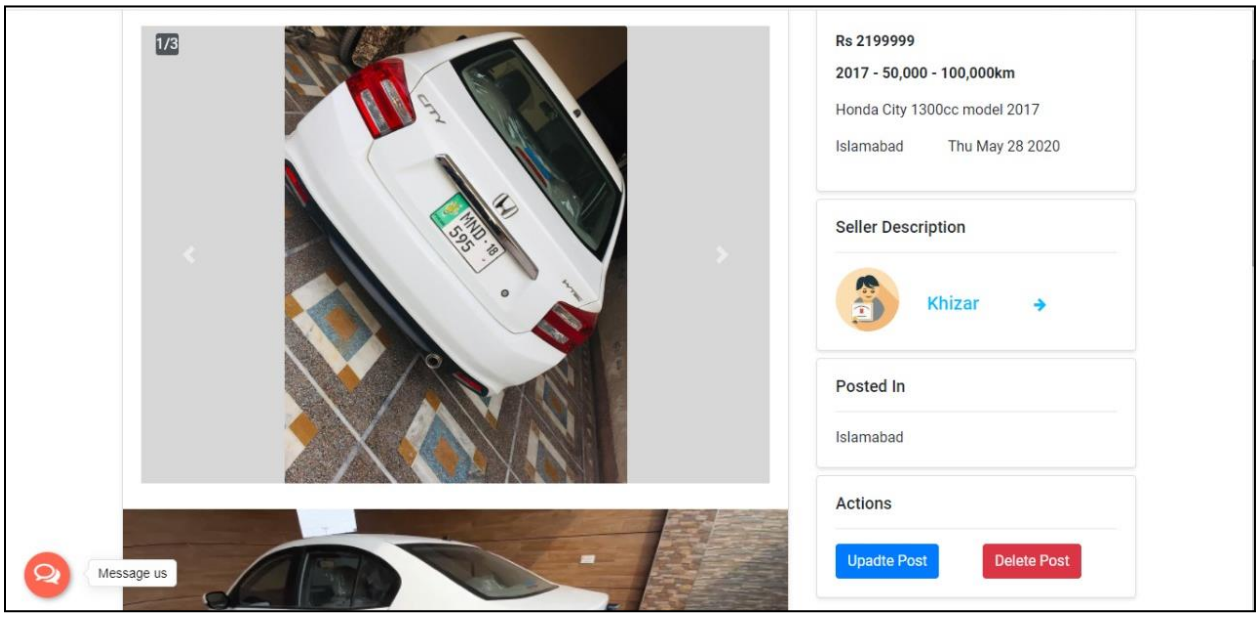


**Figure 25: Screen image for detailed post (Web-view)**

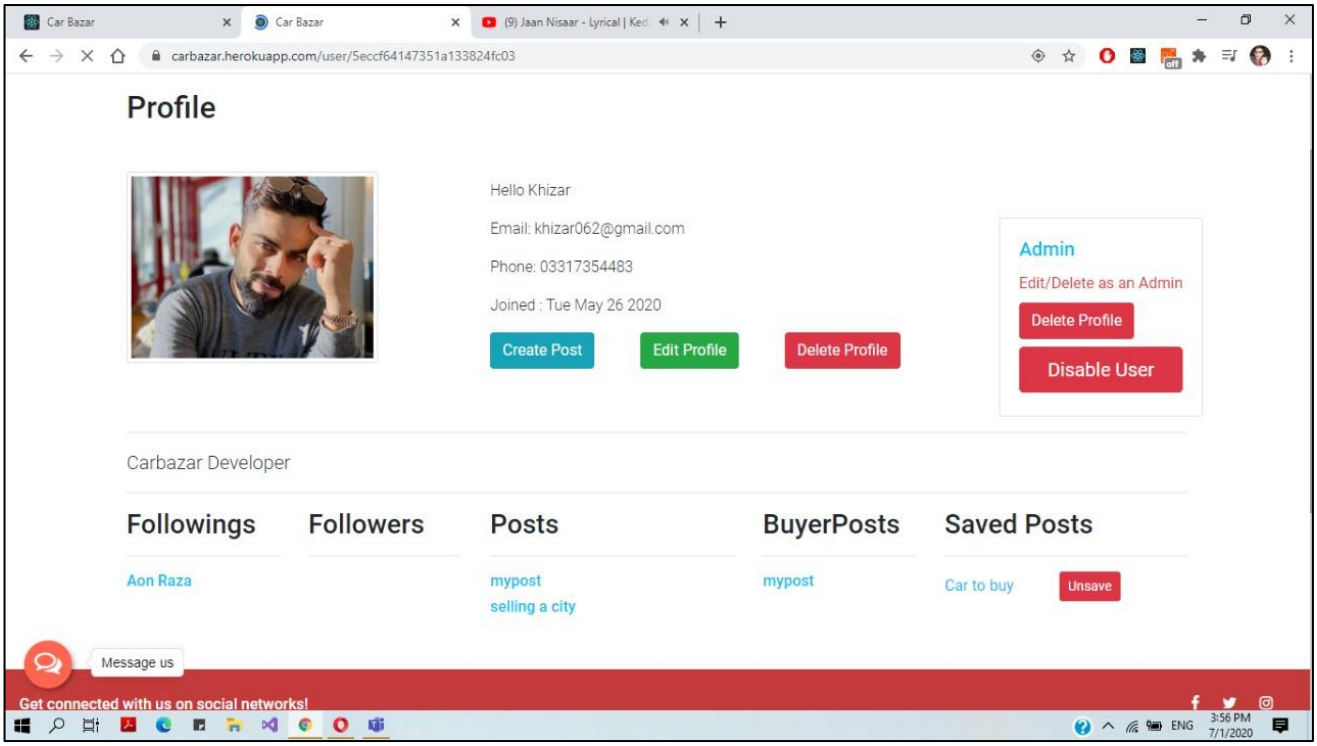


**Figure 26: Screen image user profile (web-view)**

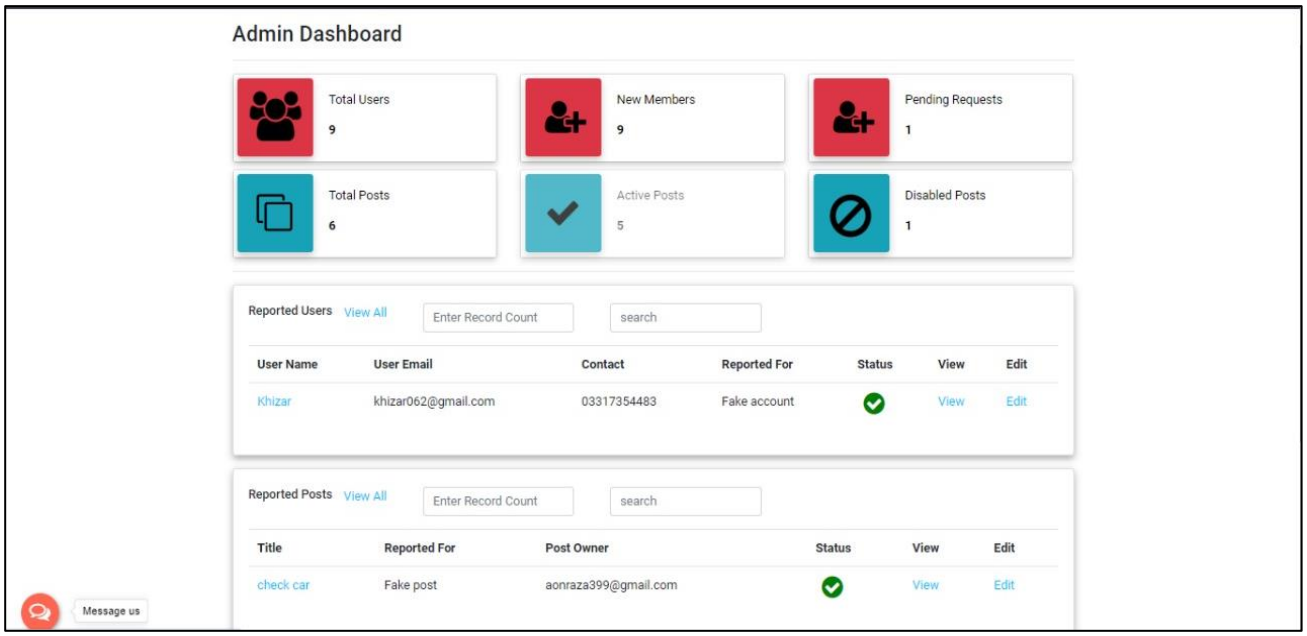


**Figure 27: Screen image for Admin panel(web-view)**

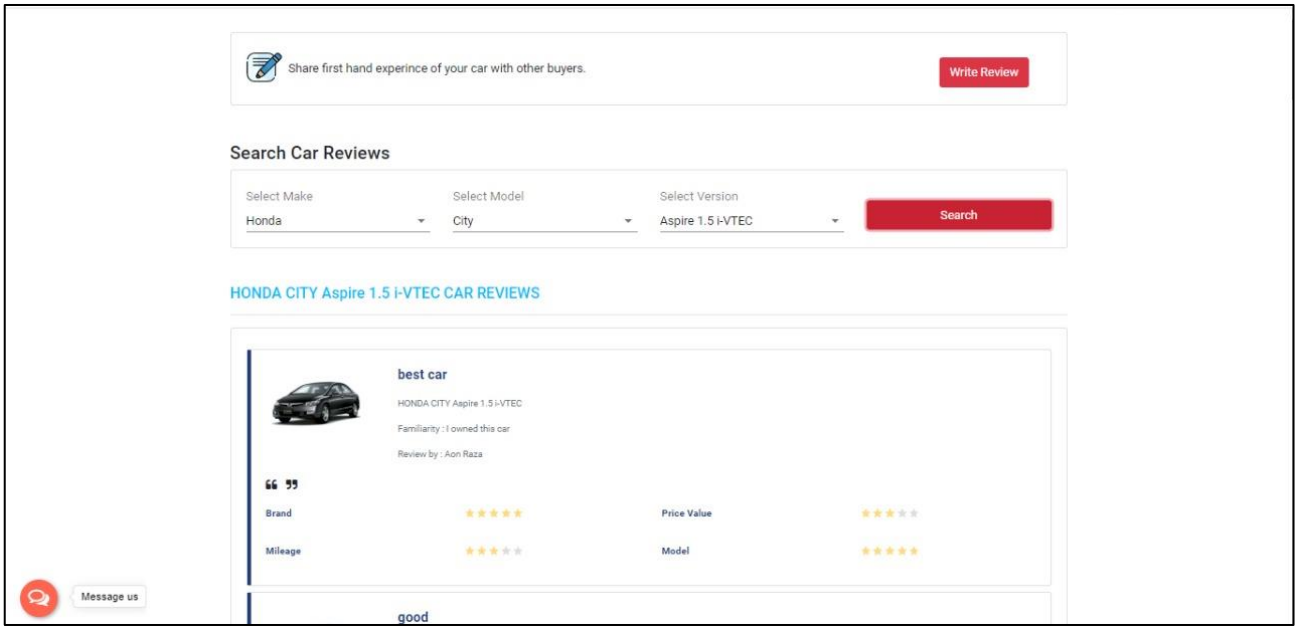


**Figure 28: Screen image for Recommender(web-view)**

Below are the screen images for the mobile view of the system:

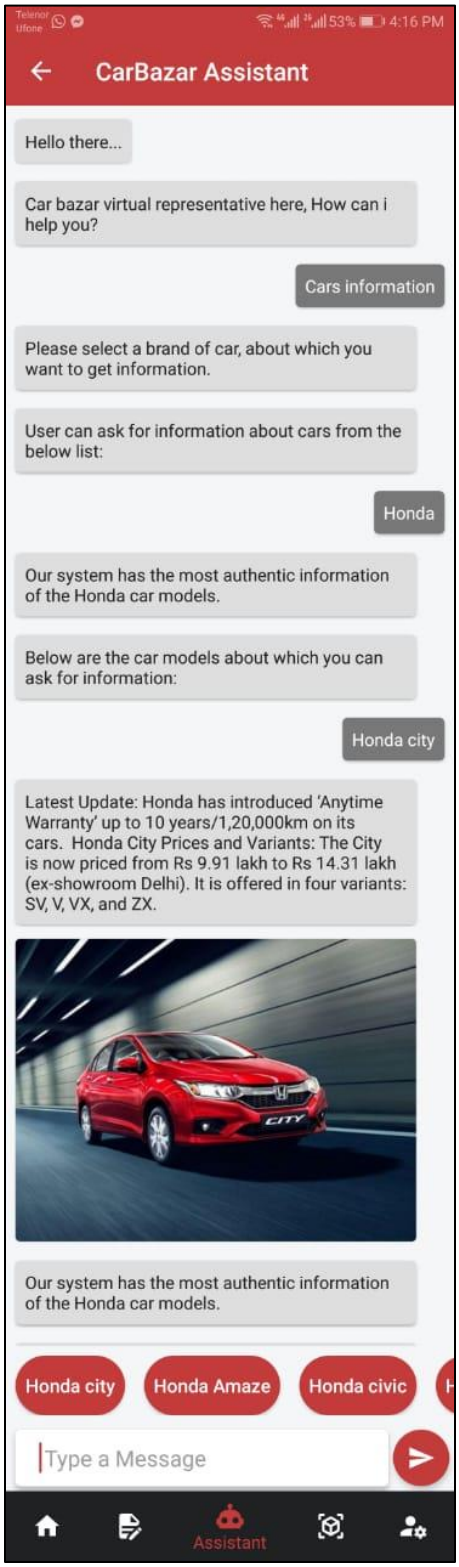


**Figure 29: Screen image for Chatbot (Mobile view)**

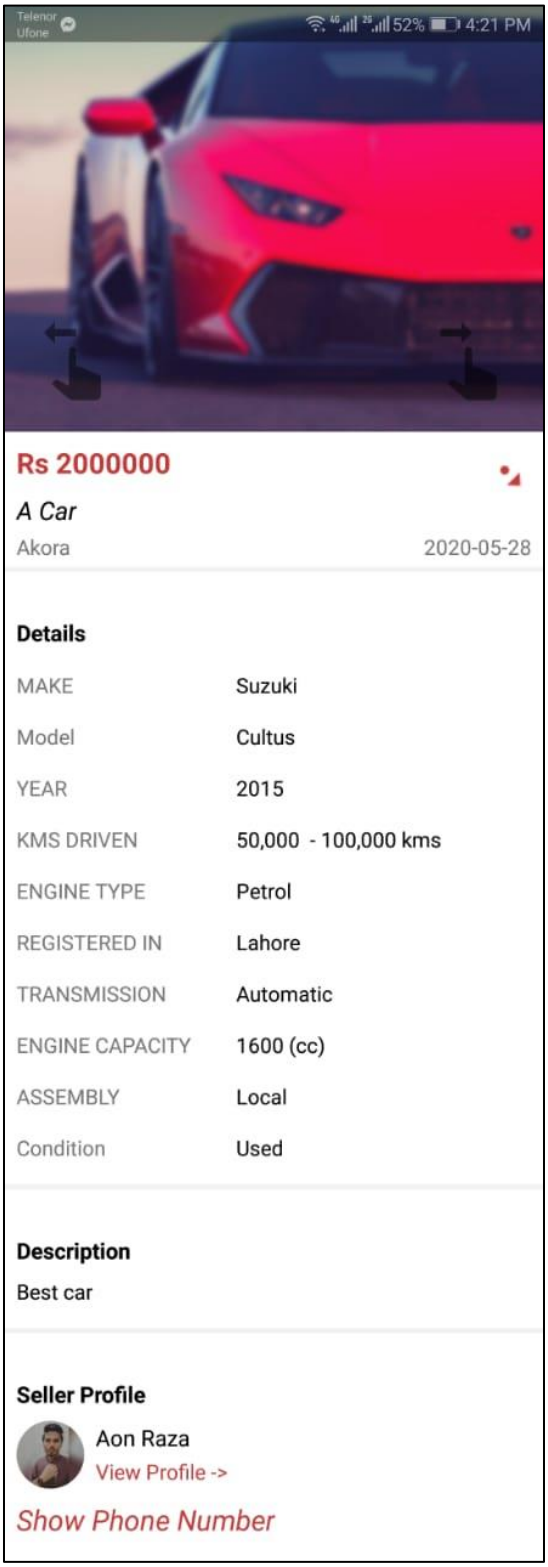


**Figure 30: Screen image for detailed post(Mobile View)**

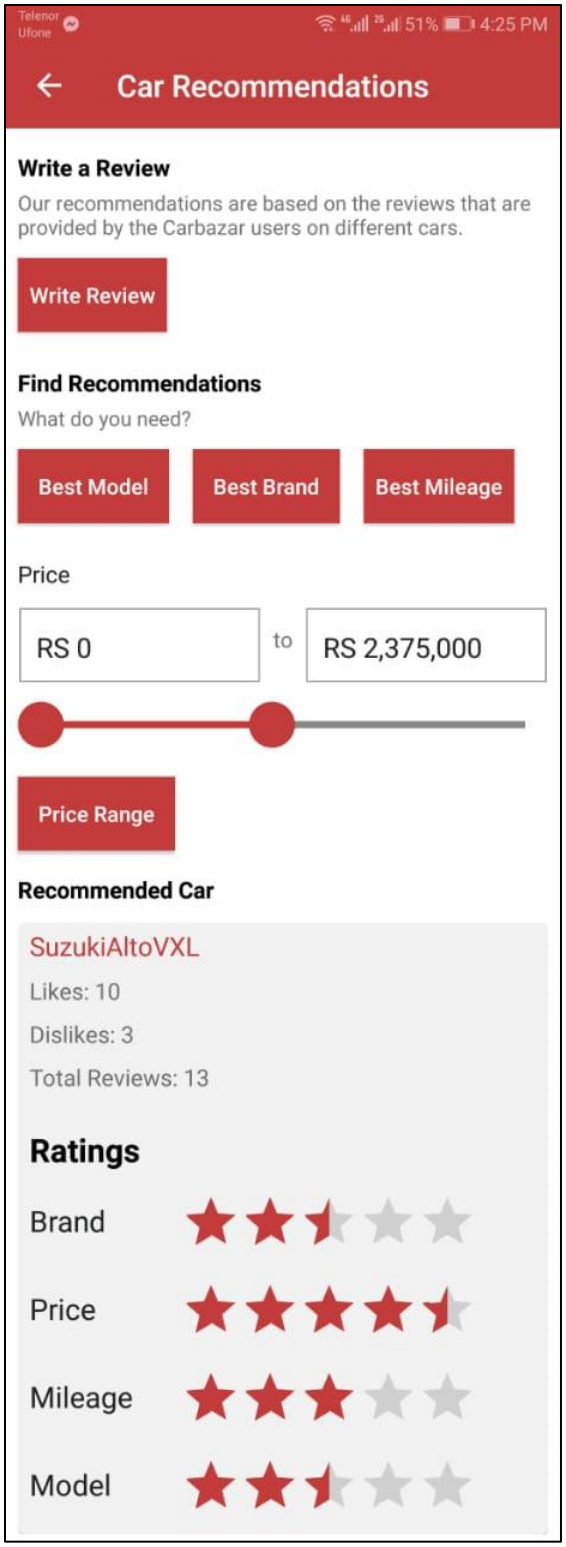


Figure 31: Screen image for Recommender (Mobile view)

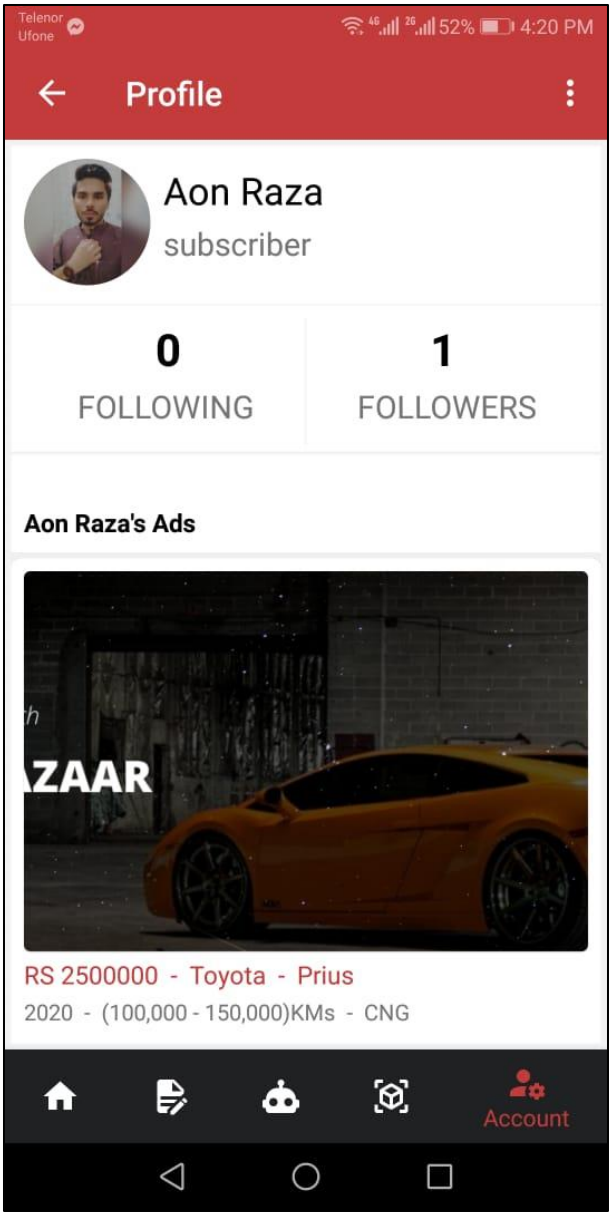


Figure 32: Screen image for user profile (Mobile view)

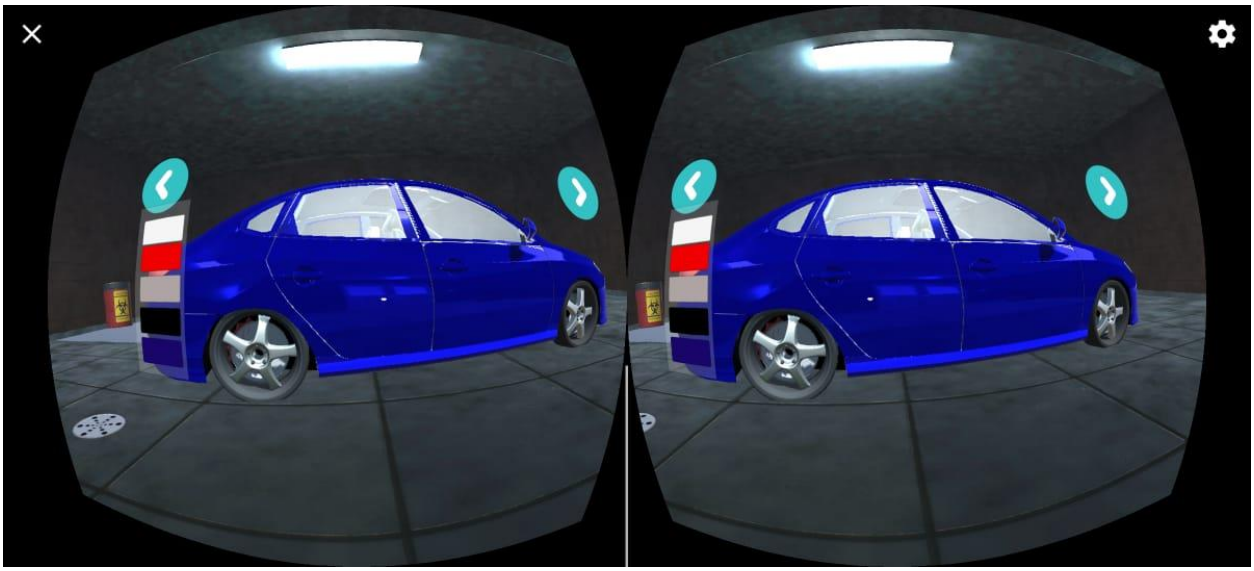

**Figure 33: Screen image for Virtual Reality (Mobile view)**

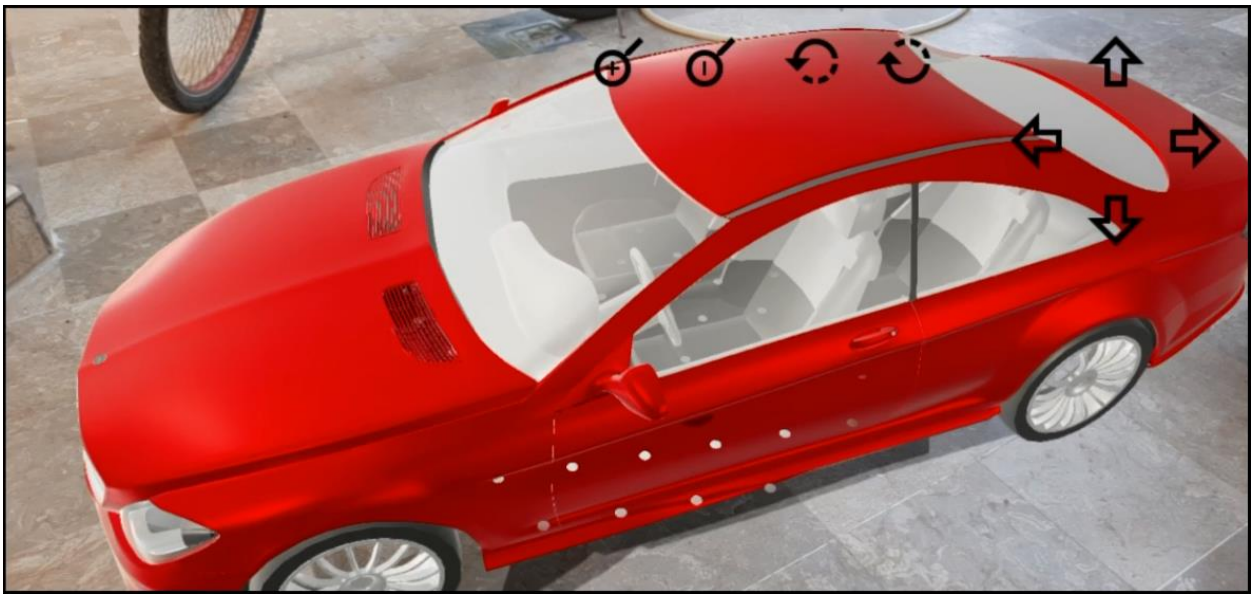

**Figure 34: Screen image for Virtual Reality (Mobile view)**

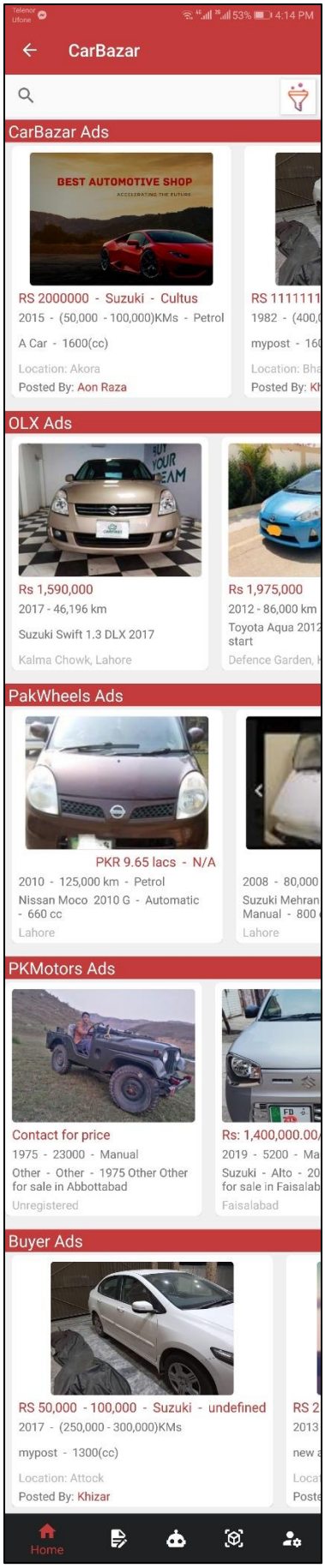


**Figure 35: Scroll shot for home screen (Mobile view)**

# 6 Testing and Evaluation

## 6.1 System Testing

Once the system has been successfully developed, testing has to be performed to ensure that the system working as intended. This is also to check that the system meets the requirements stated earlier. Besides that, system testing will help in finding the errors that may be hidden from the user. There are few types of testing which includes the unit testing, functional testing and integration testing. The testing must be completed before it is being deploy for user to use.

**Unit Testing 1:** Sign up

**Testing Objective:** To ensure the sign up of the user account works fine

**Test Case Id:** TC_001

**Test Case Description:** Test the signup functionality.

**Test Scenario:**

**Table :335 Test Cases for sign up**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Create a new account for a user when they enter their First and last name, email address mobile number and password twice in the form. | Name: Ali Khan<br>Email: ali_k112@gmail.com<br>Phone: 03325678909<br>Password: 123abc<br>Confirm password: 123abc | An account for the user named Ali will be created | An account has been created. | Pass |
| 2. | Create a new account for a user when they enter their First and last name, invalid email address mobile number and password. | First name: Iqra Azam<br>Email: iqraAzam@gmail<br>Phone: 0332374293<br>Password: 123abc<br>Confirm password: 123abc | An account for the user named iqra will be created. | No account was created. | Fail |

**Unit Testing 2:** Verify email

**Testing Objective:** to check whether an email is sent to the inbox of the user's provided email address.

**Test Case Id:** TC_002

**Test Case Description:** test the send email functionality

**Test Scenario:**

**Table :336 Test Cases for send email**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Filling of the signup form and check whether the entered email address is verified by the car bazar system | First name: Ali khan<br>Email: ali_k112@gmail.com<br>Phone: 03325678909<br>Password: 123abc<br>Confirm password: 123abc | An email is sent to the email address ali_k112@gmail.com containing a link to verify the email. | An email was sent by the car bazar system | pass |

**Unit Testing 3:** sign in

**Testing Objective:** To check whether a user can sign in to their account when they provide their correct email address and password.

**Test Case Id:** TC_003

**Test Case Description:** To check sign in functionality

**Test Scenario:**

**Table :337 Test Cases for sign in**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Filling sign in form to check whether the system give user access of their system. | Email: ali_k112@gmail.com<br>Password: 123abc | User will be signed in to their account | User get signed in to their account. | Pass |
| 2. | Filling sign in form without a password to check whether the system give user access of their system. | Email: ali_k112@gmail.com<br>Password: | User will get an error message they cannot sign in to their account when they don't provide a password | User cannot get their account' access. | Pass |

**Unit Testing 4:** Change password

**Testing Objective:** To check whether user can change their password or not.

**Test Case Id:** UC_004

**Test Case Description:** Checking of the change password functionality

**Test Scenario:**

**Table :338 Test Cases for change password**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User enter their old password and enter their new password having a length of at least 6 characters. | Old password: abc123 New password: ali112 Confirm new password: ali112 | Password will be changed for the current user. | Password got changed. Now user can access their account using this password | Pass |
| 2. | User enter their old password wrong and enter their new password having a length of at least 6 characters. | Old password: abc129 New password: ali112 Confirm new password: ali112 | Password will not be changed because the old password is incorrect. | Password was not changed. | Pass |

**Unit Testing 5: Forget password**

**Testing Objective:** To check that forget password functionality works in the system.

**Test Case Id:** UC_005

**Test Case Description:** checking the forget password functionality

**Test Scenario:**

**Table :339 Test Cases for forget password**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User clicked on the forget password button which asks for their recovery email address. And system first checks if the | Email: ali_khan@gmail.com | A recovery email will be sent to the users | User gets a recovery email to ali_khan@gmail.com | Pass |

| | | | | | |
|---|---|---|---|---|---|
| | address is the same as user entered while creating account and then sends them a recovery link | | | | |
| 2. | Check if email is found when user enters different case email. | Email: Ali_khan@gmail.com | A recovery email will be sent to the users | No user with this email is displayed | Fail |

**Unit Testing 6: Sign out**

**Testing Objective:** to check that user gets signed out from the system.

**Test Case Id:** TC_006

**Test Case Description:** Checking of the sign out functionality

**Test Scenario:**

**Table :340 Test Cases for sign out**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | If a user presses on the sign out button, all the changes that user made to their profile need to be saved and account can be accessed afterwards. | Pressing sign out button | User will get signed out, after saving all of their progress | User gets signed out. | Pass |

**Unit Testing 7:** Change profile picture

**Testing Objective:** To ensure that a user can update their profile picture.

**Test Case Id:** TC_007

**Test Case Description:** When a user wants to change their profile picture they can do so, by uploading a .png or .jpg file.

**Test Scenario:**

**Table :341 Test Cases for change picture**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User uploads their new picture in their profile | mynewPic.jpg | User's profile picture will be uploaded in their account. | Profile picture got uploaded. | Pass |
| 2. | User uploads pdf file | carbazar.pdf | File type not allowed will be displayed | Message is displayed | Pass |

**Unit Testing 8:** Add phone number

**Testing Objective:** To check that a user can enter their phone number to their profile.

**Test Case Id:** TC_008

**Test Case Description:** Checking that a user can enter their 11 digited phone number so that other users can contact them.

**Test Scenario:**

**Table :342 Test Cases for add phone number**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User added their valid phone number in their profile. | Phone: 03335234455 | Phone number will be added to the user's profile. | Phone number was added. | Pass |
| 2. | User added an invalid phone number in their profile. | Phone: 03335%#@455 | System will show a message to the user saying that a phone number cannot contain special characters | Phone number will not be added | Pass |

**Unit Testing 9: Sign in with google account**

**Testing Objective:** to check that a user can sign in using their google account as well.

**Test Case Id:** TC_009

**Test Case Description:** testing of the "Continue with google" button

**Test Scenario:**

**Table :343 Test Cases for sign in with google account**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user presses "Continue with google" button system redirect user to the login page of the google account, if it is not already logged in. | Email: ali_k@gmail.com Password: KhanAli11 | An account with the user's details of the google account in car bazar system will be created. | An account was created | Pass |
| 2. | When a user is already signed in with the google account. | No data | User is taken to the home page. | User is redirected to home page | Pass |

**Unit Testing 10: sign in with Facebook account**

**Testing Objective:** to ensure that a user account can be created using the Facebook details of a user

**Test Case Id:** TC_010

**Test Case Description:** Checking the sign in with Facebook account functionality

**Test Scenario:**

**Table :344 Test Cases for sign in with Facebook**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user presses "Continue with Facebook" button system redirect user to the login page of the Facebook account, if it is not already logged in. | Username: alik112 Password: khanALI11 | An account with the user's details of the Facebook account in car bazar system will be created. | An account was created | Pass |
| 2. | When a user is already signed in with the facebook account. | No data | User is taken to the home page. | User is redirected to home page | Pass |

**Unit Testing 11: Follow dealer profile**

**Testing Objective:** to check that a user can follow dealers in the car bazar system

**Test Case Id:** TC_011

**Test Case Description:** Ensuring working of follow dealer profile

**Test Scenario:**

**Table :345 Test Cases for follow dealer profile**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user follows other user, their following count increases by 1, and the other user get a count increased by 1 in their followers | Pressing of follow account button to follow user | User will start following that particular user, getting an increased in number of following. | One user starts to follow another user. | Pass |
| 2. | Check follower increase in another user. | Press follow button to follow user | The user that is following is added n the follower of the user being followed | User is added to the followers of other user. | Pass |
| 3 | Check following increase in user. | Press follow button to follow user | The user that is being followed is added to the following of the user. | User is added to the following user. | Pass |

**Unit Testing 12: Unfollow users**

**Testing Objective:** to check what happens when a user unfollows other user

**Test Case Id:** TC_012

**Test Case Description:** To ensure that a user will not get prioritized results from the unfollowed users.

**Test Scenario:**

**Table :346 Test Cases for unfollow users**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user unfollows other user, their following count decreases by 1, and the other user get a count decreased by 1 in their followers | Pressing of unfollow account button | User will unfollow that particular user, getting a decreased in number of following. | User was unfollowed | Pass |
| 2. | Check follower decrease in another user. | Press unfollow button to unfollow user | The user that is unfollowing is removed from the follower of the user being unfollowed | User is removed from the followers of other user. | Pass |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Check following decrease in user. | Press unfollow button to unfollow user | The user that is being unfollowed is removed from the following of the user. | User is removed from the unfollowing user. | Pass |

**Unit Testing 13: View profile**

**Testing Objective:** To check that a user can view their own or other users profile

**Test Case Id:** TC_013

**Test Case Description:** Checking the view profile functionality

**Test Scenario:**

**Table :347 Test Cases for view profile**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User clicks on the other user's profile and get to see all public details of that particular user | User clicks on another user's profile | User will be able to see another user's profile | User was able to see user's profile | Pass |
| 2. | Check if one can visit other user without loggin in. | User clicks on another user's profile | User will be redirected to sign in page. | User was still able to see user's profile | Fail |

**Unit Testing 14: Report a User**

**Testing Objective:** To check whether a user can report user or not.

**Test Case Id:** TC_014

**Test Case Description:** To ensure that a user can be reported by other user, when some malicious activity is performed by that user.

**Test Scenario:**

**Table :348 Test Cases for Report user**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user report another user, admin gets a record that a particular user is reported | Reporting user with the user ID carbazar.com/user:112 | User with the user-ID 112 will be reported to the admin. | Admin get a report notice for user with | Pass |

| | | | | | |
|---|---|---|---|---|---|
| | | | | user-ID 112 | |

**Unit Testing 15:** Upload images

**Testing Objective:** To check that a user can upload one or more pictures to their ad.

**Test Case Id:** TC_015

**Test Case Description:** Checking the upload images functionality.

**Test Scenario:**

**Table :349 Test Cases for upload images**

| No. | Test Case/Test Script | Test Data | Table :1 Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user uploads a single picture of their car by selecting it from their gallery it gets uploaded | Selecting myCarPicture1.png from gallery. | System will accept the picture and upload it to the system. | Car image is uploaded to the system. | Pass |
| 2. | A user uploads three picture of their car by selecting them from their gallery it gets uploaded | Selecting carFront.png, carBack.png, carLeft.png | System will accept four images to make a seller ad. | Car images are uploaded to the system, | Pass |

**Unit Testing 16: View ad**

**Testing Objective:** To see that a user can view detail of an ad when they search for it.

**Test Case Id:** TC_016

**Test Case Description:** To check view ad functionality working for all ads from the scrapped sites

**Test Scenario:**

**Table :350 Test Cases for view ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/ Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | A user search for Nisan Titan in the search bar and system showed them all Nisan titan results from scrapped sources and Car Bazar system. User click Nisan Titan lahore to view its detail | Clicking carbazar.com/search:NisanTitan | When a user will click a car scrapped from pkmotors it previewed the add on the pkmotors.com/full-search/nisan-titan link | pkmotors.com/full-search/nisan-titan got opened | Pass |

**Unit Testing 17:** View ad images

**Testing Objective:** To check that if an image in ad is clicked does it gets zoomed out in the next window.

**Test Case Id:** TC_017

**Test Case Description:** To check the viewing of an image in a ad functionality.

**Test Scenario:**

**Table :351 Test Cases for view image**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User clicks/taps on the image to view full in the new tab | Clicking/tapping on the image. | Image will be zoomed in | Image was zoomed | Pass |

**Unit Testing 18:** Save ad

**Testing Objective:** To see if an ad gets added to the favorite list of the user.

**Test Case Id:** TC_018

**Test Case Description:** Saving an ad to the user favorite list.

**Test Scenario:**

**Table :352 Test Cases for save ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User clicks on the heart Icon to save it to their favorite list. | User clicks on add with the post-ID 009 to save it | Ad with the post-ID 009 will get favorited to the user profile. | Ad was added to favorite list | Pass |

**Unit Testing 19:** Send Email to seller

**Testing Objective:** To check that an email is sent to the seller from the buyer's email.

**Test Case Id:** TC_019

**Test Case Description:** To check the sending of email functionality.

**Test Scenario:**

**Table :353 Test Cases for send Email**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | If a user wants to contact the seller of the car in which they are interested, they can add sender, receiver, message body and subject of an email address | Sender: alik@gmail.com Reciever: aqsa12@gmail.com Subject: interested in Nisan titan Message body: I want to buy your car, if available contact me at 03323344555 | An email from alik@gmail.com will be sent to alik@gmail.com | Aqsa12@gmail.com received and email from alik@gmail.com | Pass |

**Unit Testing 20:** Delete ad

**Testing Objective:** To check that an ad could be deleted from the user's account, that they have posted once.

**Test Case Id:** TC_020

**Test Case Description:** to test the delete ad functionality.

**Test Scenario:**

**Table :354 Test Cases for delete ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user clicks on the delete ad button, their ad gets deleted from their profile, system's database and from all the user's profile who have saved this | Deleting ad with the ad-ID 0057 | Ad with the ad-ID 0057 will get deleted. | Ad was deleted from the user's profile, system's database. | Pass |

**Unit Testing 21:** Update ad

**Testing Objective:** To check that an ad gets updated and changes are saved in the system's database

**Test Case Id:** TC_021

**Test Case Description:** To check the update ad functionality

**Test Scenario:**

**Table :355 Test Cases for update ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User updates the editable fields of the post they've already posted on their profile and presses save changes. | Title: Nisan Titan(Little damaged) Price: 200k | Ad will get updated with the new price and title. | Price and title of the address was changed in the system's database | Pass |
| 2. | User changes no field and presses save changes | Title: Nisan Titan Price 200k | Ad will not be updated because all the details are same as earlier | Ad is not updated | Pass |

**Unit Testing 22: View saved Ads**

**Testing Objective:** To check that a user can see all the ads they have saved to their profile

**Test Case Id:** TC_022

**Test Case Description:** To check the view saved ads functionality of the system

**Test Scenario:**

**Table :356 Test Cases for view saved ads**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User wants to see the list of all ads they've favorited earlier | User goes to his profile | A list of all saved ads will be shown to the user. | A list of favorite ads was shown | Pass |

**Unit Testing 23: Delete saved Ad**

**Testing Objective:** To check that an ad gets deleted from the favorite list of the user who added it.

**Test Case Id:** TC_023

**Test Case Description:** To check that delete from saved ads lists works properly when an authorized user tries to do it.

**Table :357 Test Cases for delete saved ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Delete an ad that was previously added to the favorite list of the user. | Clicking on unsave from list button | The favorited ad will be removed from the favorite list | Ad was removed from favorite's list | Pass |

**Unit Testing 24:** Input search string

**Testing Objective:** To check that a user's entered string is sent to the data sources to fetch related data

**Test Case Id:** TC_024

**Test Case Description:** To test that if a user enters a string to the system, it takes the same string to other sources for data acquisition.

**Test Scenario:**

**Table :358 Test Cases for input search string**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Get an input string from the user and send it to all the data gathering sources | Honda Civic | Input string will be accepted. | The input string was accepted by the system to search for | Pass |

| | | | | | |
|---|---|---|---|---|---|
| | | | | relevant data | |

**Unit Testing 25: Format search String**

**Testing Objective:** To test that the system makes the search string up to the searching requirement

**Test Case Id:** TC_025

**Test Case Description:** this will check that if user enters an input string it is not sent as it is to the data sources but formatted first.

**Test Scenario:**

**Table :359 Test Cases for format search string**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Formatting a search string entered by the user to send it to the data sources to find all relevant data | Hodna civic | Hodna civic will be formatted and changed to "Honda civic" before sending it to data sources to fetch relevant data | Hodna civic was sent as it is to the sources to fetch related data | Fail |

**Unit Testing 26: Searching in data sources**

**Testing Objective:** To test that the formatted string is sent to the data sources to fetch relevant data.

**Test Case Id:** TC_026

**Test Case Description:** This will check whether the user entered string brings out the relevant data or not

**Test Scenario:**

**Table :360 Test Cases for Searching in data sources**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User's entered string will be sent to all the data sources to fetch car details against that string | BMW 2018 | All results for the BMW 2018 will be searched for in the scrapped and car bazar database. | All results containing BMW 2018 were shown to the user. | Pass |

**Unit Testing 27: Cleaning of data**

**Testing Objective:** To check that system drops out the scrapped results from the other sources if they have more than 50% of the fields set to null.

**Test Case Id:** TC_027

**Test Case Description:** To check the quality of the cleaned data

**Test Scenario:**

**Table :361 Test Cases for cleaning of data**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Result fetched from the scrapped sources that has more than 50% of the fields set to null or their default values will be dropped and not visible to car bazar users. | BMW 2021 | Result of BMW 2020 and earlier will be shown. | No result of BWM 2021 were shown to the user | Fail |

**Unit Testing 28: Filter data**

**Testing Objective:** To check that system show only the cleansed and relevant data to the user.

**Test Case Id:** TC_028

**Test Case Description:** To check the filter data functionality

**Test Scenario:**

**Table :362 Test Cases for filter data**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Results that have been cleansed and dropped out are not send to the user. | Honda 1765000 | Honda cars having price near to 1765000 will be shown to the user. | Honda's cars that have a price of 1765000 were sent to user | Pass |

**Unit Testing 29:** Display data to user

**Testing Objective:** To check that only relevant data is visible to the user.

**Test Case Id:** TC_029

**Test Case Description:** To check the display data functionality

**Test Scenario:**

**Table :363 Test Cases for display data to user**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user enters a search query only relevant cleansed data is shown to the user in a user-friendly user-interface | Honda cars | Honda cars from all scrapped sources and Car bazar system will be fetched with user's pre-set priority constraints | Honda cars were shown | Pass |

**Unit Testing 30:** Search by voice

**Testing Objective:** to check that search by voice works with the search query string and changes voice to text

**Test Case Id: TC-030**

**Test Case Description:** To check search by the voice query

**Test Scenario:**

**Table :364 Test Cases for search by voice**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User enters their query to search a car by sending system voice command | "Honda civic" | System will convert speech of user to the text, and send to the data sources to search for relevant information | System converted voice to text and send this query to all data sources. | Pass |

**Unit Testing 31:** Search by price range

**Testing Objective:** To check whether user can Search car models by price range.

**Test Case Id:** TC_031

**Test Case Description:** To test when a user adds their maximum and minimum price limits what results are brought to the user.

**Test Scenario:**

**Table :365 Test Cases for search by price range**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User slides the slider of the from and to text box and set their price range | From: 300k<br>To: 500k | System show user all the cars that have a price between 300k and 400k | All cars that have price range between 300k and 400k are shown | Pass |

**Unit Testing 32: search by model**

**Testing Objective:** To check that system can search for cars using their model name

**Test Case Id:** TC_032

**Test Case Description:** To check the search by model functionality

**Test Scenario:**

**Table :366 Test Cases for search by model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects the model of the car from the filter's drop down and get the relevant data | Model: Mehran | System will show all Mehran cars | All Mehran cars were shown | Pass |

**Unit Testing 33: Search by registration city**

**Testing Objective:** To check whether a user can search a car by its registration city

**Test Case Id:** TC_033

**Test Case Description:** To test the search by registration city filter

**Test Scenario:**

**Table :367 Test Cases for search by registration city**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a city from the list as the registration city of their car. | Registration city: Lahore | All cars that has a registration city as Lahore set will be shown | Cars with the registration city Lahore be shown to the user | Pass |

**Unit Testing 34: search by fuel type**

**Testing Objective:** To check whether a user can search a car by its fuel type

**Test Case Id:** TC_034

**Test Case Description:** To test the search a car by fuel type

**Test Scenario:**

**Table :368 Test Cases for search by fuel type**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User select a fuel type from the drop down and system filter their result | Fuel type: Petrol | All cars that work on petrol will be shown | All the cars that have a fuel type of petrol will be shown | Pass |

**Unit Testing 35:** search by make

**Testing Objective:** to check that a user can search a car by its make

**Test Case Id:** TC_035

**Test Case Description:** To test the search a car by its make feature.

**Test Scenario:**

**Table :369 Test Cases for search by make**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a make from a list of the make | Make:Honda | Cars that have a Honda make will be fetched | All the cars that have a make honda will be shown to the user | Pass |

**Unit Testing 36: search by mileage**

**Testing Objective:** To check that a user can search a car model when they provide the mileage of the model, they are looking for

**Test Case Id:** TC_036

**Test Case Description:** to test the search a car by the mileage range.

**Test Scenario:**

**Table :370 Test Cases for search by mileage**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When user enters the mileage range of a car system filter the result on the mileage range and fetch relevant data | From:3000km to: 5000km | All the cars that have a mileage range 3000km to 5000km will be shown | Cars with mileage from 3000km to 5000km were show. | Pass |

**Unit Testing 37:** View car

**Testing Objective:** To check that a 3D car model is viewed to the user in augmented reality.

**Test Case Id:** TC_037

**Test Case Description:** To test viewing a 3D car model placement in the augmented form

**Test Scenario:**

**Table :371 Test Cases for view cars**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | After a user has exposed their phone to room light a 3D model must be placed in real environment and visible to user in their mobile phone | A tap on BMW X5 | A BWM x5 will be shown to the user making them to feel it in their own surrounding | A BMW x5 was shown | Pass |

**Unit Testing 38: Rotate Left**

**Testing Objective:** To check that a 3D model in AR is rotated in left direction on press of left button

**Test Case Id:** TC_038

**Test Case Description:** To test the model rotation in augmented form

**Test Scenario:**

**Table :372 Test Cases for Rotate left**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | After detecting a plane and placement of a 3D model this model can be rotate left in 360 angles. | Pressing of rotate left button | Model will be rotated in left direction | Model got rotated | Pass |

**Unit Testing 39:** Rotate right

**Testing Objective:** To check that a 3D model in AR is rotated in right direction on press of left button

**Test Case Id:** TC_039

**Test Case Description:** To test the model right rotation in augmented form

**Test Scenario:**

**Table :373 Test Cases for Rotate right**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | After detecting a plane and placement of a 3D model this model can be rotate right in 360 angles. | Pressing of rotate right button | Model will be rotated in right direction | Model got rotated in right | Pass |

**Unit Testing 40: Zoom in**

**Testing Objective:** To check that a model in AR gets zoomed in to see its details

**Test Case Id:** TC_040

**Test Case Description:** to test the zooming functionality of AR models.

**Test Scenario:**

**Table :374 Test Cases for Zoom in**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | After placement of a model in the surface this model can be zoomed in by the user | Pressing zoom in button | Model will get zoomed in | Model got zoomed in | Pass |

**Unit Testing 41: zoom out**

**Testing Objective:** To check that a model in AR gets zoomed out.

**Test Case Id:** TC_041

**Test Case Description:** to test the zoom out functionality of AR

**Test Scenario:**

**Table :375 Test Cases for zoom out**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | After placement of a model in the surface this model can be zoomed out | Pressing zoom out button | Model will get zoomed out | 3D model in AR got zoomed out | Pass |

**Unit Testing 42: view model in VR**

**Testing Objective:** to check that a car model is viewed in the VR

**Test Case Id:** TC_042

**Test Case Description:** To test the visibility of a 3D model in VR

**Test Scenario:**

**Table :376 Test Cases for view in VR**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | In VR box a model gets placed and be visible to user | Pressing view in VR button | A model will be shown to user in VR | A 3d model of a car is shown | Pass |

**Unit Testing 43: view interior**

**Testing Objective:** to view the interior of a car model in VR box

**Test Case Id:** TC_043

**Test Case Description:** to view interior of a car model in VR

**Test Scenario:**

**Table :377 Test Cases for view interior**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | On pressing the down button of the controller user can switch between interior and exterior or the car | Pressing down button | User will move inside of the car | User can feel themselves to be inside of the car | Pass |

**Unit Testing 44: send greetings**

**Testing Objective:** to check how chatbot responds to the user's greetings

**Test Case Id:** TC_044

**Test Case Description:** to check the send greeting intent defined in the chatbot skill

**Test Scenario:**

**Table :378 Test Cases for send greetings**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When user starts a conversation with chatbot, it greets the user. | Hi chatbot | Hello, this is Car Bazar virtual representative. | Hello, this is Car Bazar virtual representative. | Pass |

**Unit Testing 45: send text message**

**Testing Objective:** to check that a user can send a text message to the chatbot

**Test Case Id:** TC_045

**Test Case Description:** to check the how chatbot responds to the text messages

**Test Scenario:**

**Table :379 Test Cases for send text messages**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When user send a text message to system it replies as according to its understanding | System info | Car bazar is a web and mobile application for cars selling and buying. | Car bazar is a web and mobile application for cars selling and buying. | Pass |

**Unit Testing 46: ask for car details**

**Testing Objective:** to check how system responds when a user ask for car information

**Test Case Id:** TC_046

**Test Case Description:** check car details functionality and knowledge base of chatbot

**Test Scenario:**

**Table :380 Test Cases for car details**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user asks for a car information system gives it back if it is relevant and present in the chatbot's knowledge base | Honda Civic 2018 | Details of Honda civic 2018 along with images | Details of Honda civic 2018 along with images | pass |

**Unit Testing 47: ask about car bazar**

**Testing Objective:** to check how chatbot responds when user ask for system information

**Test Case Id:** TC_047

**Test Case Description:** check the car bazar details knowledge of the system

**Test Scenario:**

**Table :381 Test Cases for ask about car bazar**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user ask for system information, chatbot will respond to it with the information it have. | AR models | Car Bazar has 3D models shown in the augmented feel to make their car show room come to their home. | Car Bazar has 3D models shown in the augmented feel to make their car show room come to their home. | Pass |

**Unit Testing 48: Upload video**

**Testing Objective:** to check the functionality of system while uploading a video

**Test Case Id:** TC_048

**Test Case Description:** check the system's usage when we upload a video on the system

**Test Scenario:**

**Table :382 Test Cases for uploading a video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When posting a seller ad a user can add images and videos of cars for the ad. | Car video of size 6MB | Video will be uploaded on the system. | Video was uploaded to the system and visible to buyers and other users. | Pass |

**Unit Testing 49: Download video**

**Testing Objective:** to check the functionality of downloading the video from an ad.

**Test Case Id:** TC_049

**Test Case Description:** this test case will be used to ensure the downloading of a video from the system.

**Test Scenario:**

**Table :383 Test Cases for download video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When viewing an ad a user can download the video of the ad into their system. | Video of 6MB | Video will be downloaded and stored to the car bazar videos folder | Video was downloaded in the new created folder named car bazar videos | Pass |

**Unit Testing 050: Post buyer ad**

**Testing Objective:** To check the functionality and working of posting a buyer ad to the car bazar system

**Test Case Id:** TC_050

**Test Case Description:** this test case will ensure working of the system when a user try to post a buyer ad.

**Test Scenario:**

**Table :384 Test Cases for post buyer ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case is used to check the response and working of the system, when a buyer wants to add the details of the car they want. | Car title: Nisan Model: 2019 Color: Blue | A buyer ad will be posted on the system with the given details. | A buyer ad was posted in the system, with the details that user has provided | Pass |

**Unit Testing 051: Play video**

**Testing Objective:** To check the working of the video play functionality when a user wants to look for the video

**Test Case Id:** TC_051

**Test Case Description:** This test case will be used to check a system, when user is trying to play a video

**Test Scenario:**

**Table :385 Test Cases for play video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When an ad is posted to the system, user wants to ensure that the posted video is playable. This test case will check the usage of this functionality | Play an uploaded video | On pressing the play button video will be played. | Video was played when we pressed the play button | Pass |

**Unit Testing 52: Pause video**

**Testing Objective:** this test case will be used to check the working of the video when we are trying to pause it.

**Test Case Id:** TC_052

**Test Case Description:** When an ad has a video user can pause it anytime it’s getting played.

**Test Scenario:**

**Table :386 Test Cases for pause video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a video is being played a user can pause it anytime they want. This test case will be used to check this functionality of the system. | Pause a video being played. | Video will be paused when a user click in middle of the video | Video was paused when user tries to press the button inside of the video playing screen. | Pass |

**Unit Testing 53: Resume video**

**Testing Objective:** This test case will be used to check the system respond when a user is trying to resume a video

**Test Case Id:** TC_053

**Test Case Description:** When a user has paused their video and now they want it to resume, so they can watch any left video

**Test Scenario:**

**Table :387 Test Cases for Resume video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a video has been posted on the system, user could resume this if they have already paused it. This test case will be used to check the resuming of a video which was paused earlier. | Pressing the Resume button after it was paused. | Video will be resumed from the moment it was paused. | Video was resumed. | Pass |

**Unit Testing 54: Comment on AR model**

**Testing Objective:** To check the working of the adding a comment to the model.

**Test Case Id:** TC_054

**Test Case Description:** This test case will be used to check whether a user can give their feedback about the AR model that was placed in their environment.

**Test Scenario:**

**Table :388 Test Cases for Comment on AR model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Whenever Car Bazar system administrator adds a new car model to the system, all the system user can view this model in their own environment and give their feedback about it. | Comment: This model looks so realistic | The comment will be posted and visible to all the end users of the system. | Comment saying "This model looks s realistic" was posted against the model. | Pass |

**Unit Testing 55: Like model**

**Testing Objective:** To check the system's functionality when a user liked a model.

**Test Case Id:** TC_055

**Test Case Description:** This test case will be used to check whether the like action of the system actually works or not.

**Test Scenario:**

**Table :389 Test Cases for like model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user likes a car model they can give it a thumbs up. This test case will checks the functionality of giving like to a model and testing whether it increase numbers of thumbs up or not. | Giving a like on a car model. | Number of likes will get increased by one. | Number of likes got increased by one, and like option turned red, indicating it worked. | Pass |

**Unit Testing 56: Dislike a car model**

**Testing Objective:** To check the system's functionality when a user disliked a model.

**Test Case Id:** TC_056

**Test Case Description:** This test case will be used to check whether the dislike action of the system actually works or not.

**Test Scenario:**

**Table :390 Test Cases for dislike a car model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user dislikes a car model they can give it a thumbs down. This test case will checks the functionality of giving dislike to a model and testing whether it decrease numbers of thumbs up or not. | Giving a dislike on a car model. | Number of dislikes will get increased by one. | Number of dislikes got increased by one, and dislike option turned red, indicating it worked. | pass |

**Unit Testing 57: view guide about privacy and safety**

**Testing Objective:** to check the system's functionality of viewing guide of privacy and safety

**Test Case Id:** TC_057

**Test Case Description:** this test case will be used to check the system's functionality when a user wants to view the guide for the safety and privacy.

**Test Scenario:**

**Table :391 Test Cases for view privacy and safety guide**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case will be used to check the systems' respond when a user tries to view privacy and safety guide. | Click on view privacy and safety guide. | Privacy and safety guide will be shown to the user. | Privacy and safety guide was shown to the user. | Pass |

**Unit Testing 58: view guide about seller ads**

**Testing Objective:** to check the system's functionality of viewing seller ads

**Test Case Id:** TC_058

**Test Case Description:** this test case will be used to check the system's functionality when a user wants to view the guide for seller ads.

**Test Scenario:**

**Table :392 Test Cases for View guide about seller ads**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case will be used to check the system's respond when a user tries to view guide for the seller ads. | Click on view guide for the seller ads. | Guide for the seller ads will be shown to the user. | Guide for the seller ad was visible to the user. | Pass |

**Unit Testing 59: View functionality demo video**

**Testing Objective:** To check the system's functionality of viewing a demo video

**Test Case Id:** TC_059

**Test Case Description:** This test case will be used to check the system's functionality when a user wants to view the functionality demo video.

**Test Scenario:**

**Table :393 Test Cases for View demo video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case will be used to check the respond and functionality of the system when a user asks for the functionality demo video. | Clicking on the view demo video. | A video window will get visible inside of the system's screen which will show the brief usage of the system. | A video window got opened within the system screen. | Pass |

**Unit Testing 60: View chatbot usage**

**Testing Objective:** To check the system's functionality of view a chatbot usage guide.

**Test Case Id:** TC_060

**Test Case Description:** this test case will be used to check the system's functionality when a user wants to view the guide for the chatbot usage.

**Test Scenario:**

**Table :394 Test Cases for View chatbot functionality guide**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case will be used to check the respond of the system when a user wants to view the guide for the chatbot functionality. | Clicking on the view chatbot functionality. | A guide for the chatbot will be visible to the user. | A guide for the usage of chatbot will be visible. | Pass |

**Unit Testing 61: View how to edit ad**

**Testing Objective:** To check the system's functionality of viewing guide for the ad.

**Test Case Id:** TC_061

**Test Case Description:** this test case will be used to check the system's functionality when a user wants to know the posted ad editing guidelines.

**Test Scenario:**

**Table :395 Test Cases for View how to edit ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case will be used to check the system's respond when a user wants to view a guide about how to edit an ad. | Clicking on the view guide about editing an ad. | The guide for editing an ad will be shown to the user. | The guide for editing an ad will be shown to the user. | Pass |

**Unit Testing 62: View guide for the usage of reality car models**

**Testing Objective:** To check the system's functionality of viewing reality car models in AR and VR.

**Test Case Id:** TC_062

**Test Case Description:** this test case will be used to check the system's functionality when a user wants to see the guidelines or the usage of reality car models.

**Test Scenario:**

**Table :396 Test Cases for view guide to use reality car models**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | This test case will be used to check the system's respond when a user wants to view the usage of reality car models inside of the AR and VR. | Clicking on the view guide about usage of reality of car models. | The guide for viewing a reality car model will be shown to the user. | The guide for the reality car models was shown to the user. | Pass |

**Unit Testing 63: Change color**

**Testing Objective:** To check the functionality of changing font and applying it to the whole of the system.

**Test Case Id:** TC_063

**Test Case Description:** this test case will be used to check the usage of changing font of the system.

**Test Scenario:**

**Table :397 Test Cases for changing font**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user wants to change the system's font they can do so by selecting a font from the dropdown in settings. This test case will be used to check this functionality of this feature. | User selected "Robot" in the font. | System will set the font to roboto | System set the font to roboto on whole application. | Pass |

**Unit Testing 64: Change font size**

**Testing Objective:** To check the functionality of the system of changing the font size.

**Test Case Id:** TC_064

**Test Case Description:** This test case will be used to check the system's respond when a user tries to change the fonts size of the system.

**Test Scenario:**

**Table :398 Test Cases for changing font size**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user wants to change the font size of the application for its better visibility, this test case will be used to ensure the working of this functionality. | Font size large selected | The font size will be changed to large. | The font size of the application got changed to large. | Pass |

**Unit Testing 65:** Verify email

**Testing Objective:** to check whether account is verified.

**Test Case Id:** TC_065

**Test Case Description:** test the verify email functionality

**Test Scenario:**

**Table :399 Test Cases for email verification**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Clicking the link in email and checking weather account is verified. | Linked clicked in the email: https://localhost:3000/verify-account/eyJhbGci | User is taken to the web client and account is verified | User is taken to web client and account is verified | pass |

**Unit Testing 66:** Edit phone number

**Testing Objective:** To check that a user can edit their phone number to their profile.

**Test Case Id:** TC_066

**Test Case Description:** Checking that a user can edit their 11 digited phone number so that other users can contact them.

**Test Scenario:**

**Table :400 Test Cases for edit phone number**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User edited their valid phone number in their profile. | Phone: 03335234455 | Phone number will be edited in the user's profile. | Phone number was edited. | Pass |
| 2. | User edited an invalid phone number in their profile. | Phone: 03335%#@455 | System will show a message to the user saying that a phone number cannot contain special characters | Phone number will not be edited | Pass |

**Unit Testing 67: View own profile**

**Testing Objective:** To check that a user can view their own or other users profile

**Test Case Id:** TC_067

**Test Case Description:** Checking the view own profile functionality

**Test Scenario:**

**Table :401 Test Cases for view own profile**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User clicks on user's profile and get to see all details of him/her | User clicks on user's profile | User will be able to see user's profile | User was able to see user's profile | Pass |
| 2. | Check if one can visit user profile without loggin in. | User clicks on user's profile | User will be redirected to sign in page. | User was redirected to sign in page | Pass |

**Unit Testing 68:** Upload video

**Testing Objective:** To check that a user can upload one video to their ad.

**Test Case Id:** TC_068

**Test Case Description:** Checking the upload video functionality.

**Test Scenario:**

**Table :402 Test Cases for upload images**

| No. | Test Case/Test Script | Test Data | Table :1 Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user uploads a single video of their car by selecting it from their gallery it gets uploaded | Selecting myCarPicture1.mp4 from gallery. | System will accept the video and upload it to the system. | Car video is uploaded to the system. | Pass |
| 2. | Check if system accepts file other than video | Selecting abcd.pdf . | System should notify the possible types to the user. | Video is not uploaded | Pass. |

**Unit Testing 69:** Post seller ad

**Testing Objective:** To check that an ad gets posted

**Test Case Id:** TC_069

**Test Case Description:** To check the post ad functionality

**Test Scenario:**

**Table :403 Test Cases for Seller ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User fills all the required filed in the post ad feature to post a seller ad. | All fields filled correctly | Ad will be able to be previewed by the user before publishing it | Ad is previews to the user | Pass |
| 2. | User does not fill the required fields | Title: is remained unfilled | Title is required should b displayed | Ad is not previews and message is displayed | Pass |

**Unit Testing 70:** Publish seller ad

**Testing Objective:** To check that an ad gets published

**Test Case Id:** TC_070

**Test Case Description:** To check the publish ad functionality

**Test Scenario:**

**Table :404 Test Cases for publish ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User wants to publish the ad after preview | User clicks publish ad. | A modal with message "your ad is live click ok to see" appears | Ad is published and desired message is displayed | Pass |

**Unit Testing 71:** Post buyer ad

**Testing Objective:** To check that a buyer ad gets posted

**Test Case Id:** TC_071

**Test Case Description:** To check the post buyer ad functionality

**Test Scenario:**

**Table :405 Test Cases for buyer ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User fills all the required filed in the post ad feature to post a buyer ad. | All fields filled correctly | Ad will be posted and viewable. | Ad posted message displays | Pass |
| 2. | User does not fill the required fields | Title: is remained unfilled | Title is required should b displayed | Ad is not posted and message is displayed | Pass |

**Unit Testing 72:** Unsave ad

**Testing Objective:** To see if an ad gets removed from the favorite list of the user.

**Test Case Id:** TC_072

**Test Case Description:** Un saving an ad from the user favorite list.

**Test Scenario:**

**Table :406 Test Cases for save ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User clicks on the filled heart Icon with the ad to un save it from their favorite list. | User clicks on add with the post-ID 009 to un save it | Ad with the post-ID 009 will be removed from the favorite list of user | Ad was removed from favorite list | Pass |

**Unit Testing 73:** Watch Video

**Testing Objective:** To check out the proper functionality of video player in ads

**Test Case Id:** TC_073

**Test Case Description:** to test the play video functionality.

**Test Scenario:**

**Table :407 Test Cases for watch video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user clicks on the play button of video in the ad to play the video | Playing video in ad-009 | Video in ad plays smoothly. | Video in ad-009 played smoothly | Pass |

**Unit Testing 74:** Pause Video

**Testing Objective:** To check out the proper functionality of video player in ads

**Test Case Id:** TC_074

**Test Case Description:** to test the pause video functionality.

**Test Scenario:**

**Table :408 Test Cases for pause video**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user clicks on the pause button of video in the ad to pause the video | pausing video in ad-009 | Video in ad plays pauses. | Video in ad-009 paused | Pass |

**Unit Testing 75: Report ad**

**Testing Objective:** To check whether a user can report ad to admins or not.

**Test Case Id:** TC_075

**Test Case Description:** To ensure that a ad can be reported by user, when some thing is wrong in the ad.

**Test Scenario:**

**Table :409 Test Cases for Report Ad**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | When a user reports an ads, admin gets a record that a particular ad is reported and why. | Reporting post with the post ID carbazar.com/post:112 | post with the post-ID 112 will be reported to the admin. | Admin get a report notice for post with post-ID 112 | Pass |

**Unit Testing 76:** search by model

**Testing Objective:** to check that a user can search a car by its model

**Test Case Id:** TC_076

**Test Case Description:** To test the search a car by its model feature.

**Test Scenario:**

**Table :410 Test Cases for search by model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a model from a list of the model according to the make selected | Make:Honda, Model: City | Cars that have a city model will be fetched | All the cars that have a model city will be shown to the user | Pass |
| 2. | User selects a model without make | User opens model dropdown | Select make first should be selected. | Message is displayed | Pass |

**Unit Testing 77:** search by year

**Testing Objective:** to check that a user can search a car by its year

**Test Case Id:** TC_077

**Test Case Description:** To test the search a car by its year feature.

**Test Scenario:**

**Table :411 Test Cases for search by year**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a year from and to field | Year from : 2000 Year to: 2019 | Cars that have a year of 2000 to 2019 will be fetched | Cars from the 2000 to 2019 are fetched | Pass |
| 2. | User selects a from greater then to field | Year from : 2019 Year to: 2000 | Message from cannot be greater than to shall be displayed. | Message is displayed | Pass |

**Unit Testing 78:** search by exterior color

**Testing Objective:** to check that a user can search a car by its color

**Test Case Id:** TC_078

**Test Case Description:** To test the search a car by its color feature.

**Test Scenario:**

**Table :412 Test Cases for search by year**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a color from color dropdown. | Color: White | Cars that have a color of White are fetched. | Cars that have a color of White are fetched. | Pass |

**Unit Testing 79:** search by condition

**Testing Objective:** to check that a user can search a car by its condition

**Test Case Id:** TC_079

**Test Case Description:** To test the search a car by its condition feature.

**Test Scenario:**

**Table :413 Test Cases for search by condition**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a condition from condition dropdown. | Condition: Used | Cars that have used category are fetched. | Cars that have used category are fetched. | Pass |
| 2. | User selects a condition from condition dropdown. | Condition: New | Cars that have New category are fetched. | Cars that have New category are fetched. | Pass |

**Unit Testing 80:** search by transmission

**Testing Objective:** to check that a user can search a car by its transmission

**Test Case Id:** TC_080

**Test Case Description:** To test the search a car by its transmission feature.

**Test Scenario:**

**Table :414 Test Cases for search by transmission**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a transmission from transmission dropdown. | transmission: Automatic | Cars that have automatic category are fetched. | Cars that have transmission category are fetched. | Pass |
| 2. | User selects a transmission from transmission dropdown. | transmission: Manual | Cars that have manual category are fetched. | Cars that have manual category are fetched. | Pass |

**Unit Testing 81:** search by Engine Capacity

**Testing Objective:** to check that a user can search a car by its engine capacity

**Test Case Id:** TC_081

**Test Case Description:** To test the search a car by its engine capacity feature.

**Test Scenario:**

**Table :415 Test Cases for search by engine capacity**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a engine capacity from engine capacity dropdown. | engine capacity: 1300 | Cars that have engine capacity of 1300 category are fetched. | Cars that have engine capacity of 1300 category are fetched. | Pass |

**Unit Testing 82:** Like Model

**Testing Objective:** to check that a user can Like the AR model

**Test Case Id:** TC_082

**Test Case Description:** To test the Like AR model feature.

**Test Scenario:**

**Table :416 Test Cases for Like AR model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a AR model and clicks the like icon on that model. | Model: BMW | The user that liked the model should be added in the likes list of he model BMW | The Model BMW was liked and user was added in the like list | Pass |

**Unit Testing 83:** Dislike Model

**Testing Objective:** to check that a user can Dislike the AR model

**Test Case Id:** TC_083

**Test Case Description:** To test the Dislike AR model feature.

**Test Scenario:**

**Table :417 Test Cases for dislike AR model**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects a AR model and clicks the Dislike icon on that model. | Model: BMW | The user that Dislike the model should be removed from the likes list of he model BMW | The Model BMW was disliked and user was removed in the like list | Pass |

**Unit Testing 84:** Review/ give remarks on a car

**Testing Objective:** to check that a user can review a car.

**Test Case Id:** TC_084

**Test Case Description:** To test the review new car feature.

**Test Scenario:**

**Table :418 Test Cases for Review a car**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects make model and version of car to review the car and filled all necessary fields | Make:Honda Model: City Variant: Aspire 1.3 | The review is added to the car model and variant and available for users to view. | The comment "looks real" was added to the AR model BMW along with user name. | Pass |
| 2. | User selects make model and version of car to review the car and does not filled all required fields | Make:Honda | "Select model of the car" should be displayed | The desired message is displayed and review is not added. | Pass |

**Unit Testing 85:** Like Impression on car review

**Testing Objective:** to check that a user can Like/upvote the car overall.

**Test Case Id:** TC_085

**Test Case Description:** To test the Like Impression on car review feature.

**Test Scenario:**

**Table :419 Test Cases for Like Impression on car review**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User reviews a car and selects like option in the overall impression of the car. | Make:Honda Model: City Variant: Aspire 1.3 | The user that liked the car after review should be added in the likes list of car likes | The user that liked the car after review is added in the likes list of car likes | Pass |

**Unit Testing 86:** Dislike Impression on car review

**Testing Objective:** to check that a user can dislike/downvote the car overall.

**Test Case Id:** TC_086

**Test Case Description:** To test the dislike Impression on car review feature.

**Test Scenario:**

**Table :420 Test Cases for dislike Impression on car review**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User reviews a car and selects dislike option in the overall impression of the car. | Make:Honda Model: City Variant: Aspire 1.3 | The user that disliked the car after review should be added in the dislikes list of car dislikes | The user that disliked the car after review is added in the dislikes list of car dislikes | Pass |

**Unit Testing 87:** Search Car reviews

**Testing Objective:** to check that a user can search for car reviews.

**Test Case Id:** TC_087

**Test Case Description:** To test the search new car reviews feature.

**Test Scenario:**

**Table :421 Test Cases for search car reviews**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User selects car make model and variant to search for reviews. | Make:Honda Model: City Variant: Aspire 1.3 | The User should be able to see all the reviews of that car. | The user is able to see all reviews if any available of that car. | Pass |
| 2. | User does not select model and variant of car make. | Make:Honda | The message "select model first" should be displayed. | The message "select model first" is displayed. | Pass |

**Unit Testing 88:** View Model Based Recommended car.

**Testing Objective:** to check that a user can view model based Recommended car.

**Test Case Id:** TC_088

**Test Case Description:** To test the model-based recommendation feature.

**Test Scenario:**

**Table :422 Test Cases for model-based recommendation.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User navigates to the car recommendations and clicks model-based recommendation in the section. | User clicks model-based button | The system should show the top car that s recommended by the algorithm. | The system shows the top car that s recommended by the algorithm with all its information | Pass |

**Unit Testing 89:** View Brand Based Recommended car.

**Testing Objective:** to check that a user can view Brand based Recommended car.

**Test Case Id:** TC_089

**Test Case Description:** To test the brand-based recommendation feature.

**Test Scenario:**

**Table :423 Test Cases for brand-based recommendation.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User navigates to the car recommendations and clicks brand-based recommendation in the section. | User clicks brand-based button | The system should show the top car that s recommended by the algorithm. | The system shows the top car that s recommended by the algorithm with all its information | Pass |

**Unit Testing 90:** View Mileage Based Recommended car.

**Testing Objective:** to check that a user can view Mileage based Recommended car.

**Test Case Id:** TC_090

**Test Case Description:** To test the mileage-based recommendation feature.

**Test Scenario:**

**Table :424 Test Cases for mileage-based recommendation.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User navigates to the car recommendations and clicks mileage-based recommendation in the section. | User clicks mileage-based button | The system should show the top car that s recommended by the algorithm. | The system shows the top car that s recommended by the algorithm with all its information | Pass |

**Unit Testing 91:** View Mileage Price Recommended car.

**Testing Objective:** to check that a user can view price based Recommended car.

**Test Case Id:** TC_091

**Test Case Description:** To test the price-based recommendation feature.

**Test Scenario:**

**Table :425 Test Cases for price-based recommendation.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | User navigates to the car recommendations and enters minimum and maximum price range clicks price-based recommendation in the section. | Minimum: 0 Max: 2600000 User clicks price -based button | The system should show the top car that s recommended by the algorithm. | The system shows the top car that s recommended by the algorithm with all its information | Pass |
| 2. | User navigates to the car recommendations and enters minimum greater than maximum price range clicks price-based recommendation in the section. | Minimum: 2600000 Max: 0s User clicks price -based button | The system should display the message that "minimum price cannot be greater then maximum. | The system does not show any message | Fail |

**Unit Testing 92:** Disable User Account.

**Testing Objective:** to check that a admin can disable any user.

**Test Case Id:** TC_092

**Test Case Description:** To test the disable user feature.

**Test Scenario:**

**Table :426 Test Cases for disable user account.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin open a user profile and disables his account so that he could not access his account. | Admin disables user with ID-009 | The user ID 009 is disabled and cannot login his account. | The user ID 009 is disabled and cannot login his account. | Pass |

**Unit Testing 93:** Enable User Account.

**Testing Objective:** to check that a admin can enable any user.

**Test Case Id:** TC_093

**Test Case Description:** To test the disable user feature.

**Test Scenario:**

**Table :427 Test Cases for enable user account.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin open a user profile and enable his account so that he could not access his account. | Admin enable user with ID-009 | The user ID 009 is enabled and can now login his account. | The user ID 009 is enabled and can login his account. | Pass |

**Unit Testing 94:** Deactivate an ad.

**Testing Objective:** to check that an admin can disable any ad.

**Test Case Id:** TC_094

**Test Case Description:** To test the deactivate ad feature.

**Test Scenario:**

**Table :428 Test Cases for deactivate ad.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin open an ad and clicks disable to deactivate ad. | Admin deactivates ad with ID-009 | The ad ID 009 is deactivated and cannot be seen in the ads section. | The ad ID 009 is deactivated and cannot be seen in the ads section. | Pass |

**Unit Testing 95:** Activate an ad.

**Testing Objective:** to check that an admin can activate any deactivated ad.

**Test Case Id:** TC_095

**Test Case Description:** To test the activate ad feature.

**Test Scenario:**

**Table :429 Test Cases for activate ad.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin open any deactivated ad and clicks activate to activate ad. | Admin activates ad with ID-009 | The ad ID 009 is activated and can be seen in the ads section. | The ad ID 009 is activated and can be seen in the ads section. | Pass |

**Unit Testing 96:** View total users.

**Testing Objective:** to check that an admin can see total users.

**Test Case Id:** TC_096

**Test Case Description:** To test the view total users feature.

**Test Scenario:**

**Table :430 Test Cases for view total users.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click user reports to view all users. | Admin clicks total users report on the dashboard. | The list of all the users with the possible options appear to admin | The list of all the users with the possible options appear to admin | Pass |

**Unit Testing 97:** View pending dealers requests.

**Testing Objective:** to check that an admin can view pending dealers requests.

**Test Case Id:** TC_097

**Test Case Description:** To test the view pending dealers requests.

**Test Scenario:**

**Table :431 Test Cases for view pending dealers requests.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click pending request reports to view all requests. | Admin clicks pending user requests report on the dashboard. | The list of all the users with pending request with all possible options appear to admin | The list of all the users with pending request with all possible options appears to admin | Pass |

**Unit Testing 98:** Approve pending dealers requests.

**Testing Objective:** to check that an admin can approve pending dealers requests.

**Test Case Id:** TC_098

**Test Case Description:** To test the approve pending dealers requests.

**Test Scenario:**

**Table :432 Test Cases for Approve pending dealers requests.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click pending request reports to view all request and approves request | Admin clicks pending user requests with dealer-ID 001 | The dealer with ID 001 is approved and can now access all the functionality. | The dealer with ID 001 is approved and can now access all the functionality. | Pass |

**Unit Testing 99:** View total posts.

**Testing Objective:** to check that an admin can see total posts.

**Test Case Id:** TC_099

**Test Case Description:** To test the view total posts feature.

**Test Scenario:**

**Table :433 Test Cases for view total posts.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click posts reports to view all posts. | Admin clicks total posts report on the dashboard. | The list of all the posts with the possible options appear to admin | The list of all the posts with the possible options appear to admin | Pass |

**Unit Testing 100:** View active posts.

**Testing Objective:** to check that an admin can see total active posts.

**Test Case Id:** TC_100

**Test Case Description:** To test the view total active posts feature.

**Test Scenario:**

**Table :434 Test Cases for view total active posts.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click active posts reports to view all posts. | Admin clicks total active posts report on the dashboard. | The list of all the active posts with the possible options appear to admin | The list of all the active posts with the possible options appear to admin | Pass |

**Unit Testing 101:** View disabled posts.

**Testing Objective:** to check that an admin can see total disabled posts.

**Test Case Id:** TC_101

**Test Case Description:** To test the view total disabled posts feature.

**Test Scenario:**

**Table :435 Test Cases for view total disabled posts.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click disabled posts reports to view all posts. | Admin clicks total disabled posts report on the dashboard. | The list of all the disabled posts with the possible options appear to admin | The list of all the disabled posts with the possible options appear to admin | Pass |

**Unit Testing 102:** View reported posts.

**Testing Objective:** to check that an admin can see total reported posts.

**Test Case Id:** TC_102

**Test Case Description:** To test the view total reported posts feature.

**Test Scenario:**

**Table :436 Test Cases for view total reported posts.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click reported posts reports to view all posts. | Admin clicks total reported posts report on the dashboard. | The list of all the reported posts with the possible options appear to admin | The list of all the reported posts with the possible options appear to admin | Pass |

**Unit Testing 103:** View reported users.

**Testing Objective:** to check that an admin can see total reported users.

**Test Case Id:** TC_103

**Test Case Description:** To test the view total reported posts users.

**Test Scenario:**

**Table :437 Test Cases for view total reported users.**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Admin opens dashboard and click reported users reports to view all posts. | Admin clicks total reported users report on the dashboard. | The list of all the reported users with the possible options appear to admin | The list of all the reported users with the possible options appear to admin | Pass |

## 6.2 Integration Testing:

**Table 438: Test Cases for Integration Testing**

| No. | Test Case/Test Script | Test Data | Expected Result | Actual Result | Pass/Fail/Not Executed/ Suspended |
|---|---|---|---|---|---|
| 1. | Verify user can login through fetch library assistance | Fetch("https:carbazar-server/login/) | User is logged in and is directed to home. | As Expected | Pass |
| 2. | Verify user signed up gets an verification email with sendgrid integration | Fetch("https:carbazar-server/signup/) | User is added and gets a verification email | As Expected | Pass |
| 3. | Verify admin can login through fetch library assistance | Fetch("https:carbazar-server/login/) | Admin is logged in and admin dashboard is available to access | As Expected | Pass |
| 4. | Verify carbazar is fetching data from olx | Fetch("https:carbazar-scrapper/olxhome/) | Olx home ads shown on carbazar home page | As Expected | Pass |
| 5. | Verify carbazar is fetching data from pakwheels | Fetch("https:carbazar-scrapper/pakwheels/) | Pakwheels home ads shown on carbazar home page | As Expected | Pass |
| 6. | Verify carbazar is fetching data from pkmotors | Fetch("https:carbazar-scrapper/pkmotors/) | Pkmotors home ads shown on carbazar home page | As Expected | Pass |
| 7. | Verify Carbazar is searching data from olx search source. | Fetch("https:carbazar-scrapper/search? make='honda') | Olx search results are fetched to carbazar | As Expected | Pass |

| | | | | | |
|---|---|---|---|---|---|
| 8. | Verify Carbazar is searching data from pakweels search source. | Fetch("https:carbazar-scrapper/ searchpakwheels? make='honda') | Pakwheels search results are fetched to carbazar | As Expected | Pass |
| 9. | Verify Carbazar is searching data from pkmotors search source. | Fetch("https:carbazar-scrapper/ searchpkmotors? make='honda') | pkmotors search results are fetched to carbazar | As Expected | Pass |
| 10. | Verify Carbazar is searching data from carbazar server | Fetch("https:carbazar-server/ searchcarbazar? make='honda') | Data fetched from carbazar database is shown | As Expected | Pass |
| 11. | Verify redirect to olx is being shown in admin analytics | Fetch("https:carbazar-server/visit") Name: olx | Olx redirect increased in analytics tab of admin. | As Expected | Pass |
| 12. | Verify redirect to pakwheels is being shown in admin analytics | Fetch("https:carbazar-server/visit") Name: pkw | Pakwheels redirect increased in analytics tab of admin. | As Expected | Pass |
| 13. | Verify redirect to pkmotors is being shown in admin analytics | Fetch("https:carbazar-server/visit") Name: pkm | pkmotors redirect increased in analytics tab of admin. | As Expected | Pass |
| 14. | Verify no user can access admin dashboard. | Navigate to https: carbazar.herokuapp.com/ admin | User is redirected to home page. | As Expected | Pass |
| 15. | Verify no user can post ad without verification. | Navigate to https: carbazar.herokuapp.com/ post/ | User is displayed message verify email. | As Expected | Pass |

| | | | | | |
|---|---|---|---|---|---|
| 16. | Verify no user can post ad without loging in. | Navigate to https: carbazar.herokuapp.com/ post/ | User is redirected to signin page. | As Expected | Pass |
| 17. | Verify IBM chatbot is working properly. | Open chat widget. | Virtual car bazar assistant here, how can I help? message appears | As Expected | Pass |
| 18. | Verify Cometchat is working properly. | . Navigate to https: carbazar.herokuapp.com/ inbox/ | All contacts appear to user | As Expected | Pass |
| 19. | Verify reports are being generated for admin. | Report a user. | Admin can see the report. | As Expected | Pass |

# 7 Conclusion and Future Work

This chapter concludes the project and highlights future work.

## 7.1 Conclusion

The final report for Car Bazar is providing all the documented data regarding system, need for the initial planning, requirement gathering, designing of the system and after the implementation manual testing of the system, problems the existing systems have and their solution. This document describes the main functionality, Gantt charts and the mockup that has the timing constraints of the system described. By this project we will learn Web Scrapping, Augmented reality, Web development, android development and database management. We will try to complete project on time and make it a complete product.

## 7.2 Future Work

In future, we aim to work for the cross-platform application that could also work on IOS, extending the scrapping functionality to fetch data from all other internet sources as well.

# 8 References

**Web Links:**


- https://www.dawn.com/news/1332515
- http://www.eyedea.cz/download/Developer%20Package%20Sheet.pdf
- http://www.itinfo.am/eng/software-development-methodologies/

- https://www.augment.com/blocks/ar-viewer/
- https://whatis.techtarget.com/definition/augmented-reality-AR
- https://www.techopedia.com/definition/23889/web-development

**Books**:

- Ian Somerville Software Engineering 9th Edition
- Software Engineering a practitioner approach by Roger Pressmen
- Fundamentals of Software Engineering by Rajib mall
- Object-Oriented Software construction by Bertrnd meyer


# 9 Plagiarism Report

Turnitin Originality Report

Car Bazar Final Report by Syed Aon Raza

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**Figure 35: Plagiarism Report Car Bazar**