

Software Requirements Specification

Version 1.0

for

SOEN-6461-Team 11

Prepared by

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Document history

Date	Version	Description	Author
26- September-2019	1.0	Writing the software requirement based on Clerk Functionality.	Basant Gera
21- October -2019	1.1	Changes done in iteration 2 requirements & added requirement for iteration 3	Basant Gera
27-October-2019	1.2	Changed the document to follow Requirement Analysis Standard.	Sourabh Rajeev Badagandi

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Table of contents

1. Introduction	5
Purpose	5
Scope	5
Definitions, acronyms, and abbreviations	5
References	5
2. Overall description	6
Product perspective	6
Product functions	6
User characteristics	6
Constraints	6
Assumptions and dependencies	7
3. Specific requirements	8
3.1 External interfaces	8
3.2 Functional requirements	9
Actor goal list	9
3.3 Non-functional requirements	11
4. Analysis Models	13

List of figures

Figure 1. A client-server architecture.	6
Figure 2. An example user interface..	8
Figure 3. Use case model.	10

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

1. Introduction

The following document tells us about the nature of the project or software application. The document consist of some artifacts which will help our team to kick start on the web application (Vehicle Management System) which are trying to build. We are following a set of guidelines which consists of Functional and No functional requirements towards which we are trying to build a sustainable system which is capable of booking vehicle for user with their specific requirements.

The Vehicle Management System which we are trying to make will be solving the capabilities which most often website fails to address or forgot to think. We have divided to do this project into 4 iterations which will be updated sequentially in SRS document while the works go on. The detailed requirements of **Vehicle Management system** will be listed in this document which concentrates on features and capabilities.

Purpose

The purpose of the document is to understand and present artifacts which will help developers what Vehicle Management system requirements are and what is it capable of doing. The essential things about this document is to collect and analyze all sorts of ideas which comes to mind and to define the system w.r.t our developer ,designer and user. In this document we shall predict and sort out how the product (Vehicle Management System : Web Application) made based on scenarios and outline the concepts which can be developed later. The ideas which are described here may be changed or discarded as product develops.

In brief, the SRS document will provide you the details overview of software with respective parameters and goal which will be listed in this document. It also define how our users, clerk, administrator and target audience look and address how application would work and respond. Never the less it will help designer and developer to build the system efficiently and resourcefully as per the requirements stated to us.

Scope

Primarily, the scope come to out to be helping people who wanted to book vehicles to travel in day today life. It focuses mainly on how sale and distribution of vehicles has been done over time with the ease of renting, reserving and returning the vehicles and their management respectively by users.

The SRS documents is also entitled to tell you specific requirements of software which tells you the small scenarios which are called functionality we are trying to achieve.

Definitions, acronyms, and abbreviations

SRS	Software Requirements Specification
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SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

?param	Parameters
VMS	Vehicle Management System
CRMS	Customer related management software
GPL	General public Licence

References

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

2. Overall description

The following SRS documents contains the detailed Web application (Vehicle Management system) perspective to the users.It will give you the detailed description how a functionality should be made from top level and what are the expectations of the stakeholder to developer and designer.We would be following agile methodology in which 4 iterations would be carried so that we can confirm whether every build is according to stakeholder requirements or not.

The following are scenarios which are listed according to which (Vehicle Management system) should work :

Iteration :1

Setting up Environment based team unanimous decision.

Iteration :2 Clerk Functionality

- ❖ **Register** a clerk/administrator based on checkbox.[Checking up on checkbox gives user to make a username and password which will work as administrator.]
- ❖ **Login** for registered clerk/administrator. Since clerk/administrator both has different landing pages after login.
- ❖ **Vehicle Catalog page** is made for clerk which will filter the the vehicle information based on 4 ?parms which are Vehicle Make, Vehicle Type, Vehicle year and Vehicle Model.The functionality consists of the following things which are as follows :
 - ❖ Filtering out or searching based on by Vehicle Make, Vehicle Type, Vehicle year and Vehicle Model.
 - ❖ Sorting Ascending/Descending based on Vehicle Make, Vehicle Type, Vehicle year and Vehicle Model [a-z] [z-a] [1-highest] [highest-1] (In case of year).
- ❖ **Detailed View Page** is made for clerk to check all the details which are booked by clerk buy asking client are ok.If required clerk can edit the information and go ahead for booking form page.It also has the following functionality which are as follows :
 - ❖ It allows clerk to click on the next button to view new car with their respective details.
 - ❖ It allows clerk to click on book now which will redirect clerk to go on Booking form page.
- ❖ **Booking form Page** is made for the functionality which can ask the clerk to fill the first name , last name , Phone number and Dates such as Start date ,end date and license expired date with all validation to book the vehicle for current client via clerks.
 - ❖ Validation such as license no should not be expired or greater than vehicle booking end date.
 - ❖ Start date of vehicle registration should not be greater than vehicle end date.
- ❖ **Client Manager** to help clerk manage all clients, supported functions are:
 - Modify client details
 - Delete client

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

- Cancel a reservation
- Handle return of vehicle

Iteration :3 Administrator Functionality

❖ Vehicle Master : The Screen consist of following things :

- ❖ Filtering out or searching based on by Vehicle Make, Vehicle Type, Vehicle year and Vehicle Model.
- ❖ Add the vehicle record.
- ❖ Delete the vehicle record.
- ❖ Edit the vehicle record.

❖ Transaction recording Screen : The screen captures various things which are as follows :

- ❖ Any modify/ Cancel/return history of vehicle is recorded and updated on the screen.
- ❖ Filtering based on particular criteria based on search button.
 - ☐ **Due Date of vehicle.**
 - ☐ **Start Date of vehicle.**
 - ☐ **based on clerks.**
 - ☐ **based on Vehicle .**

❖ Security rights given based on user group :

- **Administrator** duty is to only add /edit/ Delete the vehicles apart from that administrator can check transactions and see the vehicle catalog but can't not book vehicle for any clerk.
- **Clerk** can book vehicle for the client as per dates clients want and can not view the Vehicle master page and don't have sufficient rights to view the page.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

The general factors that affect the product (Web Application: Vehicle management system) based on given scenarios are as follows :

Product perspective

The overall picture of the product is self-owned and self-contained by the company. The vehicle that the company owns has the sole purpose to give vehicles on the rent to the user based on certain requirements that may be asked by the user. The product (VMS) has a set of teams and set of departments that have different functionality on which they are trained such as user group for e.g Clerk, Administrator.

Following is the overall picture been shown to the Designer and developer for VMS.

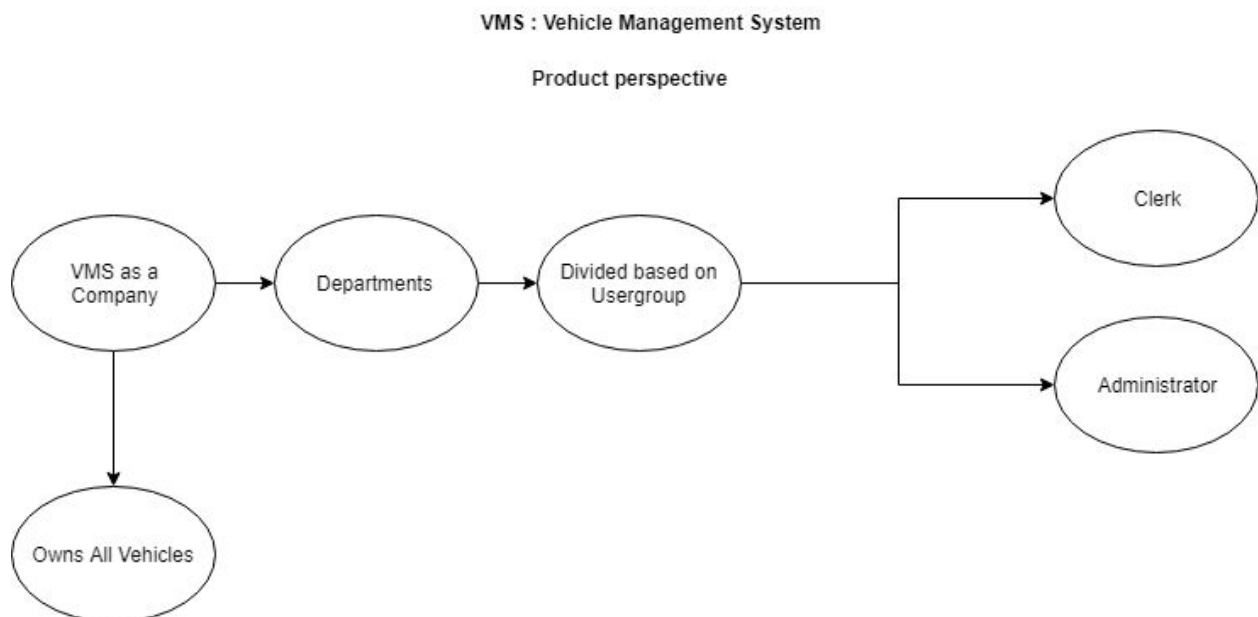


Figure : 2.1

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Product functions

The product VMS should functions are as follows :

Since every functionality varies from the clerk to Administrator so we have decided to make 2 user groups which are 1. clerk 2.Administrator.

1. It should be able to register and login.
2. If successfully logged in then the clerk should be able to give ?param such as type,make,year,model which he wants to rent a vehicle and sort according what he wants like (ascending to descending in terms of alphabets and numbers).And can open the details and view the booking and can book the booking.
3. Clerk can able to search how many available vehicles are available and unavailable based on that a customer can modify his information if he wants to modify the reservation date and end date.
4. Administrator at the same time can filter information and Can add,modify and delete the information of the vehicles.
5. Administrator can view transactions screens and filter based on Clients,vehicle , due and start date.
6. Administrator can add vehicle but cannot book the vehicle for any client whereas clerk doesn't have the right to view Vehicle master screen where vehicles are added and transactions are shown.

Figure : 2.2 below shows how VMS should perform.

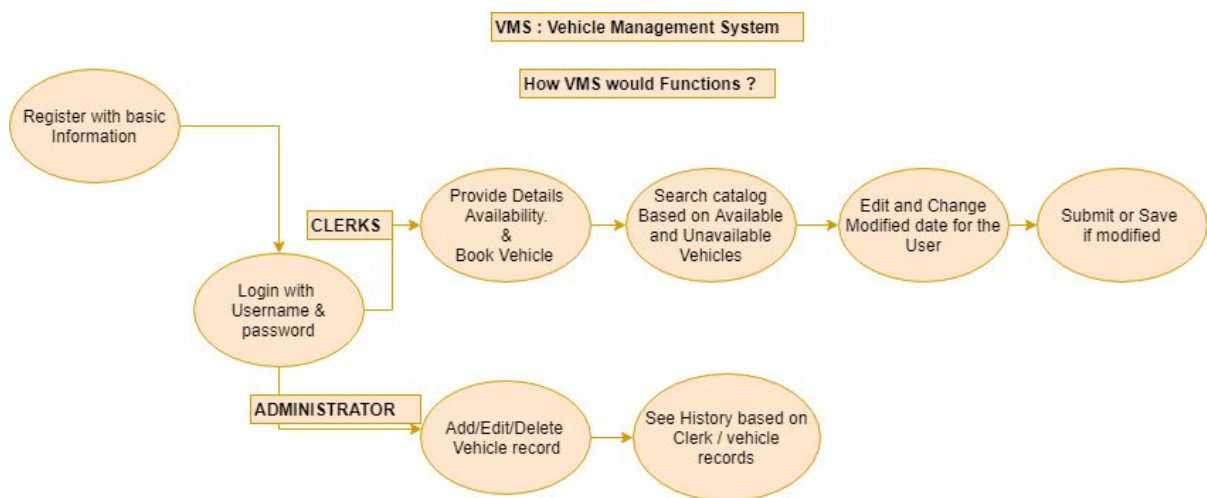


Figure :2.2

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

User characteristics

The table listed below shows the level of expectancy required to operate VMS.

User/Actors	Expected Education level	Experience	technical Expertise <i>(if any)</i>	Basic Description <i>(if any)</i>
Clerk	Educated person required or High School passed.	High School passed.	No. Basic Training is required to operate VMS.	None.
Administrator	Educated person required or High School passed.	High School passed.	No. Basic Training is required to operate VMS.	None.

Constraints

Safety Regulation : Stakeholder or Administrator can View or monitor the request submitted by the clerk.

Hardware : Since the application will run on browser if hosted on Server than connection with internet is required to open the VMS site.or if planned to host on server to work on intranet also then TCP/IP protocol suite is required.

Limitation : VMS will work on HTTP on browser on Port Number 80.So if you are planning to run something on port number 80 better be careful about the same.

Safety & Security : It can store the username and password in Session variable and cookies.So better delete it if you don't want to share with anyone else.

User Interface : The user can open it in Chrome,IE and Safari and the user interface shall be implemented in java,EJB etc.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Software Interface : It has various screens such as FrmRegister,FrmLogin,FrmChoose,FrmSearch,FrmClient.

Communication Interface : The VMS should use HTTP protocol for communication on internet if hosted.

Licensing requirement: Not Applicable.

Applicable Standards : It should be as per industry standard.

Assumptions and dependencies

1. Our Assumption would be that this product should only be used on browser since its a web application.If may work on mobile but since the design is according to PC browser height width width.
2. Other assumption which need to be cleared since it is a vehicle management website it doesn't use any GPS.
3. Make sure java plugin is installed in your browser. many a times if user may not allow to run java in back end the application seems to be not working properly.
4. It should work on various OS like Windows 10,Windows 7 and Mac.

3. Specific requirements

1. Functional Requirements

Identification	REQ-001
Version	1.0
Priority	High
Risk	Medium
Description	<ul style="list-style-type: none"> • There should be an interface to take all the information of the clerk: First Name, Last Name, Username, Password, Email and an option to register as admin if needed. • There should be a register button which validates user input fields and creates new clerk record.
Type	Functional

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Identification	REQ-002
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> • There should be an interface to take Username and Password from the user. • There should be a login button which validates the credentials with existing records and allows only valid users to access the system.
Type	Functional

Identification	REQ-003
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> • There should be a vehicle catalog page to display vehicles, it should have the following information: Make, Model, Year and Type • There should be an option to view the details of the vehicle. This option should only be visible for the clerk and not the admin.
Type	Functional

Identification	REQ-004
Version	1.0
Priority	High

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Risk	Medium
Description	<ul style="list-style-type: none"> There should be an option to filter the vehicles tables according to Make, Model, Year and Type.
Type	Functional

Identification	REQ-005
Version	1.0
Priority	High
Risk	Low
Description	<ul style="list-style-type: none"> There should be an option to sort the vehicles tables according to Make, Model, Year and Type.
Type	Functional

Identification	REQ-006
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> There should be a detailed view page for the vehicle which provides its Make, Model, Year, Type, Color, Licence Plate Number and availability details. There should be an option to book the vehicle. Detailed View page should be only accessible to the clerk.
Type	Functional

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Identification	REQ-007
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> • There should be an option to view next vehicle record from vehicle details option page. • There should be an option to go back to the vehicle catalog page from vehicle details page.
Type	Functional

Identification	REQ-008
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> • There should be a client manager page, which gives the details of all clients that have made a reservation. Details include: client ID, First Name, Last Name, Licence Number, Licence Validity, Phone Number, Start Date , Due Date, Booking Id, Booken On and Status. • Client Manager should only be accessible to the clerk.
Type	Functional

Identification	REQ-009
Version	1.0

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Priority	High
Risk	High
Description	<ul style="list-style-type: none"> The clerk should be able to update return of vehicle in client manager page.
Type	Functional

Identification	REQ-010
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> The clerk should be able to update cancellation of vehicle in client manager page.
Type	Functional

Identification	REQ-011
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> The clerk should be able to modify client details in client manager page.
Type	Functional

Identification	REQ-012
Version	1.0
Priority	High

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Risk	High
Description	<ul style="list-style-type: none"> The booking page should accept client details:First Name, Last Name, Licence Number, Licence Validity, Booking Start and End Date. The booking page should be only accessible to the clerk.
Type	Functional

Identification	REQ-013
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> The booking page should have book now button that validates all client information and confirms booking if only all the client data is valid.
Type	Functional

Identification	REQ-014
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> There should be a Vehicle Master data page which shows vehicle details and should have option to modify, add or delete vehicle records. The Vehicle Master data page should be only accessible by the admin.
Type	Functional

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Identification	REQ-015
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> There should be a Transactions page which gives all the details about transaction including client, vehicle and booking details. The Transactions page should be only accessible by the admin.
Type	Functional

Identification	REQ-016
Version	1.0
Priority	High
Risk	Medium
Description	<ul style="list-style-type: none"> There should be an option to filter the transaction table according to booking status, due/return dates, client name or vehicle name..
Type	Functional

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

2. Non Functional Requirements

Identification	REQ-017
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> The response for any request needs to be processed fast , maximum latency for concurrent operation must be less than 5 seconds.
Type	Non-Functional

Identification	REQ-018
Version	1.0
Priority	High
Risk	Medium
Description	<ul style="list-style-type: none"> Storage utilization must be optimal, it should not include redundant data.
Type	Non-Functional

Identification	REQ-019
Version	1.0
Priority	High
Risk	High
Description	<ul style="list-style-type: none"> The application should be easily scalable and must support at least 100 records.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Type	Non-Functional
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Identification	REQ-020
Version	1.0
Priority	High
Risk	Medium
Description	<ul style="list-style-type: none"> The application should provide an easy to use user interface with proper error messages and error handling.
Type	Non-Functional

Identification	REQ-021
Version	1.0
Priority	High
Risk	Medium
Description	<ul style="list-style-type: none"> The application should be modular and easy to maintain and modify.
Type	Non-Functional

Identification	REQ-022
Version	1.0
Priority	High
Risk	Medium
Description	<ul style="list-style-type: none"> The application should be secure to use, all passwords must be encrypted and stored. Username and Password length validations should be present. Admin must be limited to only one per

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

	system.
Type	Non-Functional

Performance efficiency

The performance efficiently for VMS focuses on following things which are as follows :

1. The system shall be able to process how many vehicle booking per second in perk load.
2. In standard CPU usage shall be less than 50%.
3. Going from one page to another may contain data can take up to 1-2 sec.

Compatibility

Few compatibility issues that VMS can face which are as follows :

Design compatibility : Since we are working on HTML5 with bootstrap design which can hamper the design when browser can get changed or won't work when opened in old browser of IE 4.0 or earlier or Chrome earlier version which don't support some functionality.

Java Earlier Version or Plug allowed on web browser : user should have the latest version of Java installed or plugin active in browser which he needs to allow it. Since our application is in java, user should allow the java in popup in browser.

It may not work if java is not enabled or clicked on denied.

Usability

The ability in VMS of using existing components which can be reused in VMS application which can be as follows :

1. Code design and percentage of reused requirements
2. coupling of components.
3. degree and use of framework.
4. Functions

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Reliability

The reliability constraints for VMS consist of things which are as follows :

1. Resistance to be failure free and fault tolerant.
2. Ability to perform certain tasks under specific amount of time. For e.g. Asker for reservation and return date of vehicle based on the criteria given by user to client and if any failure occurs may result to pop up saying error message occurred or switching to login page in case of session value turn out to be null since it can save the value for only 10 minutes.
3. It should work based on the conditions which is specified in the system like sorting and searching and booking without errors.

Security

Security measures for VMS are taken as follows :

1. The ability to resist entering unwanted url will result into login page.
2. Success rate at time of authentication.
3. lifespan of password for session.

Maintainability

Maintainability are measures which has been considered while making VMS such as :

1. Extension of new functionality if given by stakeholders.
2. Adapting and working in new OS such as MAC and windows various versions.
3. Quality/ quantity managing the requirements which should be documented well for understanding what stakeholders is trying to say and developer and designed are trying to design.
4. Code analysis tool can also be used to see whether proper procedure has been followed or not while designing, developing and documenting.

Portability

Probability measures are those measured in which VMS can run under different environment which are as follows :

1. Target platform(hardware,OS)

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

2. some platforms work specific to components with some functionality should be kept in mind while making VMS.

Design constraints

Following are Design constraints must be kept in mind while making VMS which are as follows :

Languages : Java ,HTML5, CSS 3.0, C#,Vb.net

Framework : Spring/ spring boot or .Net

Database : mysql workbench or SQL Server

Tools : Eclipse IDE or IntelliJ

Server : Tomcat 7.0,8.0,9.0 Versions can be used

Architectural design : MVC pattern with java spring framework.

Revision version control : Github or Gerrit

Software Project management tool : Maven in Eclipse for spring dependencies or Gradle or dynamic web project.

Libraries Used : Maven dependencies such as core,context,WebMVC and JSTL expression language or any language in which developer can write expressions easily.

(On-line) user documentation and help

Since we have been designing and developing this document a help document and user manual document will be created at least once the version/iteration 2.0,3.0,4.0 are up and running and complete as per stakeholder.

Purchased components

The plans for VMS if get successful than it will be called as CRMS software which can be purchased in future.

Licensing requirements

A GPL will be carried out for VMS for the user and can be modified according to stakeholder need.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Legal, copyright and other notices

All rights will be reserved by Team which is named as of (Team of 6) lead by team leader and guided by our professor Dr. Constantinos Constantinides.

3.1 External interfaces

These are expected result in psd file which has been given by stakeholder and a glimpse of how an application should look. Following are the .psd file according to which design should be made and get started by development. [later can be changed as per design]

Listed all the User Interface which should be as follows:

Registration page

UserRegistration

FirstName:

LastName:

UserName:

Password:

EmailID:

ClerkID:

Figure:3.1

Login Page

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019



A screenshot of a web application's login interface. At the top, the text "User Login" is displayed in a light blue font. Below this, there is a light gray rectangular box containing the login fields. Inside the box, the label "UserName:" is followed by a white text input field with a blue border. Below that, the label "password:" is followed by a white password input field. At the bottom left of the box, there is a small gray button with the text "Log in" in white.

Figure:3.2

Vehicle Information page/ clerk with sorting and booking.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Car Search Catalog

Car Type
Year
Reservation Date

Model
Car Rental
Return Date

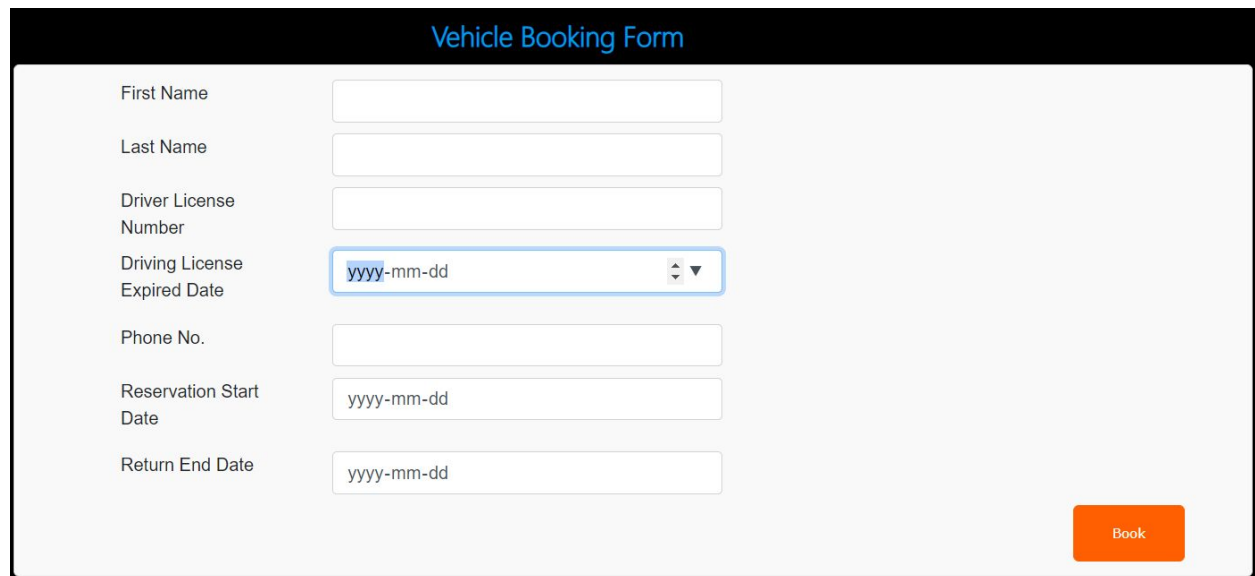
Delete
Search

<input checked="" type="checkbox"/>	Make	Model	year	Color	Car Rental	Reservation Date	End Date	Availability	Client Allocated	Submit	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details
<input type="checkbox"/>	Jeep	Santro	2010	Green	2000	22-02-2019	28-03-2019	No	-----Select-----	Save Details	Log Details

Figure:3.3

Booking Page

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019



Vehicle Booking Form

First Name

Last Name

Driver License Number

Driving License Expired Date

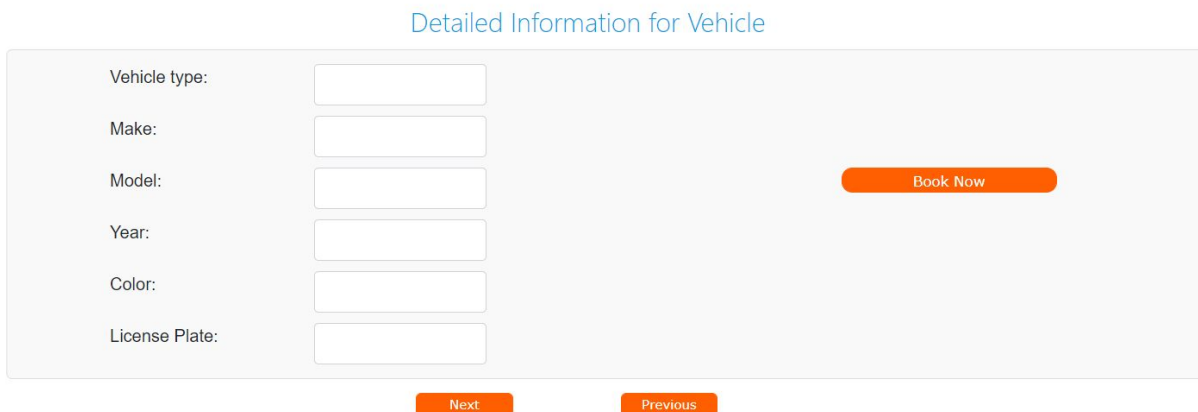
Phone No.

Reservation Start Date

Return End Date

Figure:3.4

Detailed View page



Detailed Information for Vehicle

Vehicle type:

Make:

Model:

Year:

Color:

License Plate:

Figure:3.5

User Information update page

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Add/Edit Client Information

Client First Name <input type="text"/>	Client Last Name <input type="text"/>
Driving License No. <input type="text"/>	Driving License Expired Date (If any) <input type="text"/>
Vehicle Owned <input type="text"/>	Phone No. <input type="text"/>
Reservation Start Date <input type="text"/>	Return End Date <input type="text"/>

Figure:3.6

Client Manager page

Client Manager Screen * Rectangular Snip

<input type="button" value="Add/Modify"/> <input type="button" value="Cancel"/> <input type="button" value="Return"/>										
Client ID	First Name	Last Name	Licence Number	Licence Validity	Phone Number	Booking ID	Start Date	Due Date	Booked On	Options
										Return Cancel Modify

Figure:3.7

Vehicle Master -with Filtering criteria

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

VEHICLE MASTER

Add / Modify / Delete : Vehicle Master

Type:

Year:

Model:

Make:

Add
Manage Transactions
Search

	Type	Model	Year	Make	Operations
<input type="checkbox"/>	SUV1	Wrangler1	2013	Jeep1	Edit Delete
<input type="checkbox"/>	SUV2	Wrangler2	2011	Jeep2	Edit Delete
<input type="checkbox"/>	SUV3	Wrangler3	2012	Jeep3	Edit Delete
<input type="checkbox"/>	SUV4	Wrangler4	2012	Jeep4	Edit Delete
<input type="checkbox"/>	SUV5	Wrangler5	2015	Jeep5	Edit Delete

Figure:3.8

Vehicle Master -with Add/Modify/Delete Screen

ADD-EDIT VEHICLE MASTER

Click on Save/Update to Add/Modify your Vehicle Info.

Type:

Model:

Color:

Make:

Year:

License Plate:

Update

Figure:3.9

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

ADD-EDIT VEHICLE MASTER

Click on Save/Update to Add/Modify your Vehicle Info.

Type:

Make:

Model:

Year:

Color:

License Plate:

Figure:4.0

TRANSACTIONS

View Transaction Information

Client Name:

Vehicle:

Due date:

Start Date:

Client ID	First Name	Last Name	License Number	License Validity	Phone Number	Start Date	Due Date	Booking ID	Booked On	Cancel Date	Return Date	Status
-----------	------------	-----------	----------------	------------------	--------------	------------	----------	------------	-----------	-------------	-------------	--------

Transaction Screen with filtering Screen

Figure:4.1

Functional requirements capture the intended behaviour of the system. This section contains the *Actor Goal List* and the *Use Case view*.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Actor goal list

Actor	Goal
Clerk	<p>The goal of clerk is following which are as follows :</p> <ul style="list-style-type: none"> ● Register user based on their personal data such as first name , last name, Driving licence number , username , password and expired license date. ● Based on user's Reservation and Return date of vehicle and their availability is checked. ● Clerk can check the list of available and unavailable car. ● Clerk can update the user info which he entered at the time of registration and can modify(update) the user details. ● clerk can check the log details of a particular client so that tracking of Reserve date,return date of vehicle can be stored with time stamp.
Administrator	<ul style="list-style-type: none"> ● Can load the information of Vehicles which user wanted to rent for specific date he/she wants.Or can see the Updated record/history or enrollment for every user per timestamp.Since money is involved in term of rental everything need to be stored into the history table to view the history of the clerk by administrator.Th update record can be shown to the administrator. ● Administrator can also search and look for the record based on the following criteria which are as follows : <ul style="list-style-type: none"> ❖ Start date ❖ End date ❖ Client's name ❖ Vehicle history

Use case view

USE CASE MODEL

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

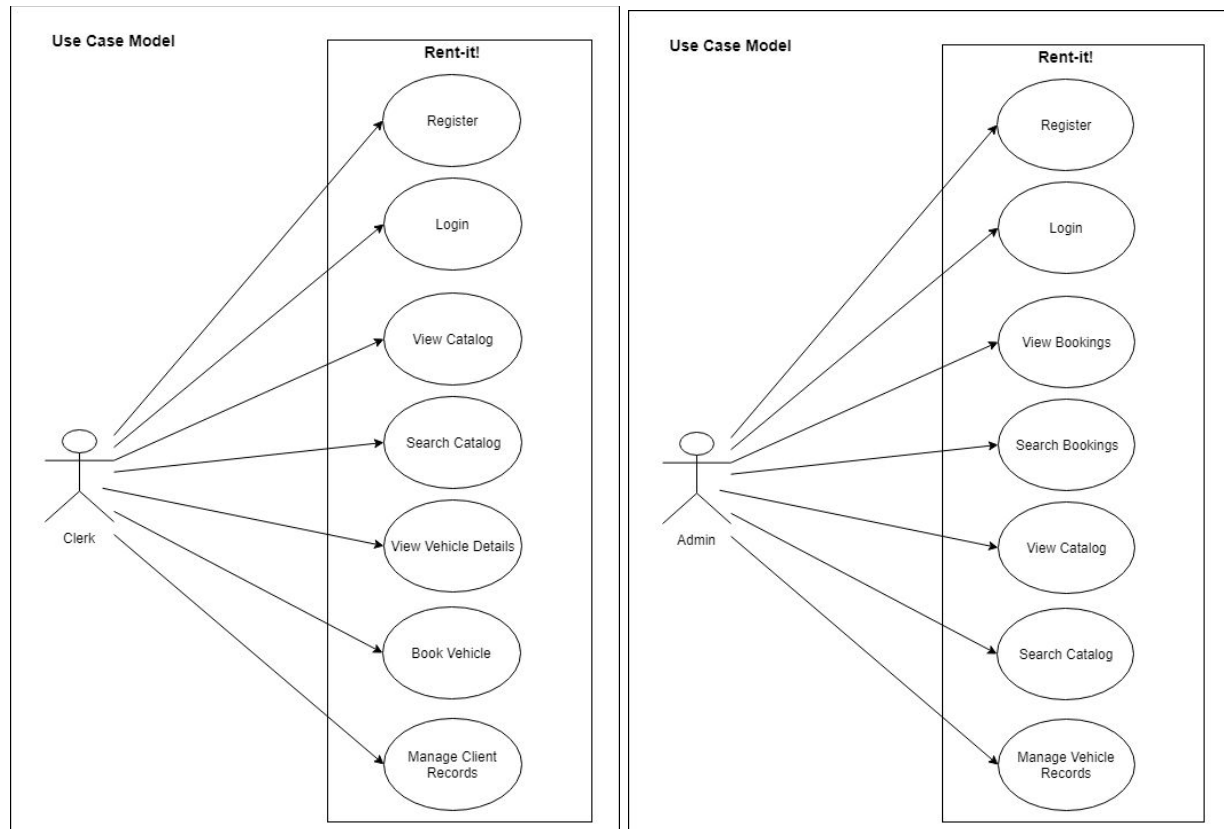


Figure 4.1:UseCase Model

Use Case No.	Use Case	Type
UC-1	Register	Non-critical
UC-2	Login	Non-critical
UC-3	View Catalog	Non-critical
UC-4	Search Catalog	Critical
UC-5	View Vehicle Details	Non-critical
UC-6	Book Vehicle	Critical
UC-7	Manage Client Records	Critical
UC-8	View Bookings	Non-critical
UC-9	Search Bookings	Critical

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

UC-10	Manage Vehicle Record	Critical
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Use Cases

1. Register

The user enters his details and clicks on the Register button to be registered as a clerk.

2. Login

The user enters his username and password to enter into the system. If invalid credentials are used the system does not grant the user access into the system.

Use Case Diagram For Login And Register

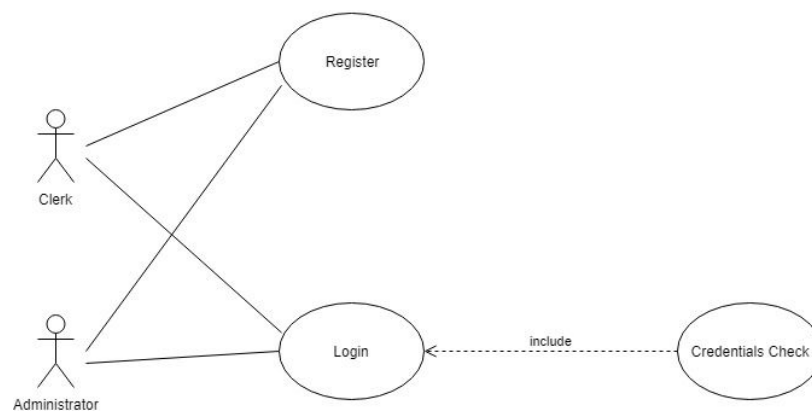


Figure 4.2:UC-1 and UC-2

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

3. View Catalog

The user can view vehicle table and even sort data.

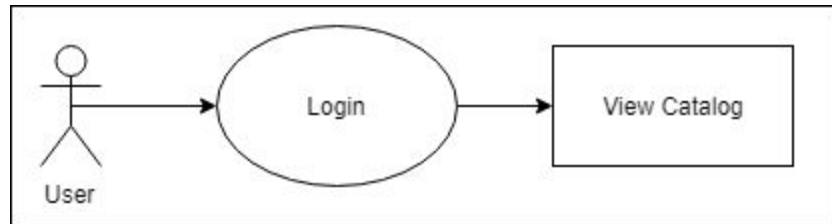


Figure 4.3:UC-3

4. Search Catalog

The user can search vehicle catalog based on different criteria like make, model, type and year.

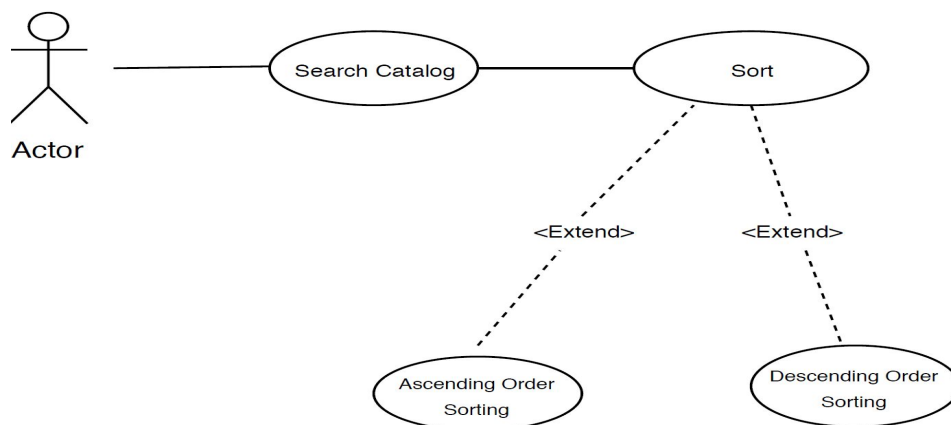


Figure 4.4:UC-4

Description : The clerk can search the vehicle based on filtering criteria which is added by clerk for user at the time of registration. Afterwards clerk can update the personal information of user.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

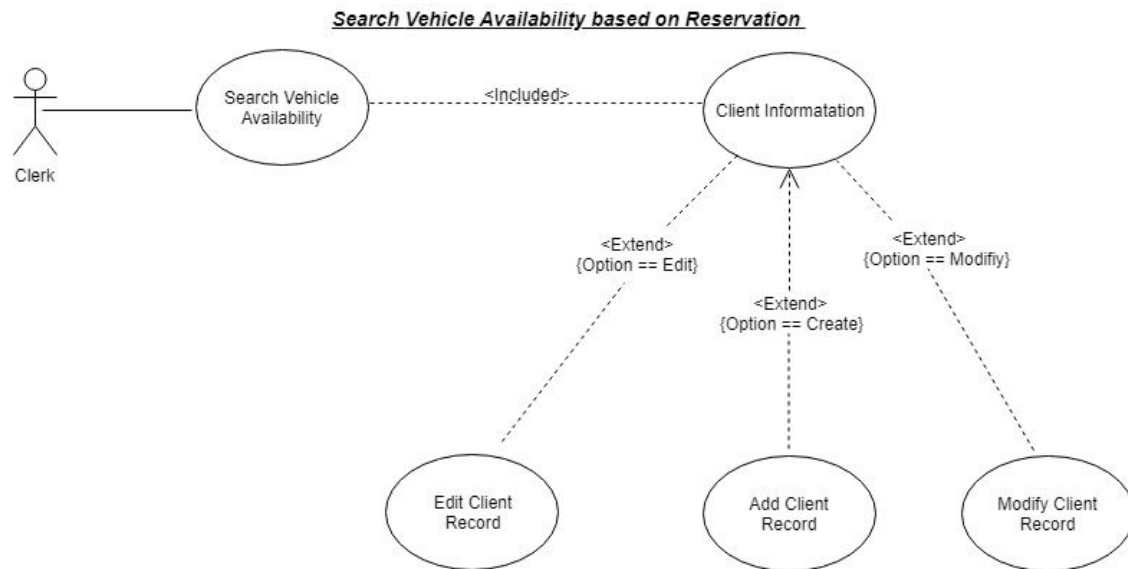


Figure 4.5:UC-4

5. View Vehicle Details

The details view gives all the details of the vehicle along with its availability details.

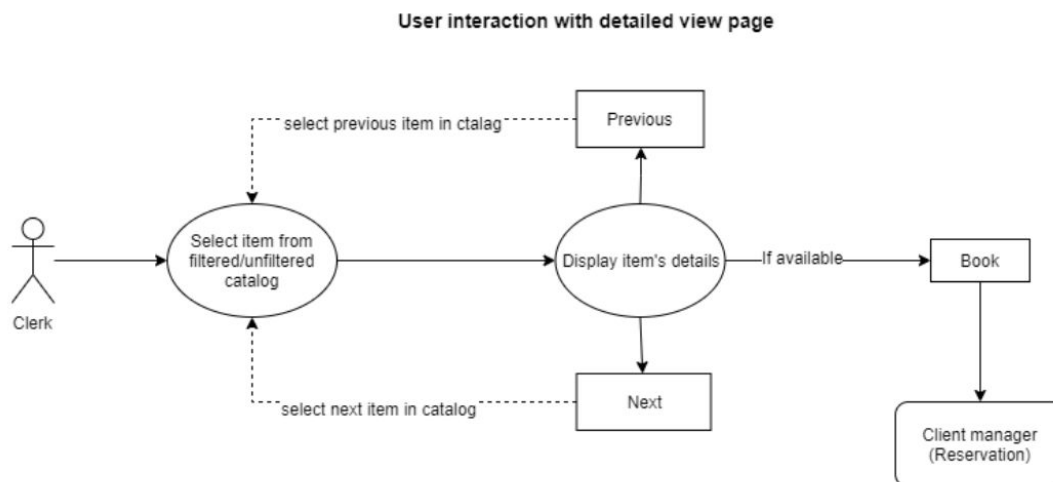


Figure 4.6:UC-5

Details: The clerk can filter the catalog for desired results and view each item in the vehicle catalog in detail. The clerk can then make a booking based on the vehicle's availability. The clerk can also browse through each item of the catalog using the buttons provided in detailed view page.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

6. Book Vehicle

Provide client details and reserve the vehicle if it is available.

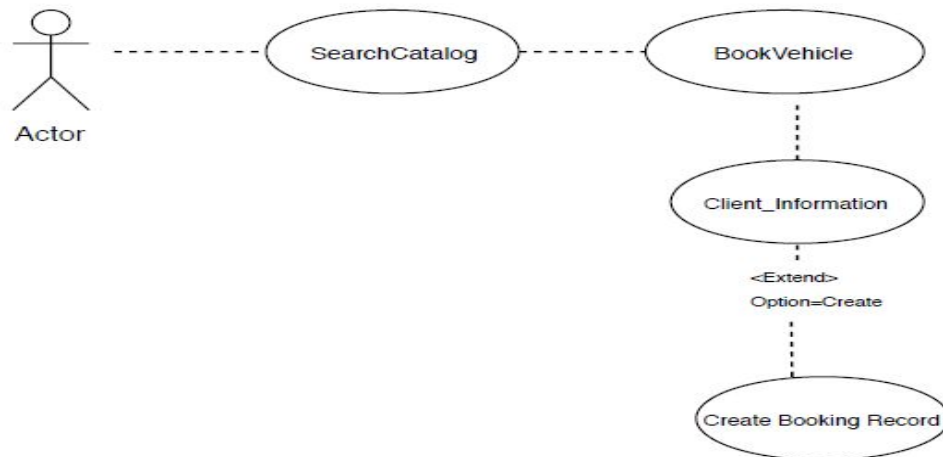


Figure 4.7:UC-6

7. Manage Client Records

View client records and also return, cancel a reservation or modify client details.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

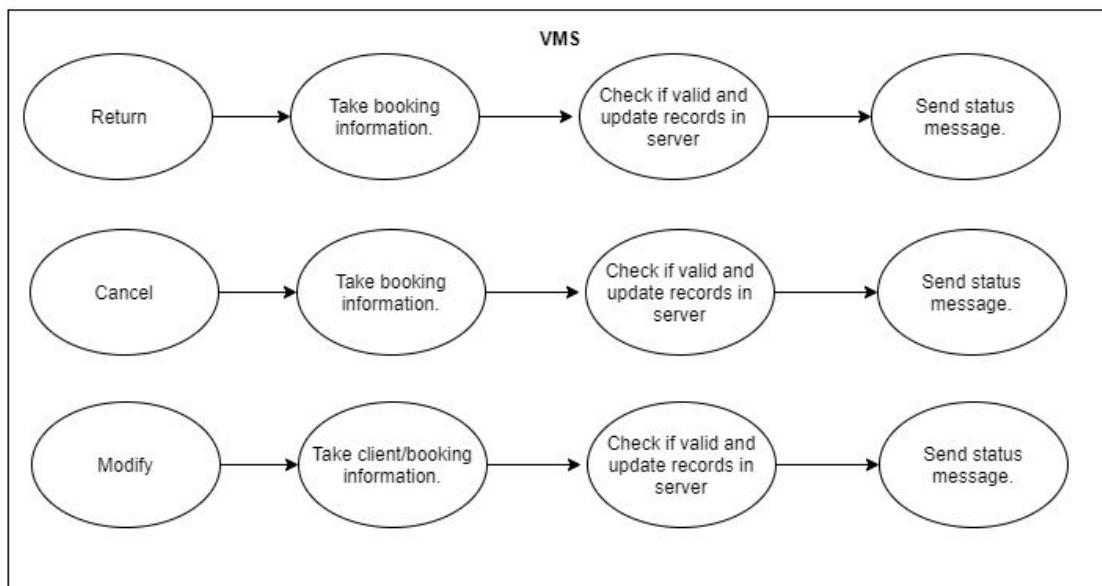
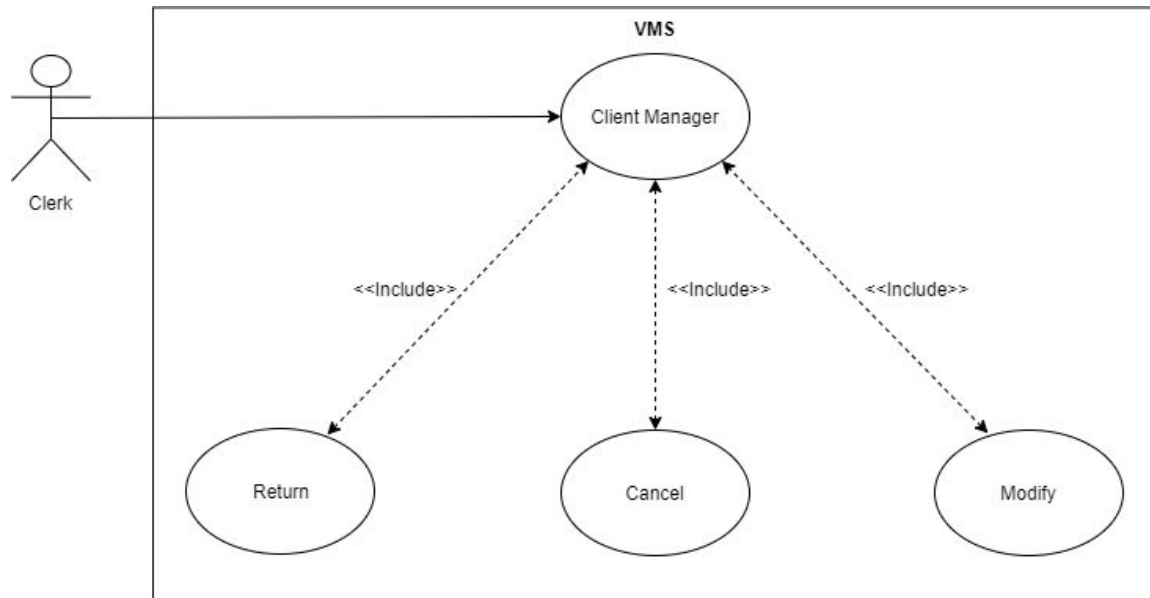


Figure 4.8:UC-7

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

8. View Bookings

View Transaction details

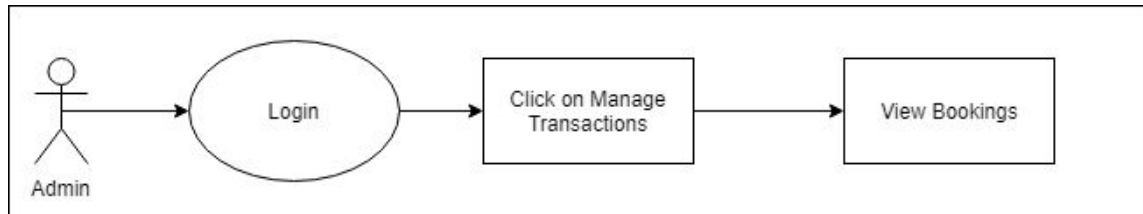


Figure 4.9:UC-8

9. Search Bookings

Filter bookings based on criteria like vehicle, client name and booking details.

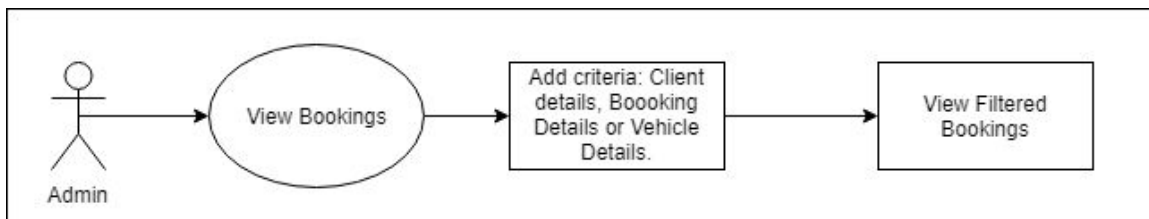


Figure 5.0:UC-9

10. Manage Vehicle Record

Add/modify or delete vehicle catalog data.

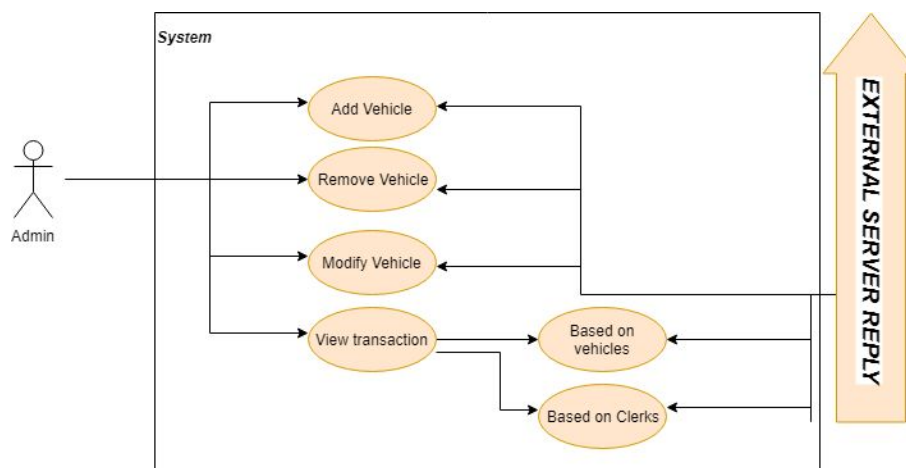


Figure 5.1:UC-10

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

State Diagrams (Only for Critical use cases):

1. Search Catalog

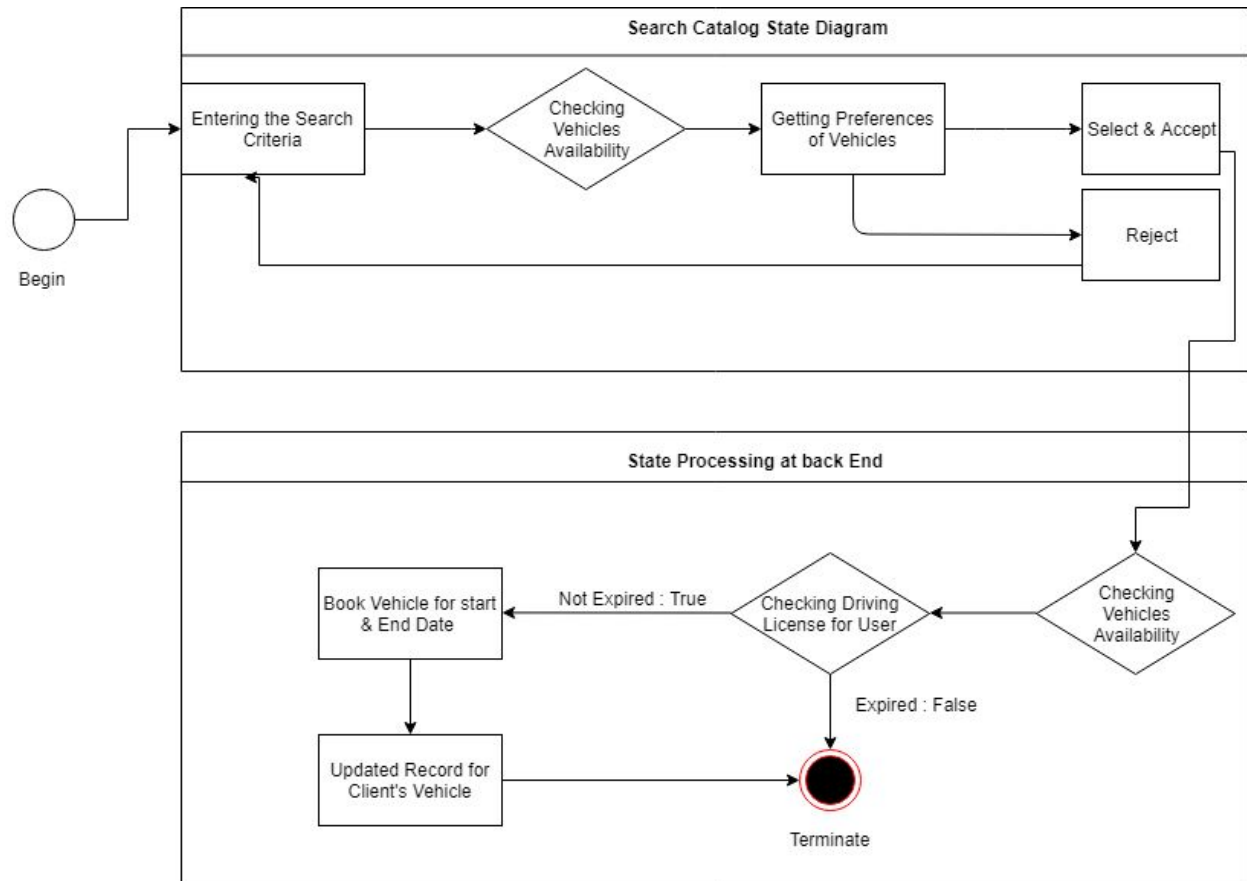


Figure 5.2:UC-4

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

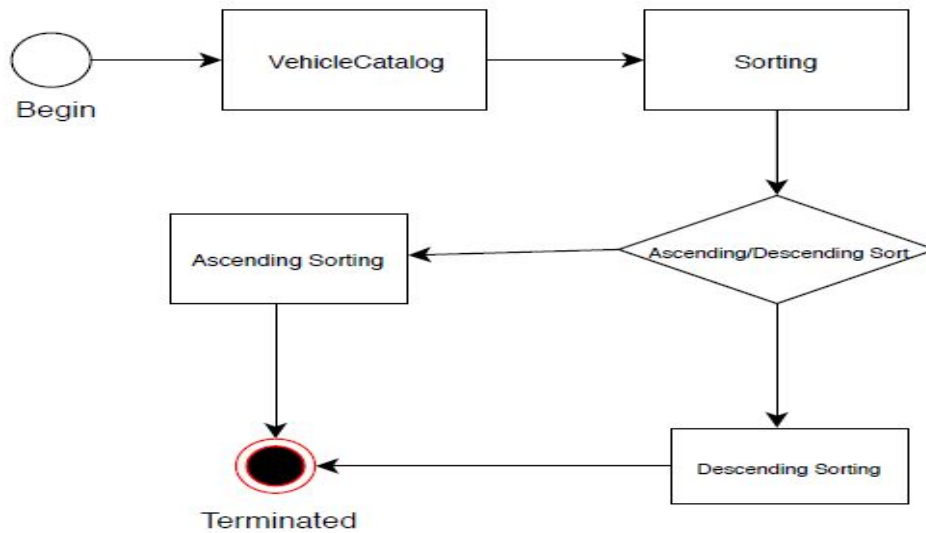


Figure 5.3:UC-4

2. Book Vehicle

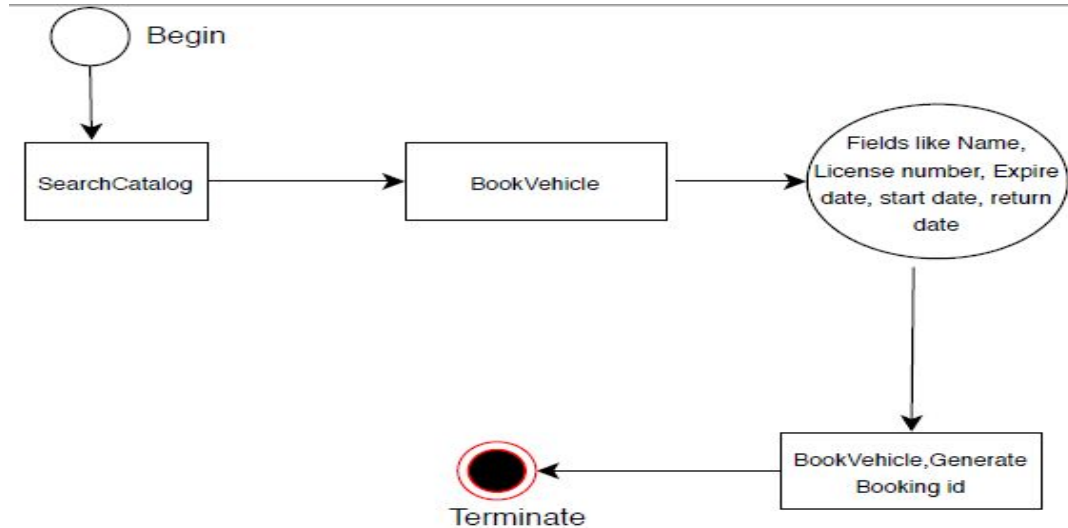


Figure 5.4:UC-6

3. Manage Client Records

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

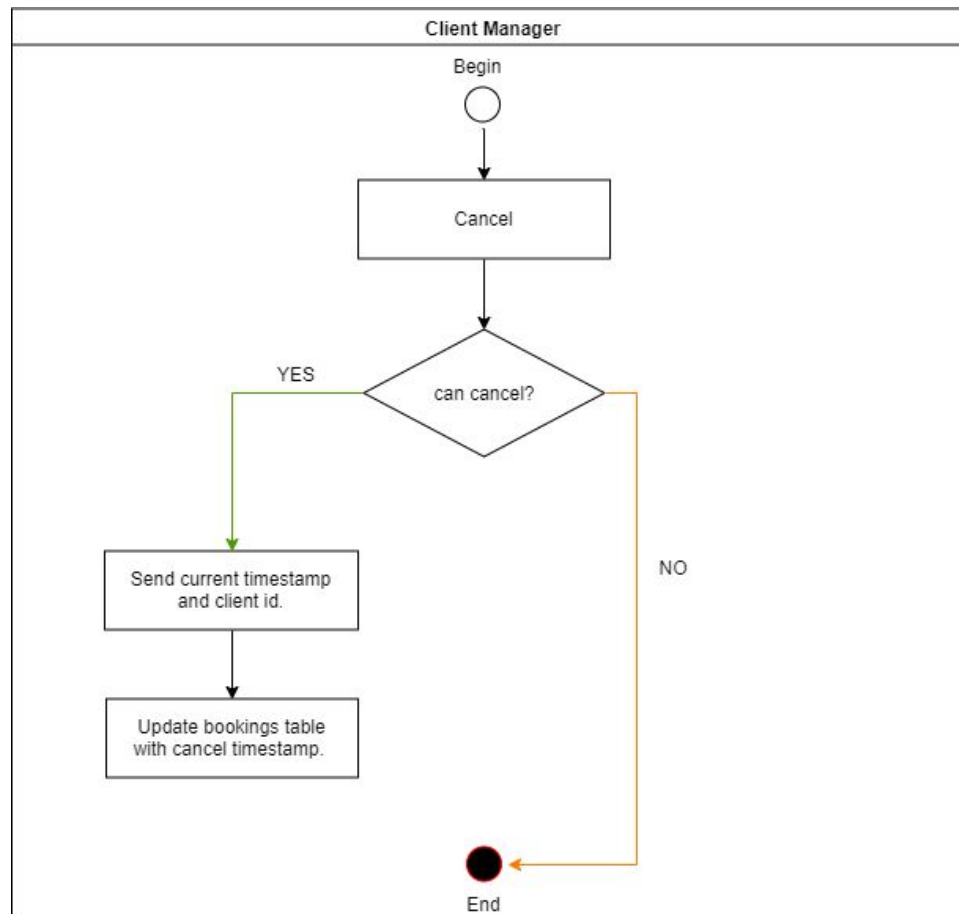


Figure 5.5:UC-7

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

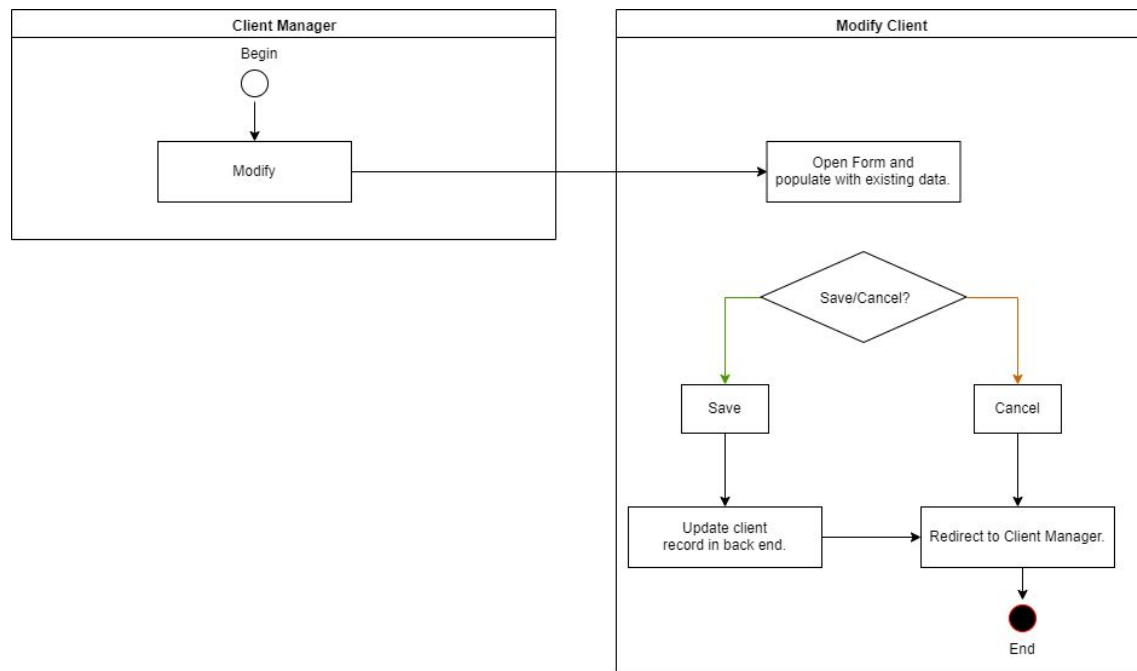


Figure 5.6:UC-7

4. Search Bookings

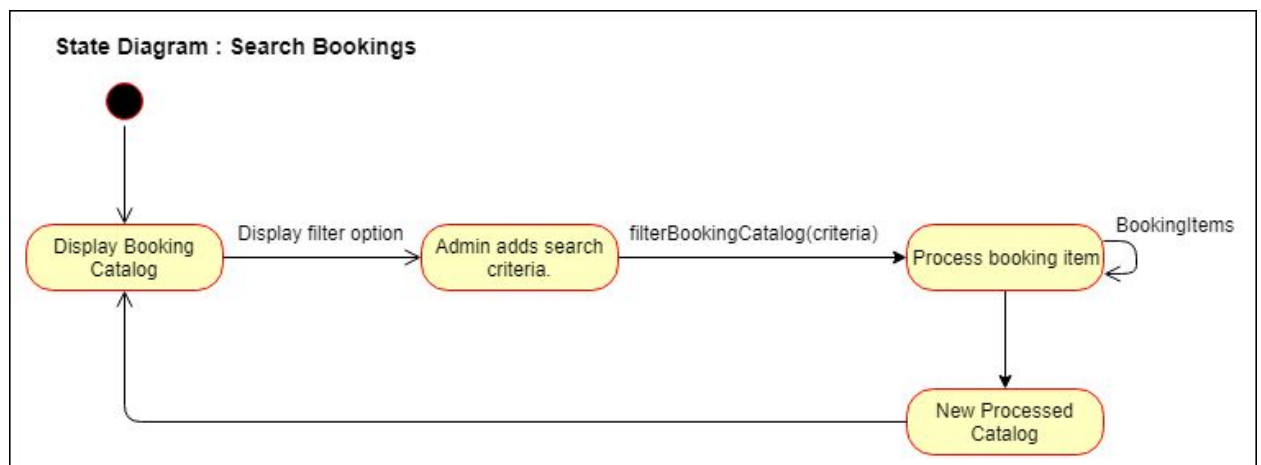


Figure 5.7:UC-9

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

5. Manage Vehicle Records

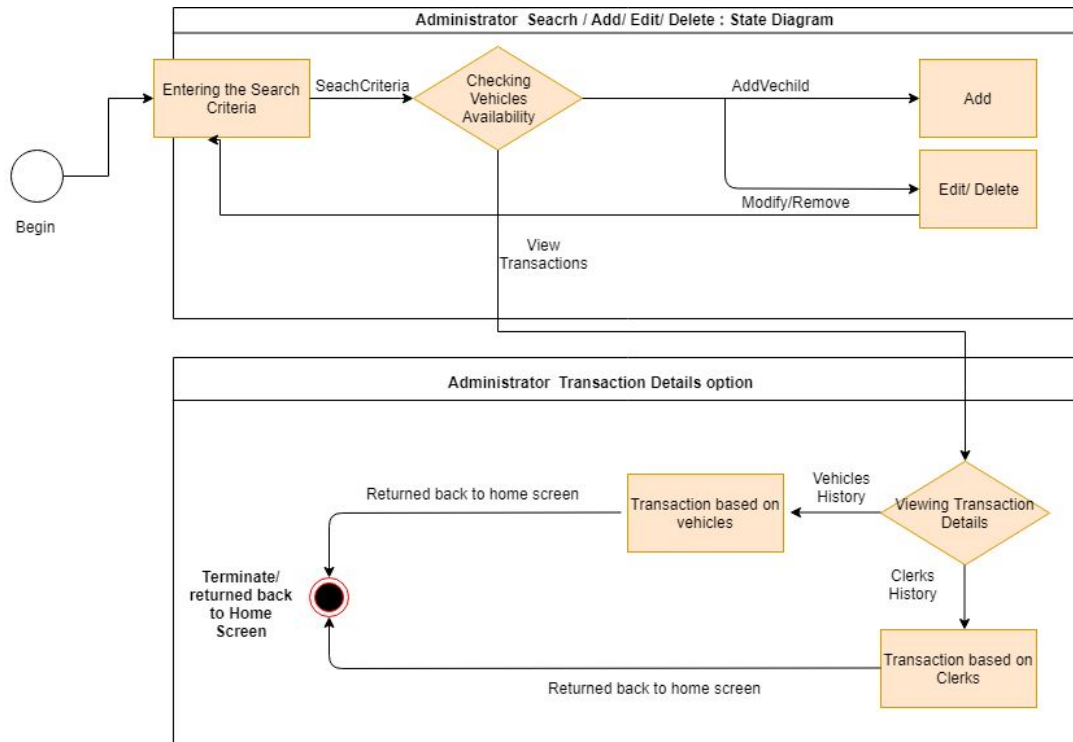


Figure 5.8:UC-10

System Sequence Diagram(Only for Critical Use cases):

1. Search Catalog

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

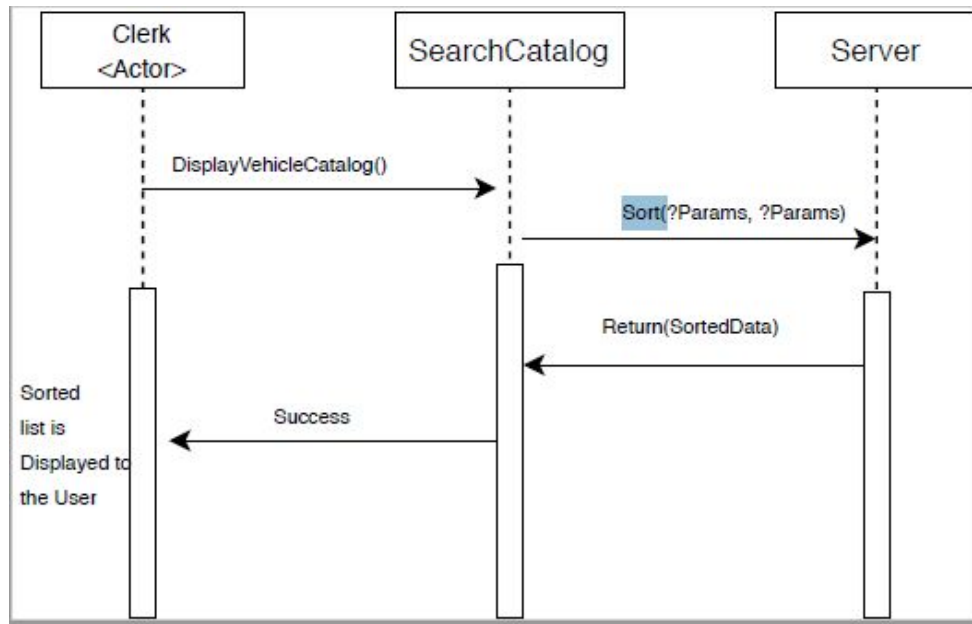


Figure 5.9:UC-4

2. Book Vehicle

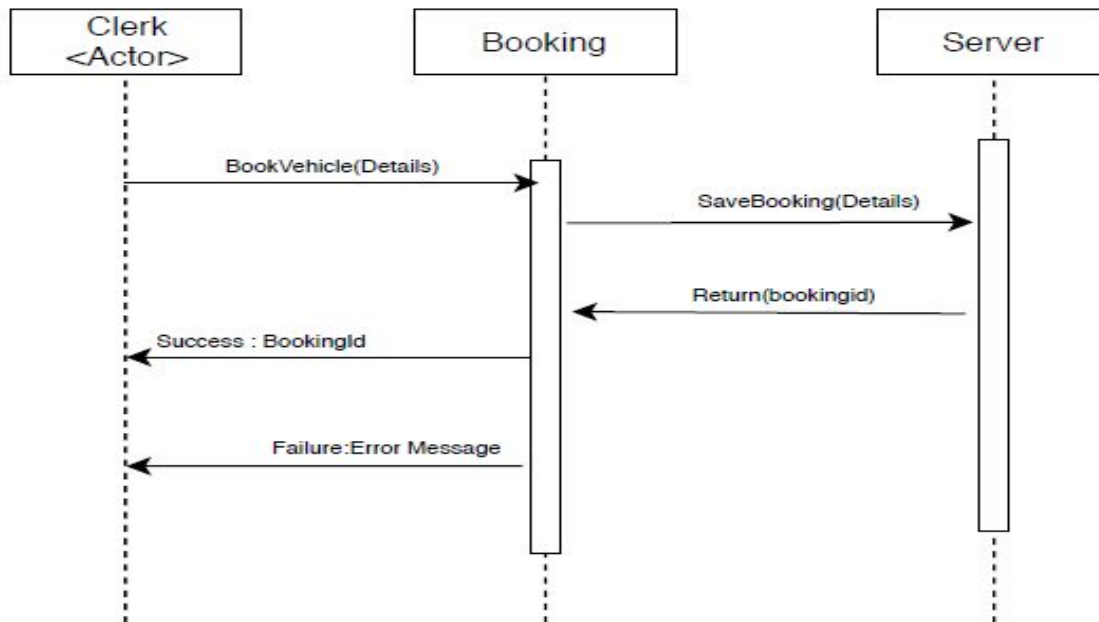


Figure 6.0:UC-6

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

3. Manage Client Records

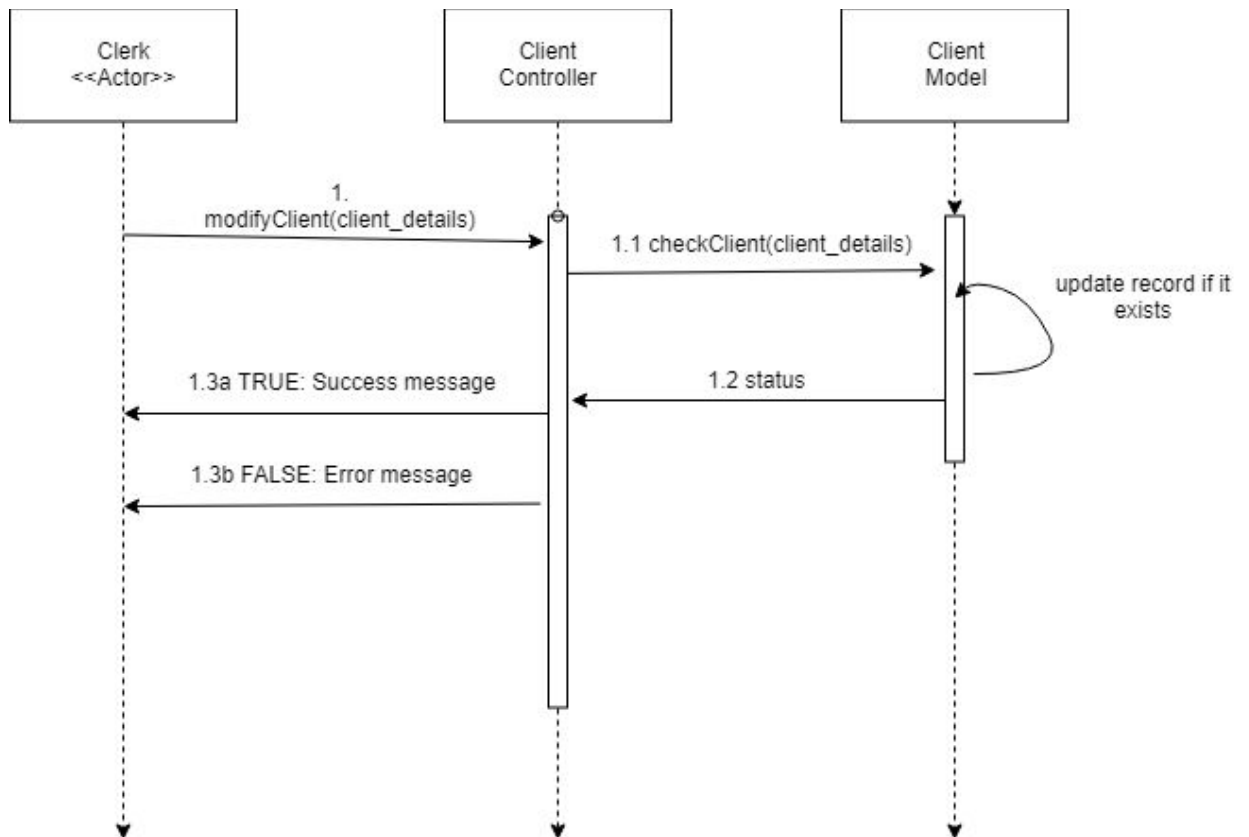


Figure 6.1:UC-7

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

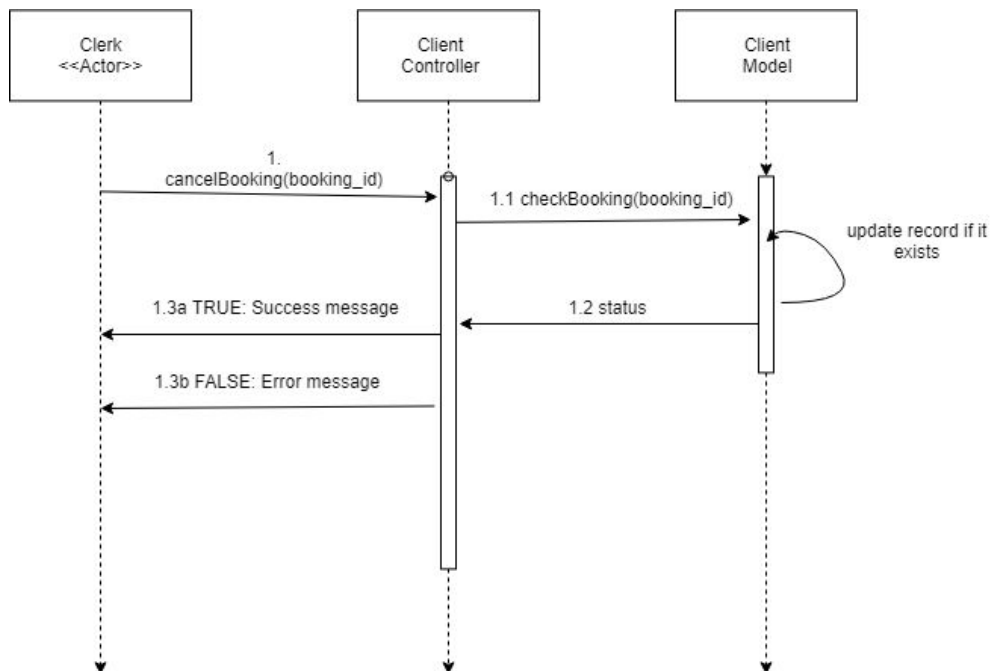


Figure 6.2:UC-7

4. Search Bookings

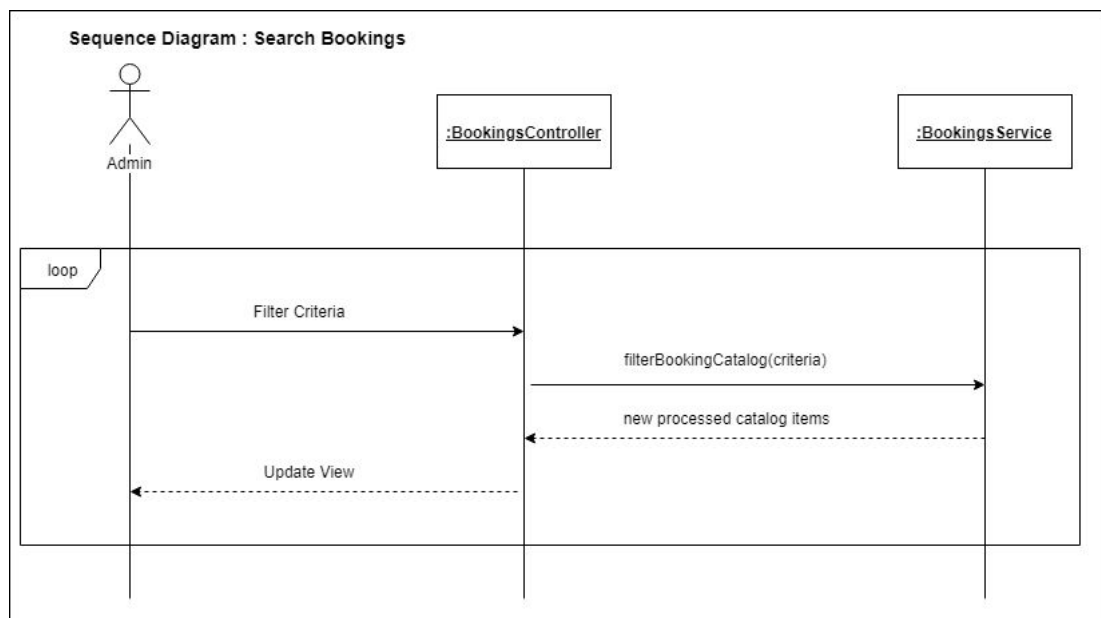


Figure 6.3:UC-9

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

5. Manage Vehicle Records

Sequence Diagram for View Catalog for Vehicle Visible to Admin/Filtering

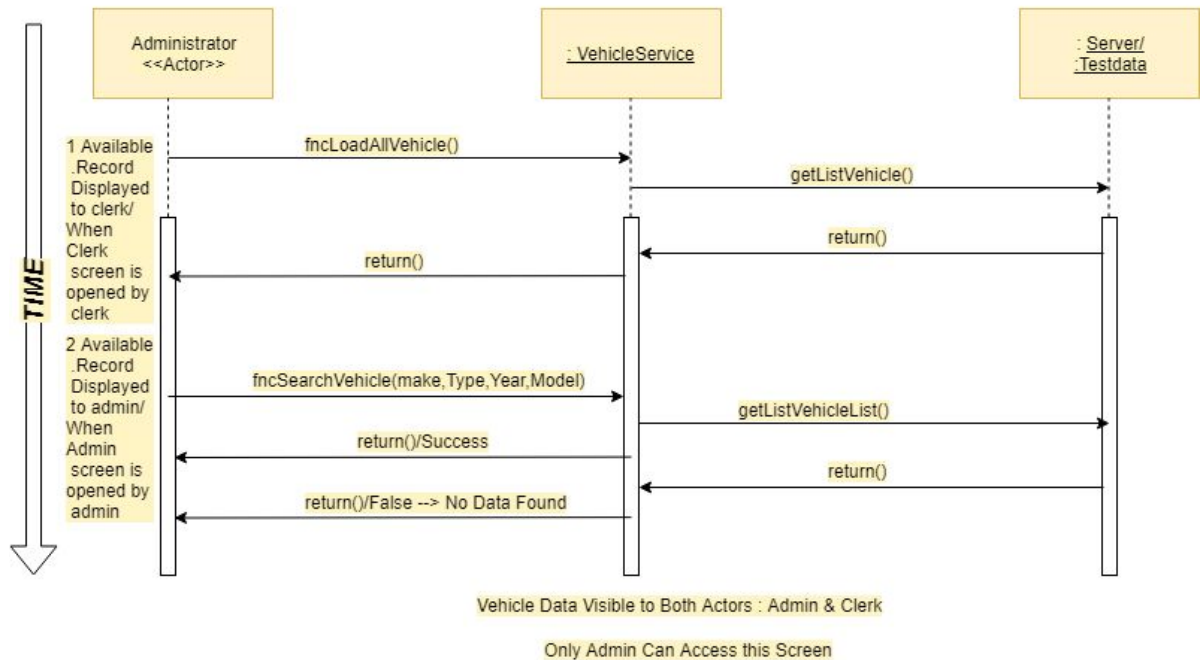


Figure 6.4:UC-10

Sequence Diagram for Add Vehicle by Admin

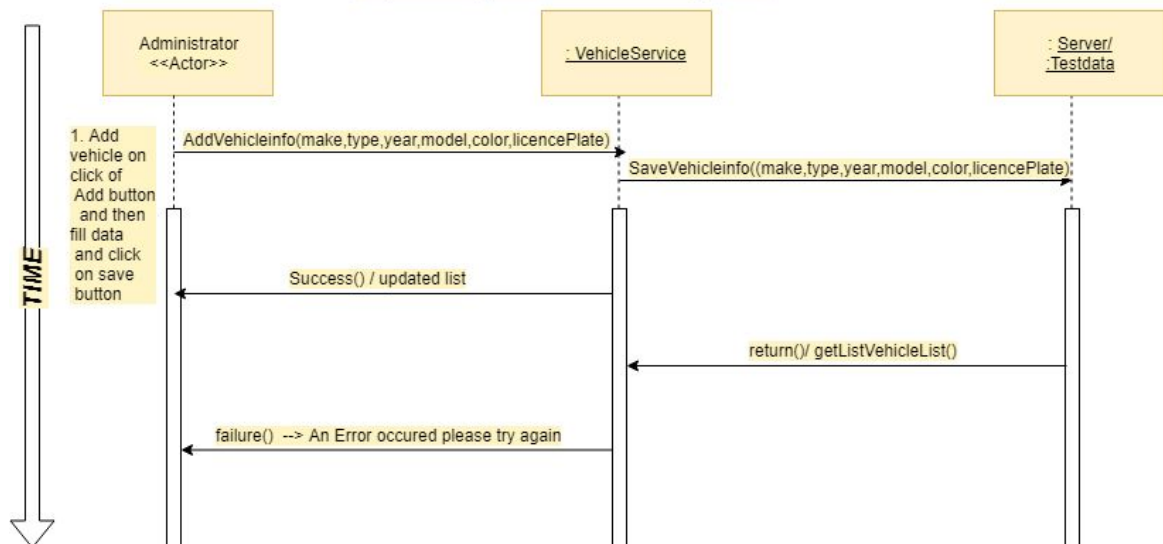


Figure 6.5:UC-10

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

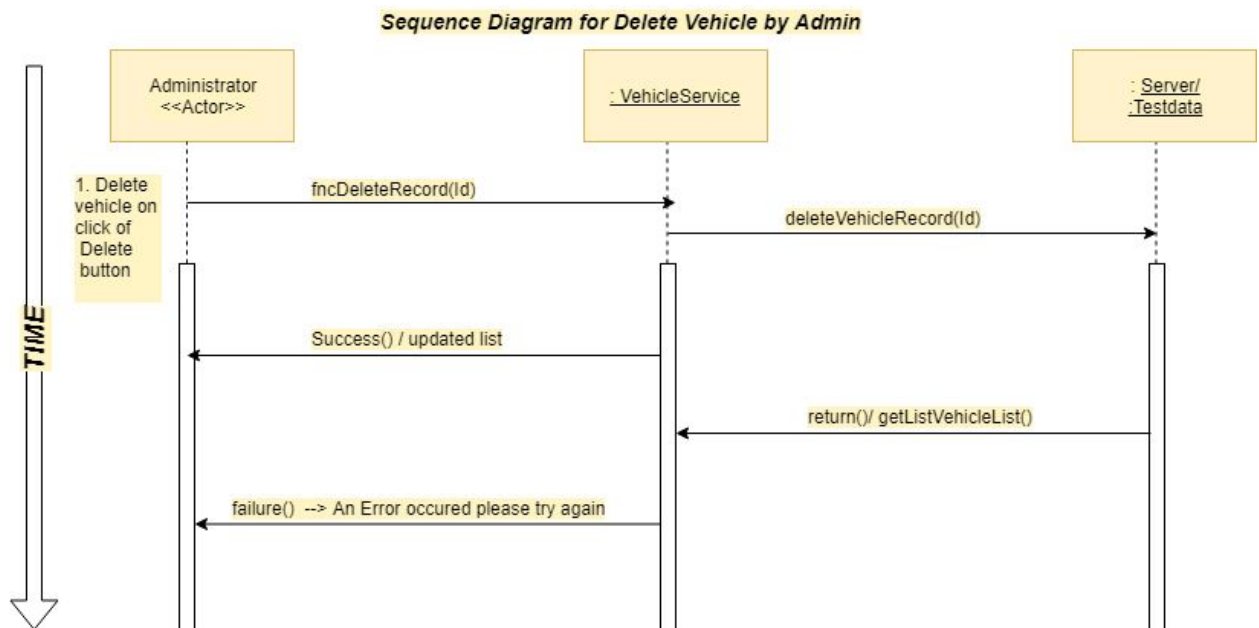


Figure 6.6:UC-10

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Conceptual Class Diagram

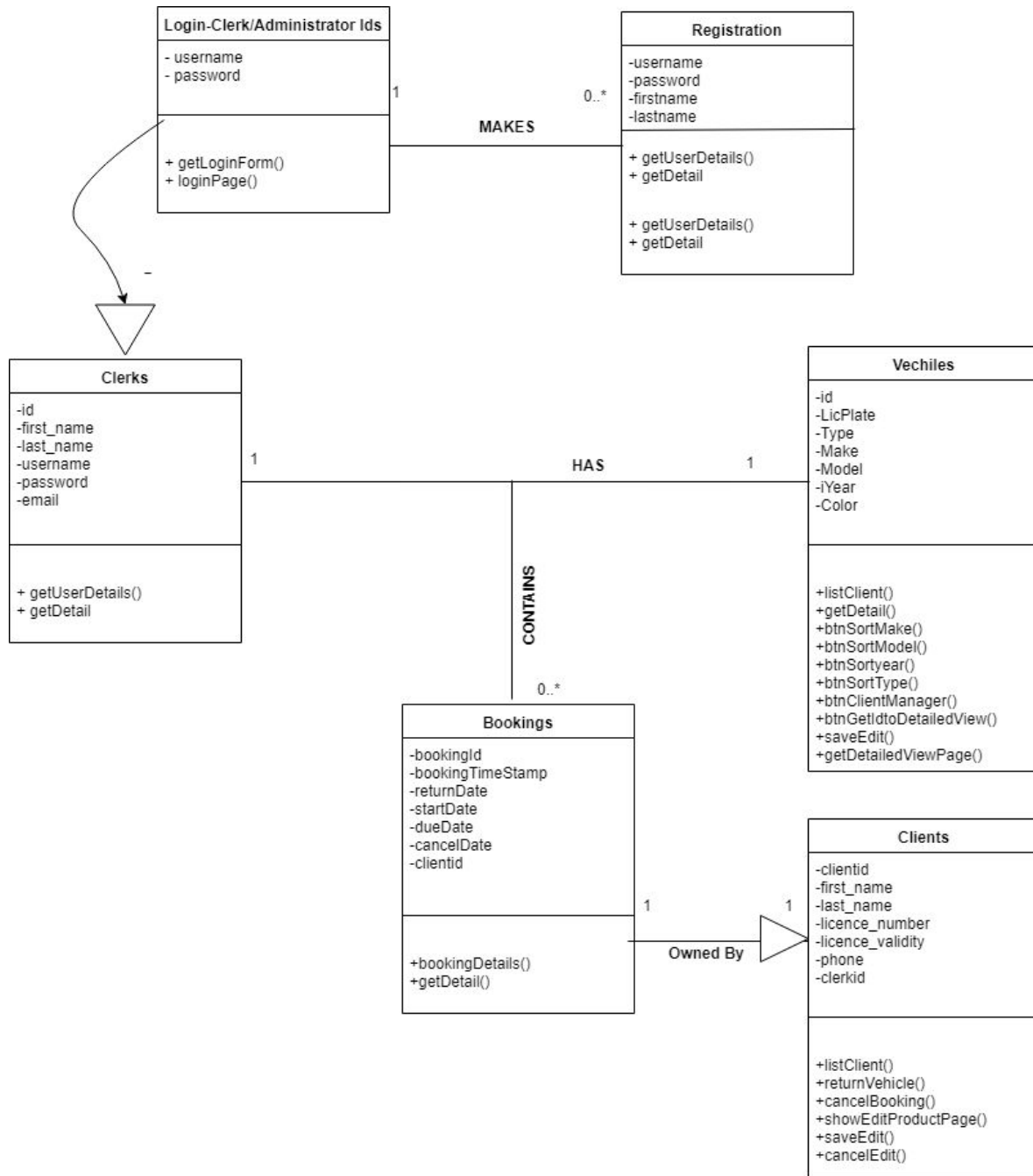


Figure 6.7:Conceptual Class Diagram

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

System Operations

SYSTEM OPERATIONS DEVELOPED BASED ON ITERATION 1

Clerk	Adminstrator
1. loadVehicleListToAssign() 2. fncSearchAddedVehicle(color,type,make,lisensePlate,model,year) 3. SortbasedOnMake(order) // ASC --> DESC, DESC-- >ASC 4. SortbasedOnType(order) // ASC --> DESC, DESC-- >ASC 5. SortbasedOnyear(order) // ASC --> DESC, DESC-- >ASC 6. SortbasedOnModel(order) // ASC --> DESC, DESC-- >ASC7 . 7. bookVehicleNow(id) 8. btnNextVehicleDetails(id) 9. bookVehicle(clientVehicleStartDate,clientVehicleReturnDate,FirstName,lastname,LiscenceExpirredDate,Clerkid,TimeStampstore) .	NONE

SYSTEM OPERATIONS DEVELOPED BASED ON ITERATION 2

Clerk	Adminstrator
NONE	1. loadVehicleList() 2. addSaveVehicleRecord(color,type,make,lisensePlate,model,year) 3. deleteVehicleRecord(id) 4. updateVehicleRecord(id) 5. fncSearchAddedVehicle(color,type,make,lisensePlate,model,year)

Figure 6.8: System Operations

Operation Contracts

Identification	OC-001
Description	View all Vehicle list for Clerk.
Version	1.0
Priority	High
Type	Functional
Risk	High
Pre-conditions	After Login Clerk should able to view all the available/not available list of vehicles added by Administrator.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Post conditions	Clerk can Search, Sort,View Details to book vehicle	
Initiating Actors	Clerk	
Actor's Goal	To view all vehicles list after login screen .	
Trigger	Clerk logged in to view the vehicle List.	
Main Scenario	Step	Action
	1.	Enter your username and password and you will be landed on the vehicle Catalog.
	2.	Vehicle list contains column like (Make,Year,Year,Model).
Extensions	Step	Branching Action
	2a.	View Vehicle list and further detailed view and Booking Catalog.

Identification	OC-002
Description	Search vehicle based on the Make,Model,Year,Type by Clerk.
Version	1.0
Priority	Medium
Type	Functional
Risk	Medium
Pre-conditions	Table will get loaded automatically with vehicle list.
Post conditions	Clerk can put parameters in textbox such as the Make,Model,Year,Type and search the vehicle what they are looking for.
Initiating Actors	Clerk

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Actor's Goal	To look for a vehicle for a client which he is looking for based on availability and search type criteria.	
Trigger	Clerk can click on the search button to view filtering criteria and put parameters like Make,Model,Year,Type.	
Main Scenario	Step	Action
	1.	Put parameter like Make,Model,Year,Type and click on search to view the record in the vehicle.
	2.	By default on clicking on <<Search Button>> all vehicle catalog will get filled by default.
Extensions	Step	Branching Action
	2a.	On click on view Details clear will be landed on Detailed View list.

Identification	OC-003
Description	Sort Vehicle list based column such as the make,model,year,Type [Based on Dataset] shown in table. ASC-->DESC, DESC-->ASC.
Version	1.0
Priority	Medium
Type	Functional
Risk	Medium
Pre-conditions	Dataset/Vehicle record should be loaded into the table
Post conditions	Clerk can click on any of the button name as follows: 1.Sort by make : (ASC->DESC),(DESC-->ASC) 2.Sort by model : (ASC->DESC),(DESC-->ASC) 3.Sort by year : (ASC->DESC),(DESC-->ASC) 4.Sort by Vehicle type : (ASC->DESC),(DESC-->ASC)

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Initiating Actors	Clerk	
Actor's Goal	To sort vehicle list based on parameters from [A-Z][Z-A](Alphabets) / [Lowest-Highest][Highest-Lowest](Numbers)	
Trigger	Click on button which are as follows : 1.Sort by make 2.Sort by model 3.Sort by year 4.Sort by Vehicle type	
Main Scenario	Step	Action
	1.	On loading up of data clerk can click on button to sort dataset/Vehicle record in order clerk is looking for.
Extensions	Step	Branching Action
	2a.	Clerk can click on the View details to view details on detailed view.

Identification	OC-004
Description	Click on the View Details/per record to view the Vehicle Details in detailed View and press next button to view next vehicle details stored in Detailed view [next button functionality].
Version	1.0
Priority	High
Type	Functional
Risk	High
Pre-conditions	Click on the record for which you wanted to view the details in Detailed view.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Post conditions	Click on next button to view the details of next vehicle record	
Initiating Actors	Clerk	
Actor's Goal	<ol style="list-style-type: none"> 1. To press View details : To view the record in detailed view. 2. To press Next button : To view the next vehicle record based on the current vehicle. 	
Trigger	Press button <<View Details>> -->> press <<Next>>	
Main Scenario	Step	Action
	1.	Press View Detail Button on Vehicle Catalog
	2.	Press Next button to view next record for the vehicle.
Extensions	Step	Branching Action
	2a.	You can click on <<Book Now>> button to book the current vehicle and redirect to Booking form for booking Confirmation.

Identification	OC-005
Description	Click on <<BookNow>> Button to book the vehicle
Version	1.0
Priority	High
Type	Functional
Risk	High
Pre-conditions	Vehicle should be available too book on Detailed View otherwise book Now button is disbaled on Detailed view Screen.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Post conditions	If clicked on <<book Now>> button the vehicle will get booked for the client and saves all the info which is shown on Client/ booking CatalogScreen for Modify/Return.	
Initiating Actors	Clerk	
Actor's Goal	To book a vehicle for a client based on the vehicle availability.	
Trigger	Fill in the following details : 1.First Name 2.Last Name 3.Driver License Number 4.Phone No. 5.Reservation Date 6.Return Date 6. Driver License Expired Date and Click on <<book Now>> button	
Main Scenario	Step	Action
	1.	Click the <<Book Now>> button if vehicle is available in detailed view.
	2.	Click the <<Book Now>> button if all the details are filled in booking form.

Identification	OC-006
Description	View all Vehicle list for Administrator
Version	1.0
Priority	Medium
Type	Functional
Risk	Medium
Pre-conditions	After Login Administrator should be able to view all the vehicles added by Administrator.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Post conditions	Administrator can Add/Edit/Delete the vehicle which can be viewed and booked by clerk for a client.	
Initiating Actors	Administrator	
Actor's Goal	To view all vehicles list after login screen .	
Trigger	Administrator logged in to view the vehicle List.	
Main Scenario	Step	Action
	1.	Enter your username and password and you will be landed on the vehicle Master.
	2.	Vehicle list contains column like (Make,Year,Year,Model).
Extensions	Step	Branching Action
	2a.	View Vehicle list and further add/modify/Delete vehicle records.

Identification	OC-007
Description	Search vehicle based on the Make,Model,Year,Type by Administrator
Version	1.0
Priority	Medium
Type	Functional
Risk	Medium
Pre-conditions	Table will get loaded automatically with vehicle list.
Post conditions	Administrator can put parameters in textbox such as the Make,Model,Year,Type and search the vehicle what they are looking for.

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Initiating Actors	Administrator	
Actor's Goal	To look for a vehicle exist in vehicle master by using filtering criteria.	
Trigger	Administrator can click on the search button to view filtering criteria and put parameters like Make,Model,Year,Type.	
Main Scenario	Step	Action
	1.	Put parameter like Make,Model,Year,Type and click on search to view the record in the vehicle.
	2.	By default on clicking on <<Search Button>> all vehicle catalog will get filled by default.
Extensions	Step	Branching Action
	2a.	Administrator Can do various functionalities such as <ul style="list-style-type: none"> 1. Add a vehicle 2. Remove a vehicle 3. Delete a vehicle

Identification	OC-008
Description	Save Vehicle record on click of <<Add>> button
Version	1.0
Priority	High
Type	Functional
Risk	High

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Pre-conditions	Load the Vehicle master table.	
Post conditions	After <<Save>> button administrator should be redirected back to vehicle master page.	
Initiating Actors	Administrator	
Actor's Goal	To add a new vehicle and after filling all the records click on <<Save>> button	
Trigger	Click on <<Add>> button to open addEditVechileMaster and Click on <<save>> button	
Main Scenario	Step	Action
	1.	Click on <<Add>> button
	2.	Click on <<Save>> button
Extensions	Step	Branching Action
	2a.	Administrator can also perform Delete and Edit Functionality

Identification	OC-009
Description	Modify Vehicle record on click of <<Edit>> button
Version	1.0
Priority	High
Type	Functional
Risk	High

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Pre-conditions	Load the Vehicle master table.	
Post conditions	After clicking on <<Edit>> button administrator will update the fields and click on <<update>> button	
Initiating Actors	Administrator	
Actor's Goal	To edit a new vehicle and after filling all the records click on <<Save>> button	
Trigger	Click on <<Edit>> button to open addEditVechileMaster and Click on <<Update>> button	
Main Scenario	Step	Action
	1.	Click on <<Edit>> button
	2.	Click on <<Update>> button
Extensions	Step	Branching Action
	2a.	Administrator can also perform Delete Functionality

Identification	OC-010
Description	Delete Vehicle record on click of <<Delete>> button
Version	1.0
Priority	High
Type	Functional
Risk	High
Related Requirements:	RQ-9
Pre-conditions	Load the Vehicle master table.
Post conditions	After <<Delete>> button administrator should delete the current vehicle record.
Initiating Actors	Administrator

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019

Actor's Goal	To delete a vehicle click on <<delete>> button	
Trigger	Click on <<delete>> button	
Main Scenario	Step	Action
	1.	Click on <<delete>> button

Use Case and Functional Requirements Mapping

		USE CASES									
		UC-1	UC-2	UC-3	UC-4	UC-5	UC-6	UC-7	UC-8	UC-9	UC-10
FUNCTIONAL REQUIREMENTS	REQ-001	X									
	REQ-002		X								
	REQ-003			X							
	REQ-004				X						
	REQ-005				X						
	REQ-006					X					
	REQ-007					X					
	REQ-008							X			
	REQ-009							X			
	REQ-010							X			
	REQ-011							X			
	REQ-012						X				
	REQ-013						X				
	REQ-014										X
	REQ-015									X	
	REQ-016									X	

SOEN6461- Team 11	Version:1.2
Software Requirements Specification	Date: 27-09-2019