System Development Report

Online

Vehicle Rental System

For Thaj Rent A Car (Pvt.) Ltd.

INTE 34263 – System Development Project

Name of the Supervisor: Dr. Ruwan Wickramarachchi

By

M.Infas Ahamed

IM/2017/004

Bachelor of Science (Honors) in Management & Information Technology

Department of Industrial Management

Faculty of Science

University of Kelaniya

Sri Lanka

2020

DECLARATION

I hereby certify that this project and all the artifacts associated with it is my own work and it has not been submitted before nor is currently being submitted for any other degree program.

Full name of the student: Muzakkeen Infas Ahamed

Student No: IM/2017/004

Signature of the student: ……. Date: 7/26/2021

Name of the supervisor: Dr. Ruwan Wickramarachchi

Signature of the supervisor: …….. Date:……

ACKNOWLEDGMENT

I express my sincere gratitude to my Project Supervisor, Dr. Ruwan Wickramarachchi for the continuous support and for being the pillar of strength in succeeding the completion of this project. I thank my Project Coordinator Mr. Janaka Senanayake for the immense helping hand given throughout.

I also would like to express thanks to Mr. R.M. Akram, proprietor of Thaj Rent A Car (Pvt)Ltd, for providing me with the required information and for the support.

I would like to thank all friends for extending their hand of friendship and providing moral support during preparation of this report.

I am always in debt with my parents who gave me the space I needed along with all the facilities to work hard on this project. And I also thank my family for helping me whenever I needed a hand

ABSTRACT

It is known globally that, in today's market, it is extremely difficult to start a new small-scale business and live-through the competition from the well-established and settled owners. In fast paced time of today, when everyone is squeezed for time, most people are finicky when it comes to order a vehicle for the rent. The customers of today are not only attracted because placing an order online is very convenient but also because they have visibility into the items offered, price and extremely simplified navigation for the order.

Thaj Rent A Car has an inefficient vehicle rental system, customer management system They have identified many weaknesses in the current system which leads to inefficiency. Online rental system that I am proposing here, greatly simplifies the rental process, increase efficiency and provide better experience for both the customer and the administration. And provide better decision support reports for management by analyzing rental details and data.

This document contains the system analysis and design for Online Vehicle Rental System for Thaj Rent A Car (Pvt)Ltd which is a way more efficient source of support for decision making.

Table of Contents

DECLARATION i

ACKNOWLEDGMENT ii

ABSTRACT iii

CHAPTER 1 – INTRODUCTION 1

1.1 Description about the business organization and the business area 1

1.2 Business process 1

1.3 Problem definition 3

1.4 Aims and Objectives. 3

1.5 Scope with clear boundaries 5

1.6 Organization of the dissertation 6

1.6.1 Chapter 1 - Introduction 6

1.6.2 Chapter 2 – System Analysis 6

1.6.3 Chapter 3 – System Design 7

1.6.4 Chapter 4 - Conclusion 7

1.7 Summary 7

CHAPTER 02 8

2.1 Requirement analysis 8

2.2 Overall Use Case Diagram for Existing System 9

2.3 Use case description for existing system. 10

2.4 Activity diagrams 12

2.4.1 Activity Diagram for Place Order 13

2.4.2 Activity Diagram for Confirm order 14

2.4.3 Activity Diagram for bill paying 15

2.4.4 Activity Diagram for Receiving Vehicle 16

2.4.5 Activity Diagram for Making Charges (Fine or penalties) 17

2.5 Activities to be computerized. 18

2.6 Software Requirement Specification (SRS) 18

2.6.1 User Story List 18

2.6.2 Functional and Non-functional Requirements 19

2.7 Business System Options (BSOs) 22

2.7.1 Business System Option Identification 22

2.7.2 BSO 1: Stand-alone application that supports the daily process of vehicle rentals 22

2.7.3 BSO 2: Web based system that would satisfy all basic functional and non-functional requirements along with online reservation and online registration of customers 23

2.7.4 BSO 3 – A web-based system associated with a mobile application that would satisfy all basic functional and non – functional requirements 24

2.8 Evaluation of the BSOs 24

2.8.1 Functional requirements vs BSOs 24
2.8.2 Non-Functional requirements vs BSOs 26
2.8.3 Cost benefit analysis 26
2.8.4 Selected BSO with Justification 26
2.9 Summary 27
CHAPTER 03 28
3.1 Overall Use case Diagram for proposed system 28
3.1.1 Use Case Diagram for Reservation 29
3.1.2 Use case Diagram for bill paying 30
3.1.3 Use Case diagram for handle My bookings 31
3.1.4 Use case diagram for handle vehicles 32
3.1.5 Use case diagram for handle Customer details 33
3.1.6 Use case Diagram for handle bookings 34
3.1.7 Use case diagram for handle inquiries 35
3.1.8 Use case diagram for handle reports 36
3.2 Activity diagram for proposed system 38
3.2.1 Activity diagram for reservation 38
3.2.2 Activity diagram for bill paying 39
3.2.3 Activity diagram for handle my booking 40
3.2.4 Activity Diagram for handle vehicles 41
3.2.5 Activity Diagram for handle Customers 42
3.2.6 Activity diagrams for handling the bookings 43
3.2.7 Activity diagram for handling inquiries 44
3.2.8 Activity Diagram for handling reports 45
3.3 Class diagram 45
3.4 Entity relationship Diagram 47
3.5 Normalized data base design 48
3.6 Sequence Diagram 49
3.6.1 Use case diagram for reservation 49
3.6.2 Use case Diagram for Bill paying 51
3.6.3 Sequence diagram for handle my bookings 52
3.6.4 Sequence diagram for handling the customer details 53
3.6.5 Sequence diagram for handling inquiry details 55
3.6.6 Sequence diagram for handling vehicle details 56
3.6.7 Sequence Diagram for handle bookings 57
3.6.8 Sequence diagram for handling report 58
3.7 Graphical User Interface 58

3.7.1 User interface for vehicle reservation 59
3.7.2 User interface for bill generation 63
3.7.3 User interface for my booking portal 64
3.7.4 User interface for Admin login 65
3.7.5 User interface for Admin Dashboard 65
3.7.6 User Interface for handle vehicles 66
3.7.7 User interface for handle the inquiries 69
3.7.8 User interface for handling customer details 69
3.7.9 User interface for handle the bookings 71
3.7.10 User interfaces for report generation 73
3.8 Summary 76
CHAPTER 4 – SYSTEM DEVELOPMENT 77
4.1 Programming Languages 77
4.2 Development Tools and Techniques 79
4.3 Third Party Components and Libraries 79
CHAPTER 5 – System Testing 81
5.1 Test Plan and Test Strategy 81
5.2 Test Cases 81
5.3 Test Report 86
CHAPTER 6 – System Installation 87
6.1 Installation Guide 87
6.2 User Manuals 88
CHAPTER 7 – CONCLUSION 114
7.1 Degree of the objectives met 114
7.2 Usability, accessibility, reliability and friendliness 114
7.3 User's Response 115
7.4 Limitations and Drawbacks 115
7.5 Future modifications, improvements and extensions possible 115
7.6 References 115

LIST OF FIGURES

FIGURE 1 SCOPE OF THE PROJECT 5
FIGURE 2 OVERALL USE CASE DIAGRAM OF EXISTING SYSTEM 9
FIGURE 3 ACTIVITY DIAGRAM FOR PLACE ORDER 13
FIGURE 4 ACTIVITY DIAGRAM FOR CONFIRMING ORDER 14
FIGURE 5 ACTIVITY DIAGRAM FOR BILL PAYING 15
FIGURE 6 ACTIVITY DIAGRAM FOR RECEIVING VEHICLE 16
FIGURE 7 ACTIVITY DIAGRAM FOR CHARGING 17
FIGURE 8 OVERALL USE CASE DIAGRAM FOR PROPOSED SYSTEM 28
FIGURE 9 USE CASE DIAGRAM FOR RESERVATION 29
FIGURE 10 USE CASE DIAGRAM FOR BILL PAYING 30
FIGURE 11 USE CASE DIAGRAM FOR HANDLING MY BOOKING 31
FIGURE 12 USE CASE DIAGRAM FOR HANDLING VEHICLES 32
FIGURE 13 USE CASE DIAGRAM FOR HANDLING CUSTOMER DETAILS 33
FIGURE 14 USE CASE DIAGRAM FOR HANDLING BOOKINGS 34
FIGURE 15 USE CASE DIAGRAM FOR HANDLING INQUIRIES 35
FIGURE 16 USE CASE DIAGRAM FOR HANDLING REPORTS 36
FIGURE 17 ACTIVITY DIAGRAM FOR RESERVATION 38
FIGURE 18 ACTIVITY DIAGRAM FOR BILL PAYING 39
FIGURE 19 ACTIVITY DIAGRAM FOR HANDLE MY BOOKINGS 40
FIGURE 20 ACTIVITY DIAGRAM FOR HANDLE VEHICLES 41
FIGURE 21 ACTIVITY DIAGRAM FOR HANDLE CUSTOMERS 42
FIGURE 22 ACTIVITY DIAGRAM FOR HANDLING THE BOOKINGS 43
FIGURE 23 ACTIVITY DIAGRAM FOR HANDLING INQUIRIES 44
FIGURE 24 ACTIVITY DIAGRAM FOR HANDLING REPORTS 45
FIGURE 25 CLASS DIAGRAM FOR PROPOSED SYSTEM 46
FIGURE 26 ENTITY RELATIONSHIP DIAGRAM FOR PROPOSED SYSTEM 47
FIGURE 27 NORMALIZE DATABASE DESIGN FOR PROPOSED SYSTEM 48
FIGURE 28 SEQUENCE DIAGRAM FOR CUSTOMER SIGN UP 49
FIGURE 29 SEQUENCE DIAGRAM FOR CUSTOMER INQUIRIES 49
FIGURE 30 SEQUENCE DIAGRAM FOR FILTER AND SEARCH 50
FIGURE 31 SEQUENCE DIAGRAM FOR FILLING BOOKING FORM 50
FIGURE 32 SEQUENCE DIAGRAM FOR BILL PAYING 51
FIGURE 33 SEQUENCE DIAGRAM FOR HANDLE MY BOOKINGS 52
FIGURE 34 SEQUENCE DIAGRAM FOR ADMIN LOG IN 53
FIGURE 35 SEQUENCE DIAGRAM FOR HANDLE CUSTOMER REGISTRATION AND FEEDBACKS 54
FIGURE 36 SEQUENCE DIAGRAM FOR HANDLING INQUIRIES 55
FIGURE 37 SEQUENCE DIAGRAM FOR HANDLING VEHICLE DETAILS 56
FIGURE 38 SEQUENCE DIAGRAM FOR HANDLING BOOKINGS 57
FIGURE 39 SEQUENCE DIAGRAM FOR HANDLING REPORT 58
FIGURE 40 GUI FOR HOME PAGE 59
FIGURE 41 GUI FOR INQUIRY OPTION 60
FIGURE 42 GUI FOR FILTER AND SEARCH 60
FIGURE 43 GUI FOR MY BOOKING FORM 61
FIGURE 44 GUI FOR CUSTOMER SIGN UP 61
FIGURE 45 GUI FOR CUSTOMER LOG IN 62
FIGURE 46 GUI FOR BILL GENERATION 63
FIGURE 47 GUI FOR ONLINE PAYMENT GATE WAY 63
FIGURE 48 GUI FOR MY BOOKING PORTAL 64
FIGURE 49 GUI FOR ADMIN LOG IN 65
FIGURE 50 GUI FOR ADMIN DASHBOARD 65
FIGURE 51 GUI FOR VEHICLE BRANDS 66
FIGURE 52 GUI FOR POST NEW VEHICLE BRANDS 66
FIGURE 53 GUI FOR UPDATE VEHICLE BRANDS 67

FIGURE 54 GUI FOR POST NEW VEHICLES....67
FIGURE 55 GUI FOR VEHICLE DETAILS....68
FIGURE 56 GUI FOR UPDATE VEHICLE DETAILS....68
FIGURE 57 GUI FOR INQUIRY DETAILS....69
FIGURE 58 GUI FOR CUSTOMER REGISTRATION DETAILS....69
FIGURE 59 GUI FOR CUSTOMER FEEDBACK DETAILS....70
FIGURE 60 GUI FOR BOOKING DETAILS....71
FIGURE 61 GUI FOR BOOKING CONFIRMATION....71
FIGURE 62 GUI FOR SENDING CONFIRMATION MESSAGE....72
FIGURE 63 GUI FOR B/W REPORT GENERATION....73
FIGURE 64 GUI FOR SAMPLE B/W REPORT....73
FIGURE 65 GUI FOR BOOKING COUNT REPORT....74
FIGURE 66 GUI FOR SAMPLE BOOKING COUNT REPORT....74
FIGURE 67 GUI FOR SALES REPORT GENERATION....75
FIGURE 68 GUI FOR SAMPLE SALES REPORT....75
FIGURE 69 HOME PAGE....89
FIGURE 70 FILTER VEHICLE....90
FIGURE 71 VEHICLE LIST....91
FIGURE 72 VEHICLE DETAILS....92
FIGURE 73 SUBSCRIBE NEWSLETTER....93
FIGURE 74 CONTACT US PAGE....94
FIGURE 75 CUSTOMER REGISTRATION....95
FIGURE 76 USER LOG IN....96
FIGURE 77 RESET PASSWORD....97
FIGURE 78 USER SETTINGS....98
FIGURE 79 BOOKING FORM AND BOOKING SUCCESSFUL NOTIFICATION....98
FIGURE 80 BOOKING FORM....99
FIGURE 81 PASSWORD UPDATE....100
FIGURE 82 POST TESTIMONIALS....101
FIGURE 83 MY TESTIMONIALS....102
FIGURE 84 MY BOOKING....103
FIGURE 85 ADMIN DASHBOARD....104
FIGURE 86 ADMIN LOG IN....105
FIGURE 87 CREATE BRAND....105
FIGURE 88 MANAGE BRANDS....106
FIGURE 89 MANAGE TESTIMONIALS....106
FIGURE 90 MANAGE SUBSCRIPTION....107
FIGURE 91 REGISTERED USERS....107
FIGURE 92 CHANGE PASSWORD....108
FIGURE 93 MANAGE CONTACT US QUERIES....108
FIGURE 94 MANAGE PAGES....109
FIGURE 95 UPDATE CONTACT INFO....109
FIGURE 96 POST VEHICLES....110
FIGURE 97 MANAGE VEHICLES....110
FIGURE 98 NEW BOOKINGS....111
FIGURE 99 BOOKING CONFIRMATION....111
FIGURE 100 BOOKING RECEIPT....112
FIGURE 101 CONFIRMED BOOKING....112
FIGURE 102 CANCELLED BOOKINGS....113
FIGURE 103 BOOKING COUNT REPORT....113

LIST OF TABLES

TABLE 1 USE CASE DESCRIPTION OF UC10 10
TABLE 2 USE CASE DESCRIPTION OF UC20 10
TABLE 3 USE CASE DESCRIPTION OF UC30 11
TABLE 4 USE CASE DESCRIPTION OF UC40 11
TABLE 5 USE CASE DESCRIPTION OF UC50 12
TABLE 6 USER STORY LIST 19
TABLE 7 FUNCTIONAL REQUIREMENTS 21
TABLE 8 NON FUNCTIONAL REQUIREMENTS 21
TABLE 9 BSO VS FUNCTIONAL REQUIREMENTS COMPARISION 25
TABLE 10 BSO VS NON FUNCTIONAL REQUIREMENTS COMPARISION 26
TABLE 11 COST BENEFIT ANALYSIS 26
TABLE 12 USE CASE DESCRIPTION FOR UC10 30
TABLE 13 USE CASE DESCRIPTION FOR UC20 31
TABLE 14 USE CASE DESCRIPTION FOR UC30 32
TABLE 15 USE CASE DESCRIPTION FOR UC40 33
TABLE 16 USE CASE DESCRIPTION FOR UC50 34
TABLE 17 USE CASE DESCRIPTION FOR UC60 35
TABLE 18 USE CASE DESCRIPTION FOR UC70 36
TABLE 19 USE CASE DESCRIPTION FOR UC80 37
TABLE 20 TEST CASE 01 - USER REGISTRATION 82
TABLE 21 TEST CASE 02 - USER LOG IN 82
TABLE 22 TEST CASE 03 - FILTER AND SEARCH 82
TABLE 23 TEST CASE 04 - RESERVATION BOOKING 83
TABLE 24 TEST CASE 05 - ADD SUBSCRIPTION 83
TABLE 25 TEST CASE 06 - CONTACT US 83
TABLE 26 TEST CASE 07 - ADMIN LOG IN 84
TABLE 27 TEST CASE 08 - POST NEW VEHICLES 84
TABLE 28 TEST CASE 09 - CREATE NEW BRAND 84
TABLE 29 TEST CASE 10 - BOOKING CONFIRMATION 85
TABLE 30 TEST CASE 11 - MANAGE PAGES 85
TABLE 31 TEST CASE 12 - UPDATE CONTACT 85
TABLE 32 TEST CASE 13 - BOOKING COUNT REPORT 85

CHAPTER 1 – INTRODUCTION

This chapter outlines the introduction of the company, nature of the business, the current business process and issues. Furthermore, it analyses the objectives and aims of the proposed system, scope and boundaries and organization of the dissertation.

Outline of the Chapter

1.1 Description about the business organization and the business area

1.2 Business Process

1.3 Problem Definition

1.4 Aims and Objectives

1.5 Scope with clear boundaries

1.6 Organization of the dissertation

1.7 Summary

1.1 Description about the business organization and the business area

The Thaj Rent A Car (Pvt.) Ltd. is an organization operated from Vavuniya District in Vavuniya Town, which has been approved by Divisional secretariat office of Vavuniya. As its names suggests, this organization is a vehicle rental place around Vavuniya Town. Their primary business is to renting vehicles like car, van, bus and motor bikes for general publics for the trips and journey or for their daily uses for those who don't have own vehicles at all.

This service is an important part of many people's life and is used all around the world to travel from place to place whether traveling on business with the family or on holidays outing, so this service is necessary to the people. Therefore, this private organization contains many types of vehicles based on the customer need and facilities.

1.2 Business process

At present, The Thaj Rent A Car (Pvt.) Ltd carries out its camping reservation process in a completely manual manner as follows.

As I mentioned above as a large vehicle rental system around Vavuniya town they give many rental services using vast amount of different types of vehicle, but they implement all their business processes related with customers in traditional way of selecting vehicle, booking

vehicle with the purpose of getting rental service and paying cash, get receipt for the payment notify the customer for the finishing date of rental services, vehicle checkup and complaining the damages of both customer and administration services were implemented in manual manner. Those processes consist of four actors such as customer, staff or clerk, cashier and manager for overall administration.

Considering of their usual manual method of organizational process which is made by two method by customers and organization first method is to customer visit to the reception staff and they show the available vehicle for the renting services and another method is that customer made phone call and asking the information of available cars from reception of organization.
In this process customer need to give the details like how many days he wants this vehicle, which purpose and which type of vehicle he wants, so reception clerk will check the availability of particular vehicle based on the customer details that he gave to reception. if a customer doesn't meet his or her desired vehicle, he or she would be recommended by another vehicle available for the service, if not he will be informed to wait his desired vehicle till that vehicle service is finished by another customer.

Once he meets his desired vehicle type, he is asked to submit the driving license details for the last confirmation with manager whether to accept his order or not, after the confirmation of his details he will be given the receipt with vehicle number, amount (deposit money and rental cost) including other necessary details of the vehicle to be rented. After that he have to pay the cash to cashier but until he doesn't pay the total cash, vehicle never will be delivered to him for rental services if he misses to pay total money before three day of getting rental service, he will be notified or discarded from rental services.

After the total payment he will be given a copy of stamped receipt and he submit it to the staff and get the vehicle for rental services and he is able to check the vehicle and notify the damages before starting his journey to the staff which is better to not get fined for unnecessary charges of the damages that was remaining before customer take over the vehicle. Eventually while returning the vehicle, staff check the vehicle whether there are any new damages after customer used the vehicle, if so, customer will be charged by staff or clerk from deposit many and he can get the receipt of the charge paid from customer. All what I mentioned above are their current process but it's very difficult to keep on going continuously so they need such web-based system to full fill their daily basis process of their rental services.

1.3 Problem definition

As a part of their high-level strategic review, the management of Thaj Rent A Car (Pvt)Ltd has identified the following major business problems experienced in their present vehicle rental process in their organization.

Here are the problems and weakness in accordance with the current process as follows.

- Since office performs recording customer information manually it takes much time
- Searching and data receiving mechanism of the system takes a lot of time.
- Data collection is not accurate and it's not timely manner.
- It is difficult to add replace delete and edit the required information.
- Checking the validity of input data is difficult.
- Since information is not collected timely and accurately, the output is not precise and on time.
- Processing the input data to get out put takes much time because of the manual system.
- It's difficult to check whether the output is valid or invalid.
- It's difficult to view some more additional information about renting service and vehicles.
- There is the loss of data when storage place gets natural disaster and other human made problems.
- Current system is manual system therefore it's not economical sufficient due to the wastage of materials and time.
- The services in current systems are not as fast as possible because of the service providers are busy with the paper and paper related activities.
- There is much more time spent for the vehicle reservation by customer and organizations staffs.

1.4 Aims and Objectives.

Through this system This organization is to resolve some major problems arising from current system of the renting services. Here are the aims and objectives that our system to meet after the development of the new system as follows.

- By using the system, the user eliminates duplication of the work required to maintain multiple databases.

- There is also less chance for error, because a record is only entered once any changes made to a record are automatically recorded throughout the system.
- The general objective is to change the manual system into web because of that many paper works are reduced, and less amount of time is consumed.
- Easy modern way to interaction between customers and organizational staffs.
- Easy to store and easily track customers information.
- Easy to manage all rental services and vehicle information.
- Daily update of information
- Reduce risk of customer and giving the reliable datas to consumer and seller.
- It might be a advertisement service and save time and profitable services and provide fast services to customers
- Provide an easy platform for people who are renting vehicles and can easily search and reserve vehicles.
- Manually collecting details through web
- User has simultaneous access to same data base containing vehicle availability and rental orders.

1.5 Scope with clear boundaries

Figure 1 Scope of the project

The main scope of this system is to computerize and make it online service for easy access to customers and easy maintenance to administrators, in accordance with the scope there are two roles considered in this system.

A. System Administrator

The system will provide a separate login to the system administrator.

Any modification to the system will be handled this user.

- Manage vehicle details vehicle details.
- Manage customer and booking details.
- Booking confirmation
- Generating reports

B. Registered Customer

- Create a profile including basic information.
- Search for the desired vehicle and view details.
- View availability of the vehicle
- Reserve suitable vehicle
- View basic cost details of the transaction.
- Leave comments about service details(feedback)
- Customer will be notified if unavailability of the when their required vehicle is available for renting.

C. Guest User

- Search and filter vehicle
- Enquiry option
- Registration

1.6 Organization of the dissertation

This project report covers the System Analysis and the System Design For the proposed Project online vehicle rental system for Thaj Rent A Car (Pvt)Ltd.

1.6.1 Chapter 1 - Introduction

Chapter 1 introduces the nature of the business, current business process, problems and the objectives of the proposed system. It clearly defines the scope and the boundaries.

1.6.2 Chapter 2 – System Analysis

Chapter 2 presents the clear analysis of the existing system and the requirement analysis of the system. It further analyses the available business system options (BSOs) and defines the best options to proceed with.

1.6.3 Chapter 3 – System Design

System Design is about the continuation of the project after the requirement analysis and specification. This chapter will offer a better understanding of the system behavior and interactions with the diagrams used. One diagram will lead to another to explain the functionality, entities and the relationships. By the end of the chapter, database design will show the tables which will be used in the system.

1.6.4 Chapter 4 - Conclusion

This chapter will summarize the report and provides a conclusion to all the things which have been discussed throughout the report. It also discusses the degree of objectives met, usability, accessibility, reliability, & friendliness, user's response, limitations and drawbacks, future modifications, improvements and extensions possible.

1.7 Summary

In the nature of business process, the introduction of the business environment was defined. Then the problems and issues were explained, through which the objectives were emphasized. Moreover, clear boundaries and scope for the system were enlightened.

CHAPTER 02

This chapter shows how the documentation of the existing system is working with the explanation of the use case diagram and sequence diagrams and BSOs and User stories

Outline of the chapter

2.1 Requirements analyze.

2.2 Use case diagram for existing system.

2.3 Use case description for existing system.

2.4 Activity diagrams

2.5 Activities to be computerized.

2.6 software requirement specification

2.7 business system options

2.8 Evaluation of the BSOs

2.9 summary

2.1 Requirement analysis

To analyze those requirements firstly the information was gathered through the questionaries and discussions with client of the organization.

2.2 Overall Use Case Diagram for Existing System

Figure 2 Overall use case diagram of existing system

This use case diagram depicts the overall process of existing system of organization.

In this chart main use cases are as follows

I. UC10-place order
II. UC20-confirm order
III. UC30-bill paying.
IV. UC40-receive vehicle.
V. UC50-charging

2.3 Use case description for existing system.

These following tables depict the use case descriptions of place order, confirmation, bill payment, receive vehicle and charges respectively including actors, normal flow of process and alternate flow of process.

Use case ID	UC10
Use case Name	Place order
Actors	Customer, Staff
Description	Placing order must be done by staff after the discussion of the customer
Normal flow	1. First customer should give details about driving license and other details about the journey 2. Select a vehicle 3. Staff check availability
Alternate flow	3.1. If not available recommend another vehicle
Post condition	Verify the customer details

Table 1 use case description of UC10

Use case ID	UC20
Use case Name	Confirm order
Actors	manager, Staff
Description	After the placing the order customer details including driving license should be verified by staff and manager
Pre-condition	Submit driving license
Normal flow	1. Staff submit the driving license details to manager 2. Verifying all those details
Alternate flow	2.1. If verification not accepted customer order will be rejected
Post condition	Request payments

Table 2 use case description of UC20

Use case ID	UC30
Use case Name	Bill paying
Actors	customer, Staff, cashier
Description	After the confirmation of the order customer should pay at least deposit money for rental services
Pre-condition	Order Should be confirmed by manager
Normal flow	1. Staff give the bill of fees. 2. Pay it to cashier. 3. Cashiers issue the paid copy of the receipt. 4. Or Accepting Pay by card
Alternate flow	4.1. Credit card not verified and returned
Post condition	Submit the copy of paid receipt to staff

Table 3 use case description of UC30

Use case ID	UC40
Use case Name	Receive the vehicle
Actors	customer, Staff
Description	After the payment customer should submit the copy of the paid receipt and receive the rented vehicle
Pre-condition	Submit paid copy of the receipt issued by cashier
Normal flow	1. Staff receive the copy of paid receipt 2. Give the vehicle details and hand over the vehicle 3. Check vehicle
Alternate flow	3.1. If any damages that should be informed by customer to staff
Post condition	Start the journey

Table 4 use case description of UC40

Use case ID	UC50
Use case Name	Charging
Actors	Customer, staff
Description	After the journey when customer returning the vehicle staff should check the new damages of vehicle and fine the charges from customer
Pre-condition	Return the vehicle
Normal flow	1. Staff check the new damages 2. Customers finish the order
Alternate flow	2.1. If any damages staff should generate the bill for charge 2.2.Collect charge from deposit money 2.3.Issue the paid copy of receipt for the charges
Post condition	Finish the order

Table 5 use case description of UC50

2.4 Activity diagrams

Activity diagrams shows the flow of activities of the system here the sequence diagram represents each use case diagram in a efficient way , further those sequence diagram shows the interaction between actors how they are connected each other.

2.4.1 Activity Diagram for Place Order

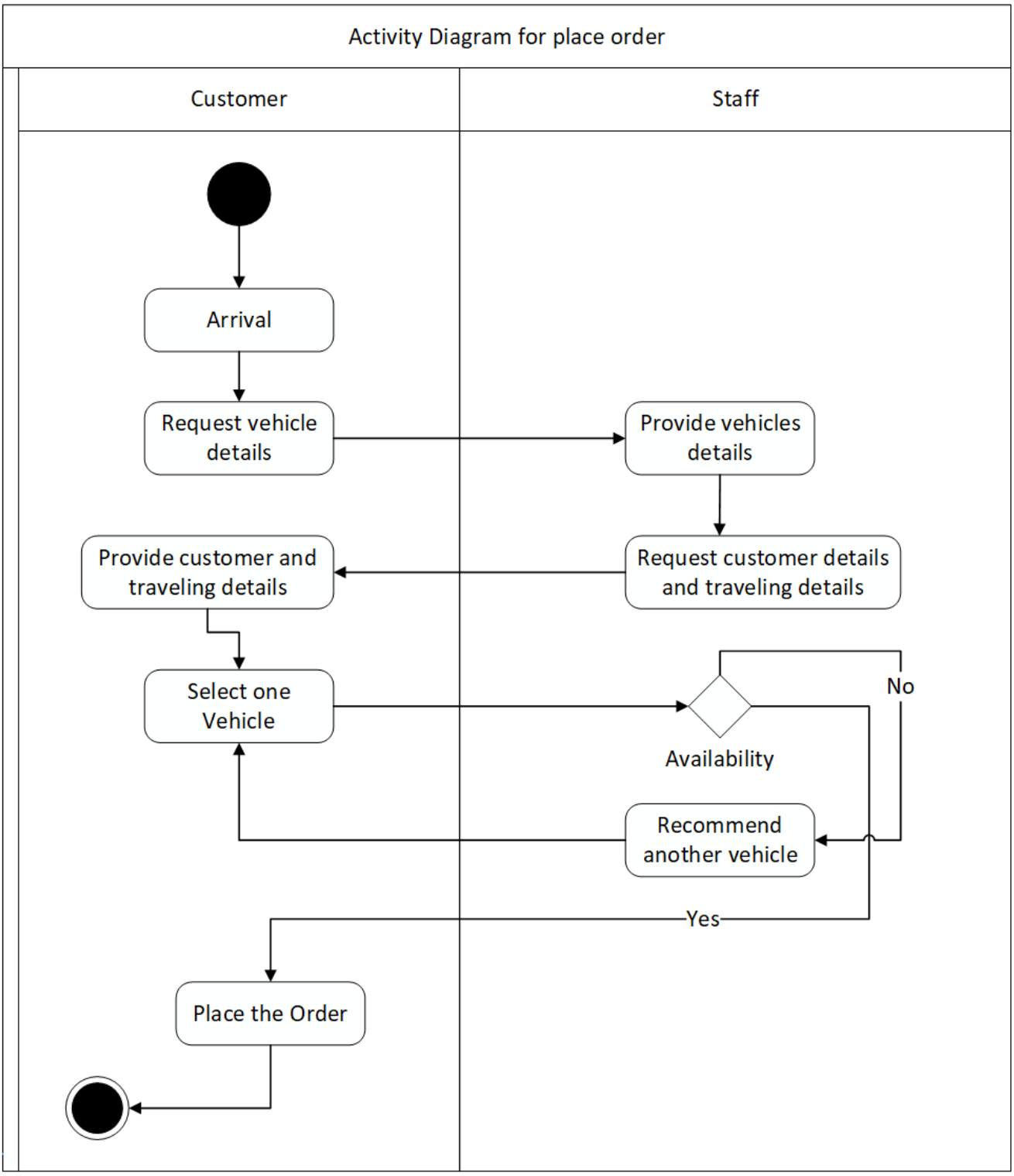

Figure 3 Activity diagram for place order

2.4.2 Activity Diagram for Confirm order

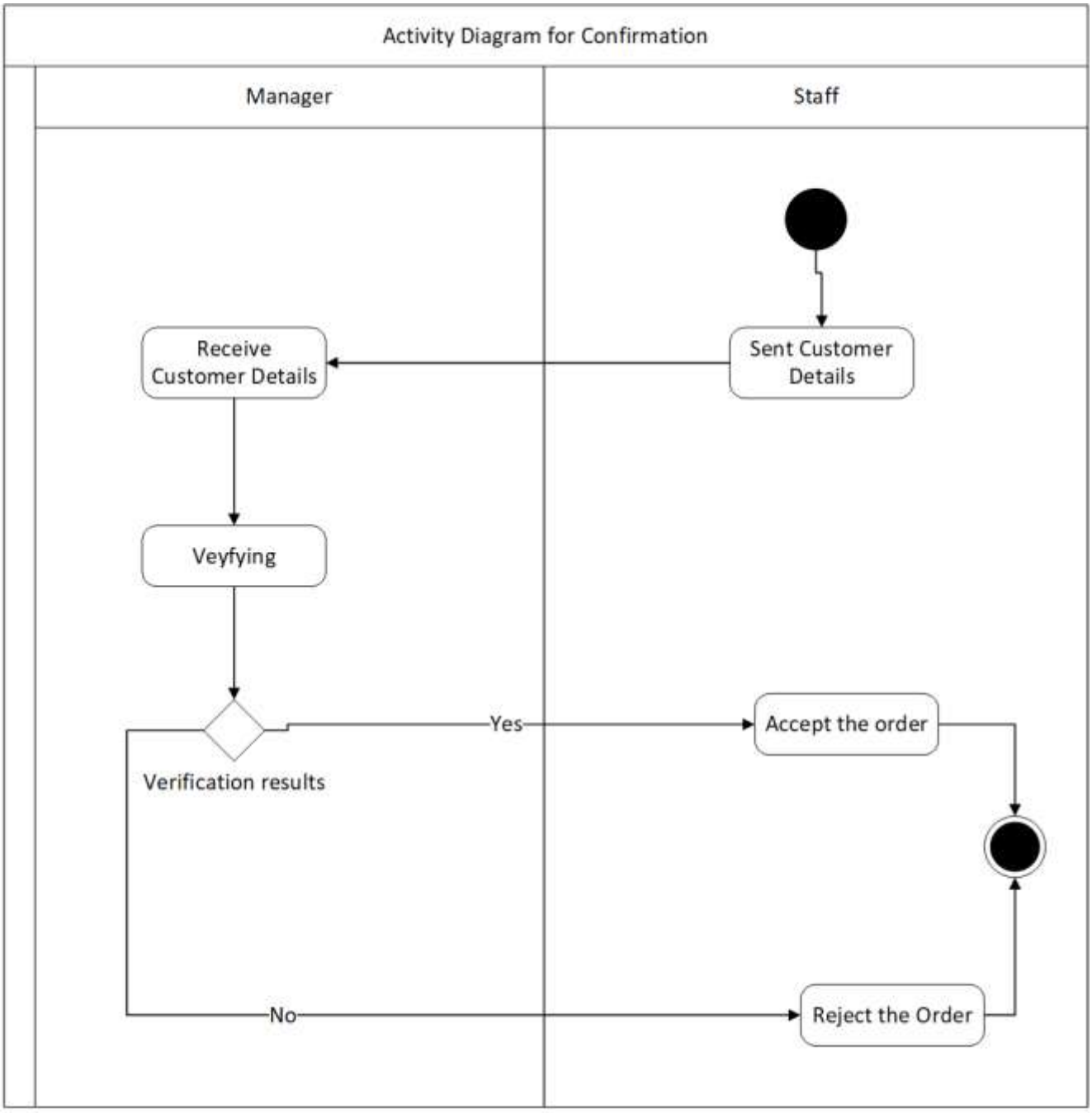

Figure 4 Activity diagram for confirming order

2.4.3 Activity Diagram for bill paying

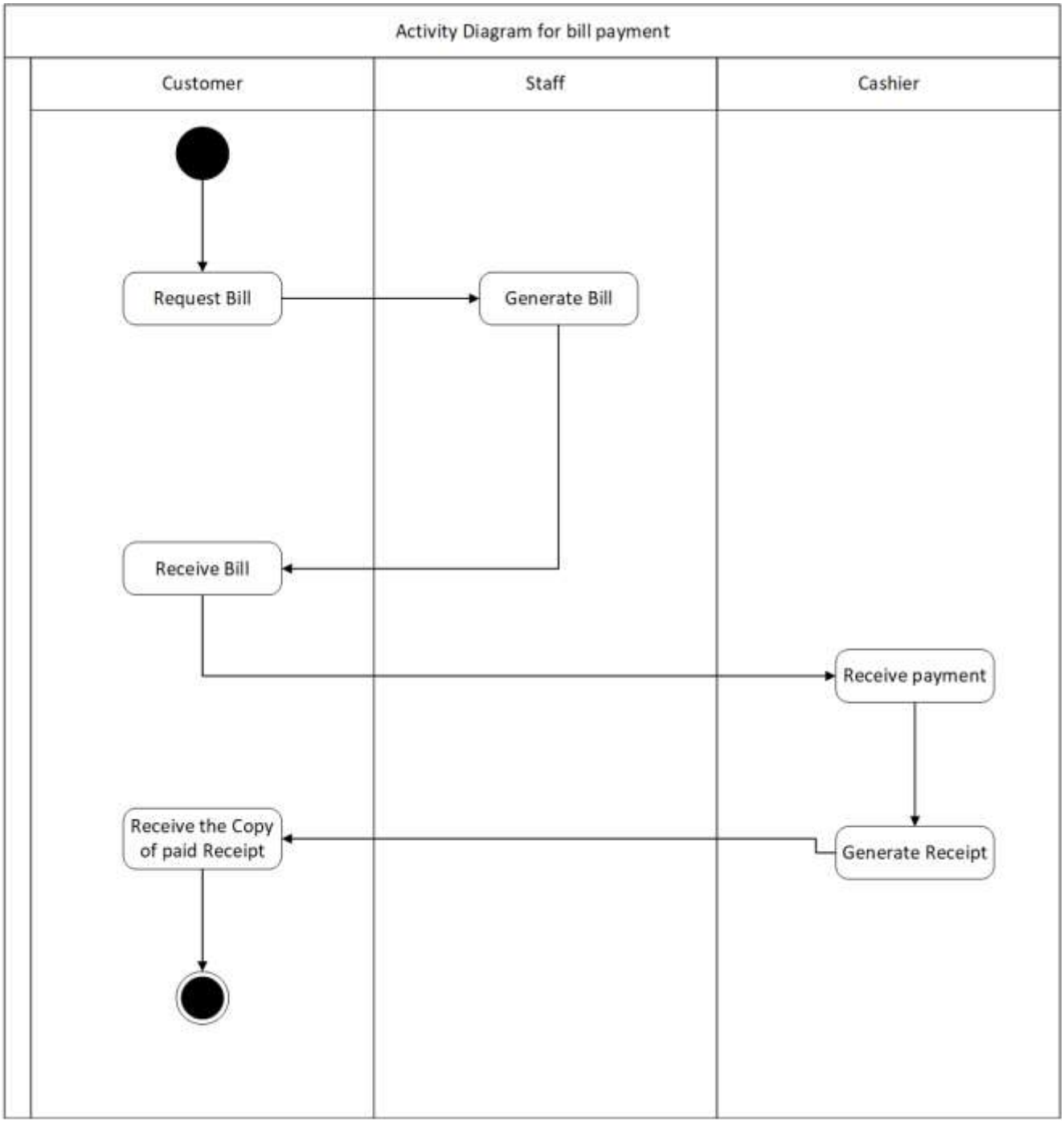

Figure 5 Activity diagram for bill paying

2.4.4 Activity Diagram for Receiving Vehicle

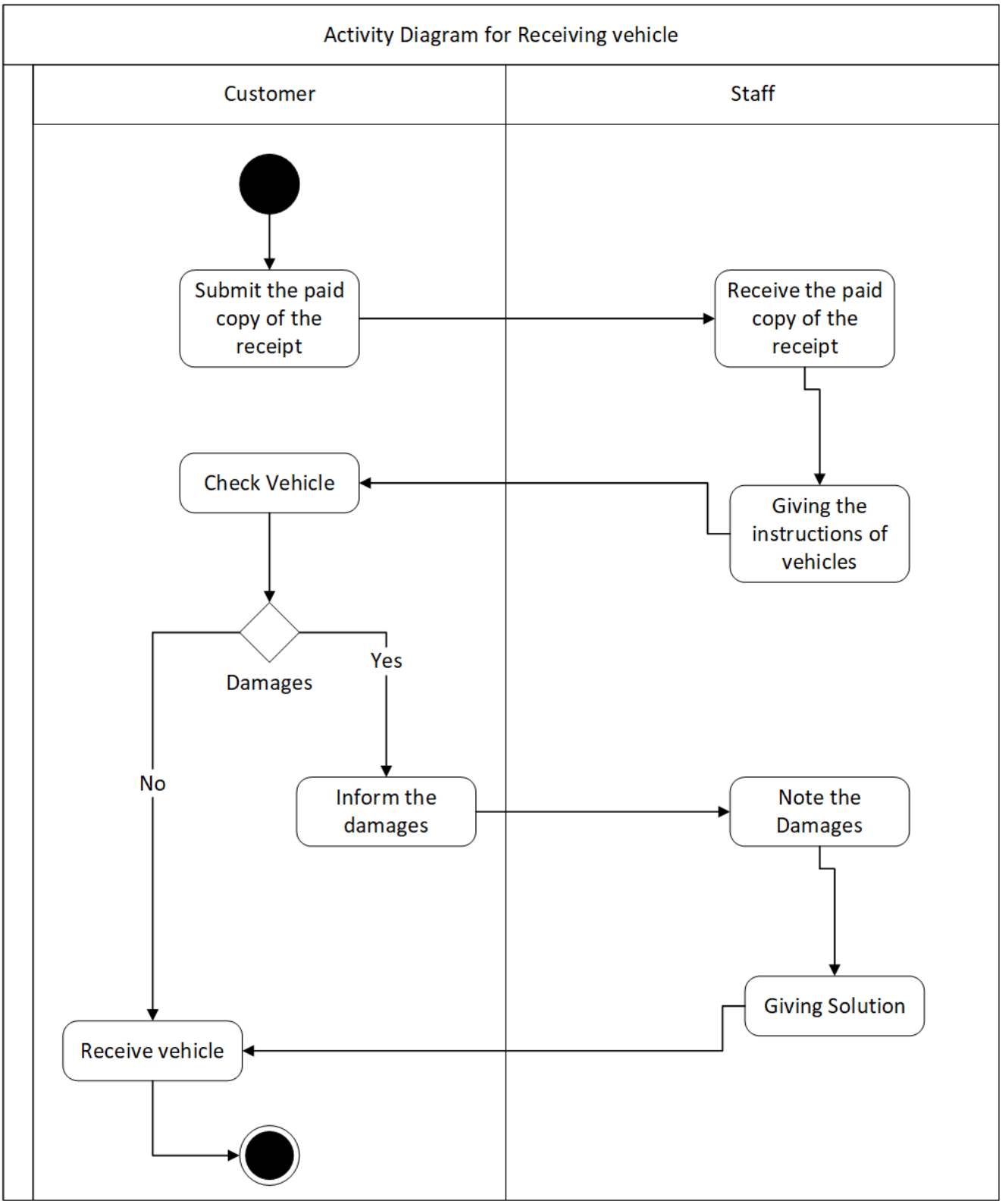

Figure 6 Activity diagram for receiving vehicle

2.4.5 Activity Diagram for Making Charges (Fine or penalties)

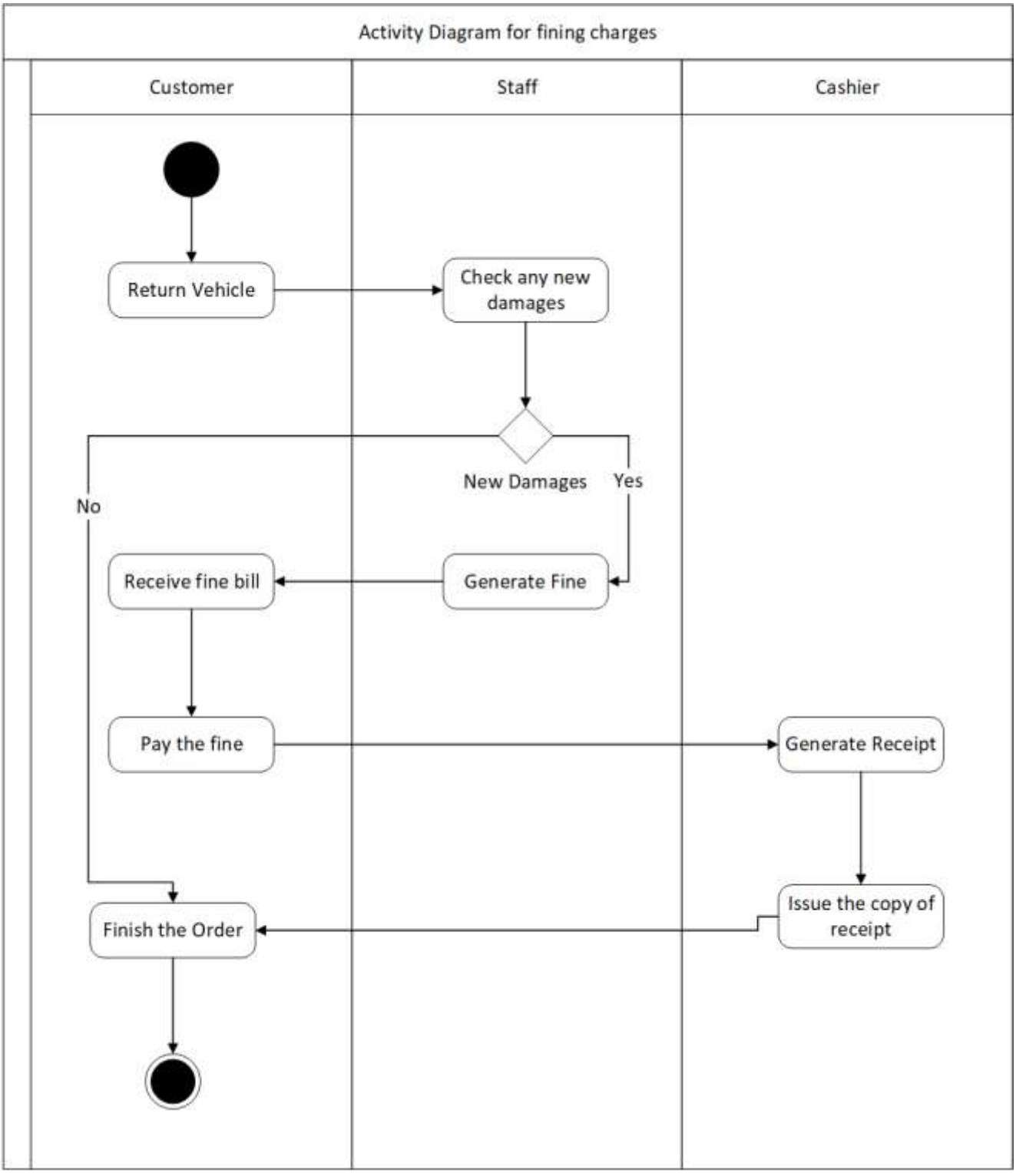

Figure 7 Activity diagram for charging

2.5 Activities to be computerized.

- Place order

  Till now this is a manual process in the existing system and in will be computerized through this web-based system where customer can easily view the vehicle details and he can be able to book online and submit the license details via this web application.

- Confirmation

  This process is also now in manual process, but it can be easily fulfilled by online through this web application where admin easily confirm the bookings of customers and customer can be able to see the confirmation through the system

- Bill payment

  These activities are now undergoing in manual process so after the system modification it will be computerized and enable to easily view the bill of the rental services.

- Check damages of vehicle.

  The proposed system has the option to upload the vehicles damages when picking up the vehicle show it helps the administration for the decisions about charges on damages.

- Handle vehicle details

  Through the system vehicle details can be easily managed and identified by administrators

- Handle customer details

  Through the system organization easily can collect the customer details, inquiries and feedbacks of customers and their booking details as well.

2.6 Software Requirement Specification (SRS)

2.6.1 User Story List

User Stories are used to explain the description of a software feature from an end user perspective. User story contains the type of user , what User want and why following table consist of main user stories and explains the functional and nonfunctional features describe by different type of users

ID	User Story
US -1	As a customer I want to reserve the vehicle for my rental service through online and I need a way to see and select the vehicle that I want to rent.
US-2	As a customer I want to get the payment bill in efficient way, and I want to keep those documents whenever I want to use it
US-3	As a customer I want to post feedback and inquiries that could easily reach the admin
US-4	As a customer I need a way to view my booking confirmation directly in a efficient manner
US-5	As a customer I can be able to notify the damages of the vehicle in a efficient manner
US-6	As a manager I want a way to easily handle my customer details and booking details of my customer
US-7	As a manager I can be able to confirm and send the confirmation to customer directly and fast
US-8	As a manager I want to easily verify the customers booking
US-10	As a manager I want to easily manage the vehicle details and I need a way to well organize my vehicle list
US-11	As a manager I want to generate reports in a efficient way
US-12	As a manager I want to easily identify vehicle status whether it is available or not

Table 6 User story list

2.6.2 Functional and Non-functional Requirements

Functional Requirements

Functional Requirements describe what the system should be able to do in order to satisfy the main objective of it. Mainly these requirements describe what are the task of functions which the system can perform after the implementation.

Requirement		Priority H/M/L	M/O	Weight H/M/L
1. Shall be able to Register customers		H	M	H
2. Shall be able to login to the system		H	M	H
	2.1 Shall be able to facilitate customers to log in to the system	H	M	H
	2.2 Shall be able to facilitate admin to log in to the system	H	M	H

3. Shall be able to reset password and profile		H	M	H
4. Shall be able to display vehicles		H	M	H
	4.1 Shall be able to allow guest user to view vehicles	H	M	H
	4.2 Shall be able to allow guest user and customer to enquire about vehicles	H	M	H
5. Shall be able to show each vehicle details under each vehicle's category		H	M	H
6. Shall be able to show that particular vehicle is on rental or not		H	M	H
7. Shall be able to select a vehicle from list		H	M	H
8. Shall be able to book a vehicle		H	M	H
	8.1 Shall be able to fill the booking form	H	M	H
	8.2 Shall be able to upload the scan copy of driving license	H	M	H
9. Shall be able to view the reservation of customer		H	M	H
	9.1 Shall be able to cancel the reservation	H	M	H
	9.2 Shall be able to confirm the reservation	H	M	H
10. Shall be able to show the total payment including rental amount and deposit amount		H	M	H
11. Shall be able to make payment online		H	M	H
12. Shall be able to generate receipt		H	M	H
13. Shall be able to E mail the receipt to the customer		H	M	H
14. Shall be able to show the status of vehicle		H	M	H
	14.1 Shall be able to view the returned and Unreturned vehicles	H	M	H
	14.2 Shall be able to view the damages and repair maintenance of the vehicles	H	M	H
15. Shall be able to show the feedback option		H	M	H
	15.1 Shall be able to give feedbacks	H	M	H
	15.2 Should be able to reply to the feedbacks	M	O	L
16. Shall be able to handle customer details		H	M	H

	16.1 Shall be able to manage registration details	H	M	H
	16.2 Shall be able to manage booking details	H	M	H
	16.3 Shall be able to manage payment details	H	M	H
	16.4 Shall be able to manage feedback details	H	M	H
17. Shall be able to handle vehicle details		H	M	H
	17.1 Shall be able to post vehicle type	H	M	H
	17.2 Shall be able to post vehicle color	H	M	H
	17.3 Shall be able to post vehicle number	H	M	H
	17.4 Shall be able to delete Vehicle	H	M	H
18. Should be able to generate the reports		M	O	M

Table 7 Functional requirements

Non-Functional Requirements

Requirements	Priority H/M/L	M/O	Weight H/M/L
1. Shall be able to provide web interface	H	M	H
2. Shall follow the UI/UX principles when designing web pages	M	M	M
3. Should be cost effective	M	M	M
4. Should be responsive perfectly on android & iOS mobile platforms	H	O	H
5. Should use existing resource efficiently	M	O	L

Table 8 Non functional requirements

Non-Functional Requirements describe the behavior of the system other than the main functionalities of the system. Hence, they will cover the requirements which are not included in section of functional requirements. Nonfunctional requirements describe the usability, reliability, performance, maintainability and other similar aspects of the system. These set of requirements may not be directly related to the main functionality, but they are extreme importance to the proper functioning of the system. Following Table will show the Non- functional requirements for online vehicle rental system.

2.7 Business System Options (BSOs)

System has to be focused on satisfying the identified requirements and also focused on the future requirements. According to this project, the features which the BSOs are offering must satisfy mainly vehicle reservation by customer through this application, handle the customer, vehicle, booking details online payment method and generating reports and bills for the rental of vehicle.

In this section BSOs will be presented and at the end they will be evaluated to come up with the best option. Each BSO will be consisted of overlapping features as well as exclusive features. Evaluation of the BSOs will be done by comparing them against the functional and non-functional requirements of the system.

2.7.1 Business System Option Identification

BSO 1 – Stand-alone application that supports the daily process of vehicle rentals

BSO 2 – Web based system that would satisfy all basic functional and non-functional requirements along with online reservation and online registration of customers

BSO 3 – A web-based system associated with a mobile application that would satisfy all basic functional and non – functional requirements

2.7.2 BSO 1: Stand-alone application that supports the daily process of vehicle rentals

Description

This BSO is concerning about introducing a stand-alone application for the organization side to manage the daily function of vehicle rentals.

Functionalities

Organization side:

Users from organization will be able to log in to the system and can manage the vehicle details, booking details and customer details. They also will be able to generate reports and can delete or edit the vehicle details.

Benefits

- Enable users to get more accurate and quality information and support better decision making
- Concurrent access to the databases is available. Therefore, conflicts and inconvenience caused due to referring to the same data gets minimized.

Issues

- Users will not be able to access the information outside the organization
- Customer can’t make online reservation or payment
- System will be limited to the computers within organization

2.7.3 BSO 2: Web based system that would satisfy all basic functional and non-functional requirements along with online reservation and online registration of customers

Description

This BSO is concerning about introducing a web-based platform for both client and customers. This will be a rich internet application with added functionalities.

Functionalities

Customer Side:

Customer can create profiles and have features like secured login, reservation of vehicle for renting and can view the vehicle details and payments. Customer will be able to view the confirmation and also will be able to give feedbacks and he will be able to post inquiries.

Organization side:

User will be able to login the system and can update the profile and passwords. They can be able to generate reports and view the inquiries and feedback of the customers and easily can handle the booking, vehicle details so that the system easily shows the confirmation and new and updated vehicle details.

Benefits

- Both customer and admins can access the system from anywhere through the internet
- Give more attractive interface compared to the BSO 1
- Platform independent

Issues

- Security issues
- Rely highly on good internet connection
- Difficult to integrate API to the System

2.7.4 BSO 3 – A web-based system associated with a mobile application that would satisfy all basic functional and non – functional requirements

Description

This BSO is concerned about introducing a mobile application for the clients. This will be an integration of android application and website with added functionalities.

Functionalities

Clients can create their profiles through mobile application, secured login, enabling customer to online reservation and enabling customer view vehicles and search and filter the vehicles for the reservation. Client can access the web interface as well as the mobile application using their mobile phones when internet access is enabled.

Benefits

- Can be accessed from anywhere through the internet
- Accurate and easy navigation
- API can be integrated easily

Issues

- Incompatibility
- Less shear ability

2.8 Evaluation of the BSOs

Evaluation of BSOs will be done by comparing them first with the functional and non-functional requirements. Then the pros and cons of the BSOs will be also considered. Ultimately the best option could be one of the BSOs or a hybrid version of them. Looking at the BSOs, it seems that BSO 2 and BSO 3 cover almost all the requirements mentioned in the requirement catalogue. But there are some differences when taking the other constraints into consideration. The following table shows the comparison of the BSO with the requirements.

2.8.1 Functional requirements vs BSOs

Requirement	BSO 1	BSO 2	BSO 3

1. Shall be able to Register customers	X	X	X
2. Shall be able to login to the system	X	X	X
3. Shall be able to reset password and profile	X	X	X
4. Shall be able to display vehicles	X	X	X
5. Shall be able to show each vehicle details under each vehicle's category	X	X	X
6. Shall be able to show that particular vehicle is on rental or not	X	X	X
7. Shall be able to select a vehicle from list	X	X	X
8. Shall be able to book a vehicle	X	X	X
9. Shall be able to view the reservation of customer	X	X	X
10. Shall be able to show the total payment including rental amount and deposit amount	X	X	X
12. Shall be able to generate receipt	X	X	X
13. Shall be able to E mail the receipt to the customer	X	X	X
14. Shall be able to show the status of vehicle	X	X	X
16. Shall be able to handle customer details	X	X	X
17. Shall be able to handle vehicle details	X	X	X
18. Should be able to generate the reports	X	X	X

Table 9 BSO vs functional requirements comparision

The table given above compare all functional requirements with three BSOs where BSO 2 and BSO 3 satisfies with all functional requirements but BSO 1 has some problems in satisfying with requirements in the table 10 given below.

2.8.2 Non-Functional requirements vs BSOs

This table illustrate the comparison between BSOs and non- functional requirements where all non-functional requirements are satisfied by BSO 2 but BSO 3 satisfies with all non-functional requirements except two of them such as cost effective and using existing resource efficiently.

Requirements	BSO 1	BSO 2	BSO 3
1. Shall be able to provide web interface		X	X
2. Shall follow the UI/UX principles when designing web pages		X	X
3. Should be cost effective.	X	X	
4. Should be responsive perfectly on android & iOS. mobile platforms		X	X
5. Should use existing resource efficiently.	X	X	

Table 10 BSO vs Non functional requirements comparision

2.8.3 Cost benefit analysis

Cost benefit analysis is a systematic approach to estimate the strengths and weakness of alternatives and determine the best approach to achieve benefits while preserving savings.

Description	Unit Cost (Rs)	Quantity	Cost (Rs)
Web hosting	10000	1	10000
Total Cost			10000

Table 11 Cost benefit Analysis

2.8.4 Selected BSO with Justification

The selected BSO is BSO 2, Web based system that would satisfy all basic functional and non-functional requirements along with online reservation of vehicle for rental service and management supporting platform, since it proves to be the most beneficial and cost effective. BSO 2 fulfils all the mandatory, basic and optional functions. BSO 1 is stand-alone application which doesn't support online vehicle reservation for the rentals which is the major requirement by client BSO 2 support

online customer registration as well. Although BSO 3 supports almost all the functions as BSO 2, it comes with mobile application. But implementing the mobile application is not cost-effective way for client as per their nonfunctional requirements.

2.9 Summary

This chapter analyze the existing features of the online vehicle rental system and thus specify the functional and non-functional requirements. Based on that, BSOs were determined and the best option was selected comparing those BSOs.

CHAPTER 03

Outline of the chapter

3.1 Use case diagram for proposed system.

3.2 Activity diagram for proposed system

3.3 Class diagram for proposed system

3.4 ER diagram

3.5 Normalized database diagram

3.6 Sequence diagram

3.7 GUI

3.8 summary

3.1 Overall Use case Diagram for proposed system

Following use case diagram show the overall activities of reservation, bill payment, my bookings, handle inquiry details and vehicle, bookings, customer, reports etc.

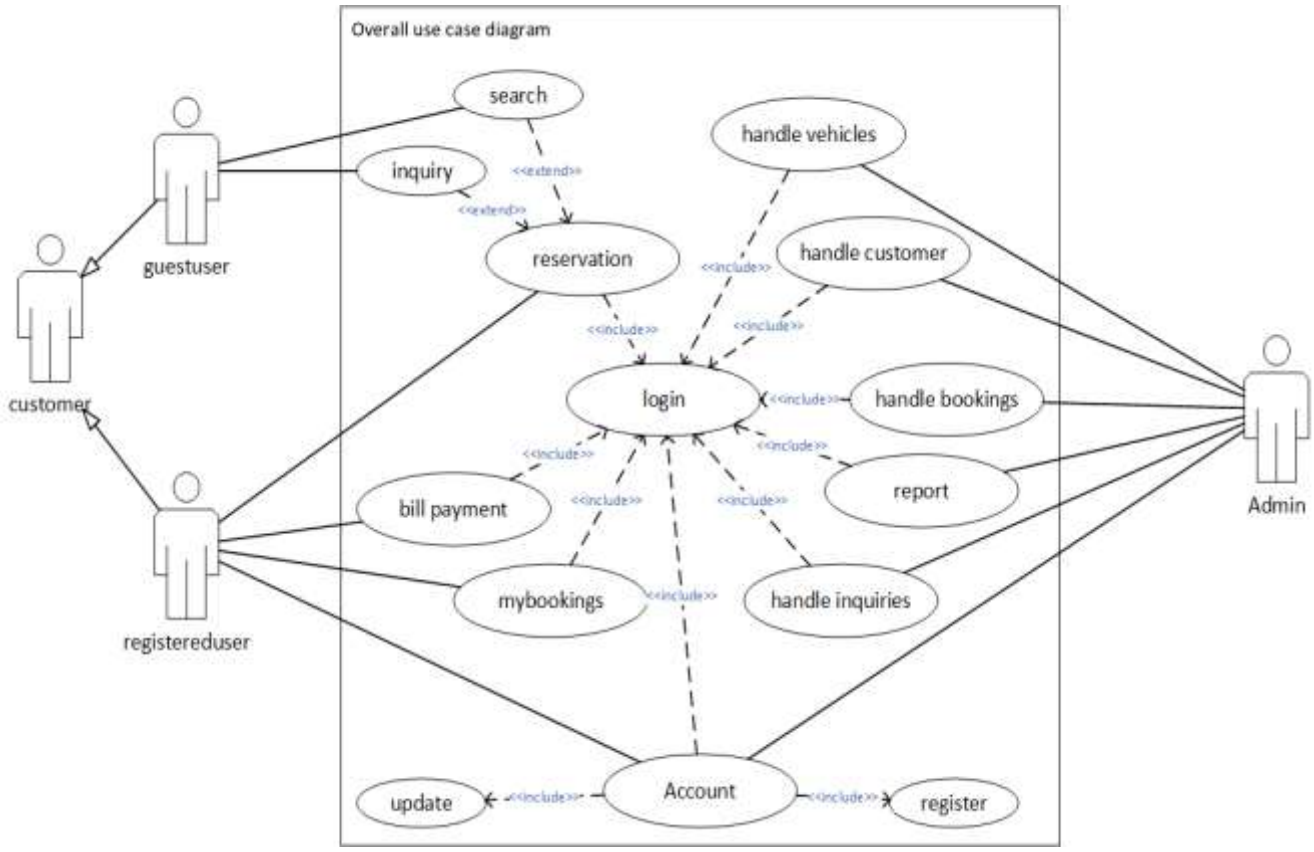

Figure 8 Overall use case diagram for proposed system

Here in this table the main use cases are as follows

I. UC10- Reservation
II. UC20- Bill paying
III. UC30- handle my bookings
IV. UC40- handle vehicles
V. UC50- handle Customers
VI. UC60- handle bookings
VII. UC70- handle inquiries
VIII. UC80- handle report

3.1.1 Use Case Diagram for Reservation

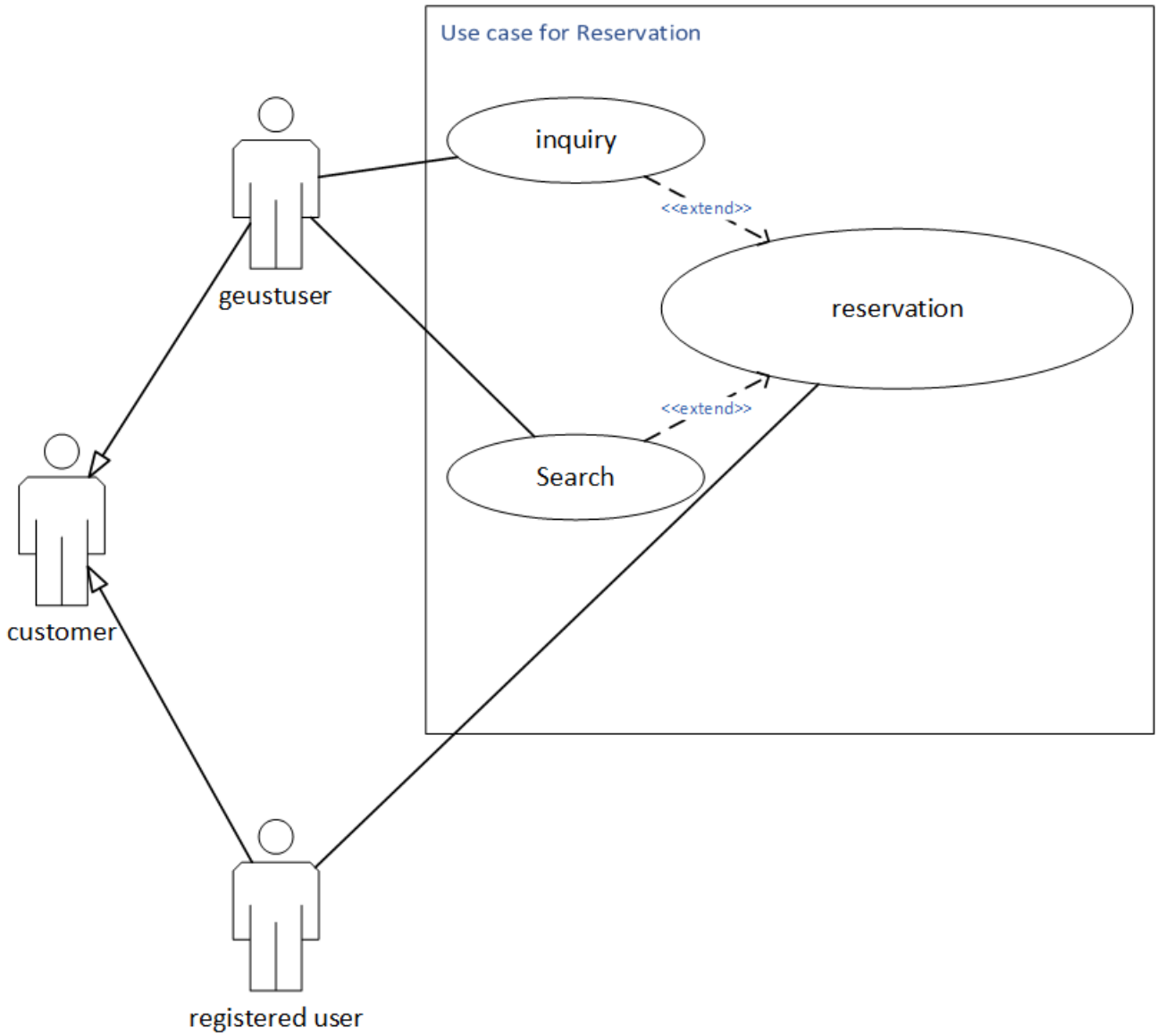

Figure 9 use case diagram for reservation

Use case ID	UC10
Use case Name	Reservation

Actors	Customer, system
Description	Here customer first enter the home page and search vehicles and if any doubts he posts inquiries right there
Pre-condition	Customer should register into system
Normal flow	1. Search and filter the vehicle list 2. View details of the vehicles 3. Fill the booking form
Alternate flow	3.1. If he is not registered customer system will asked to registration and then log in to the system
Post condition	Log in to the system and fill form

Table 12 use case description for UC10

3.1.2 Use case Diagram for bill paying

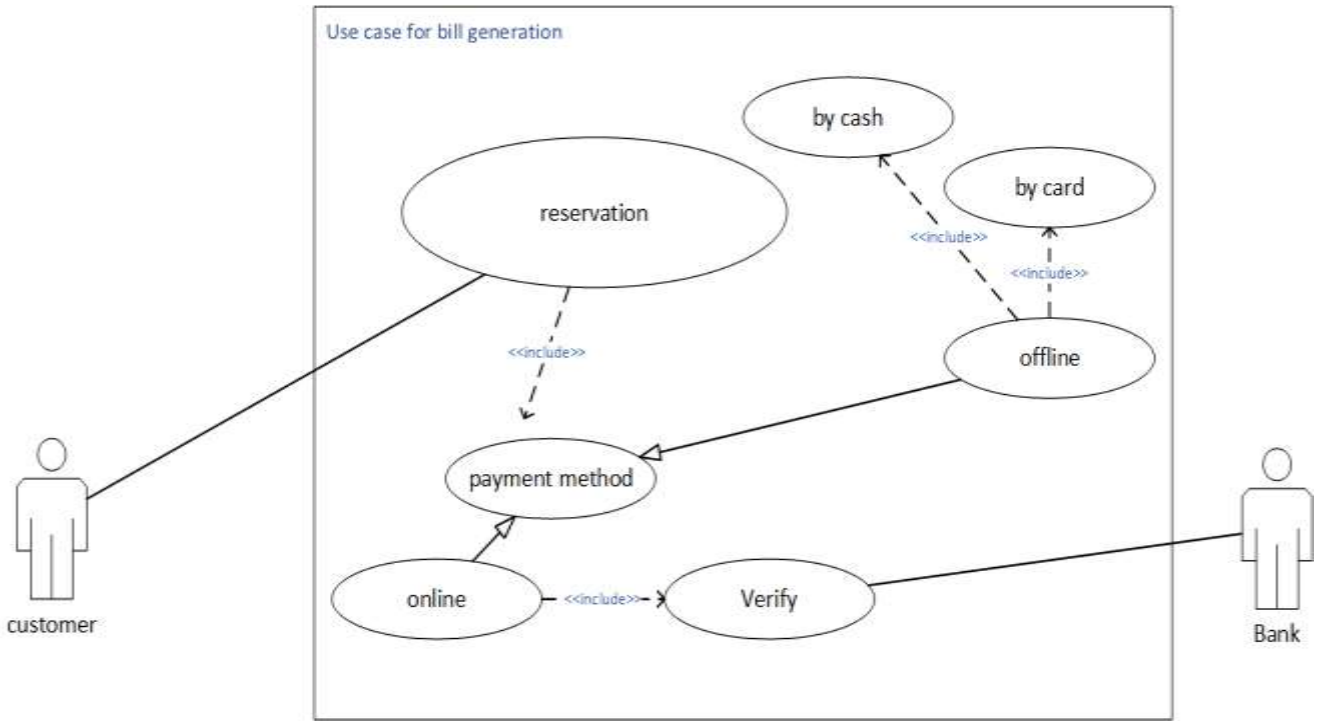

Figure 10 use case diagram for bill paying

Use case ID	UC20
Use case Name	Bill paying

Actors	customer, System
Description	After the submission of the booking form system will show bill of the rental service and will asked to select a payment option
Pre-condition	Submit the booking form
Normal flow	1. System show the bill of the rental vehicle with total booking details 2. Give the options of payment method 3. Select a payment option
Alternate flow	3.1. If selecting the online payment method show the online payment gate way
Post condition	Submit the payment method

Table 13 use case description for UC20

3.1.3 Use Case diagram for handle My bookings

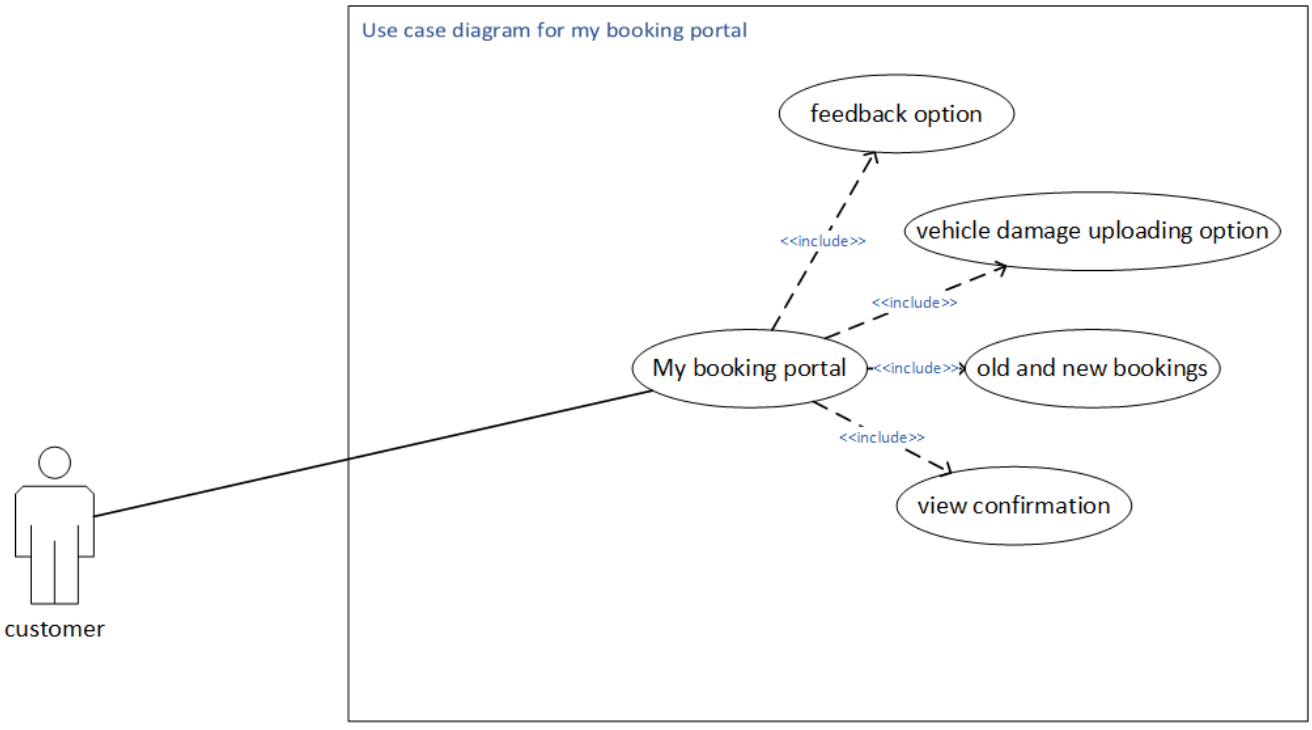

Figure 11 use case diagram for handling my booking

Use case ID	UC30
Use case Name	Handle My bookings

Actors	Customer, system
Description	This use case enables the customer to post feedback, upload damages of the vehicle upon picking up the vehicle and view the confirmation and old, new booking details and where he can be able cancel his reserved order
Pre-condition	Registration
Normal flow	1. Request my booking portal 2. Post feedback and damages of vehicle 3. Cancel reserved order 4. View old and new bookings and confirmation
Alternate flow	
Post condition	Log out

Table 14 use case description for UC30

3.1.4 Use case diagram for handle vehicles

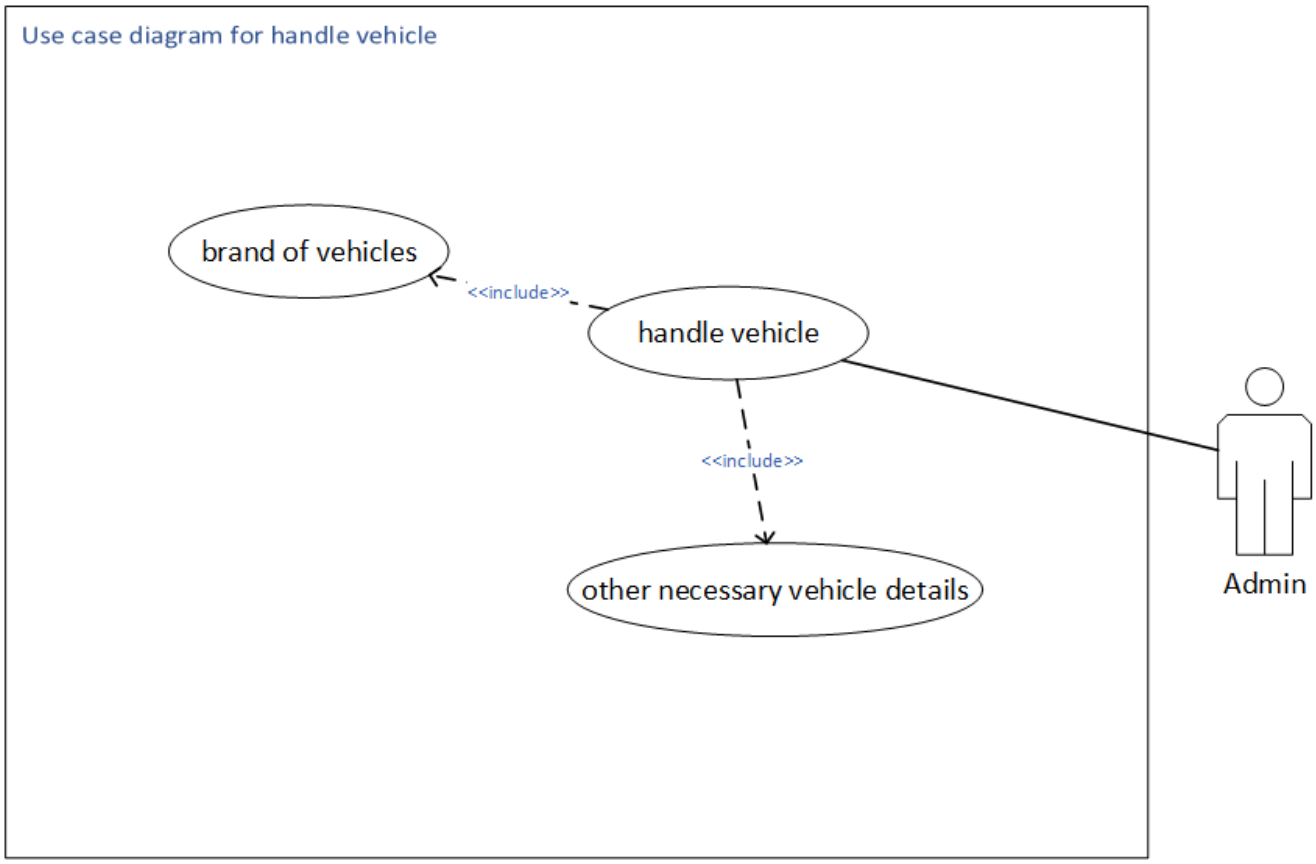

Figure 12 use case diagram for handling vehicles

Use case ID	UC40

Use case Name	Handle vehicles
Actors	System, admin
Description	Admin first log in to the system and select the vehicle details from dashboard and update, post vehicle brand and other necessary vehicle details
Pre-condition	Log in and view the dashboard
Normal flow	1. Log in to the dashboard 2. Request vehicle brand or two-wheeler four-wheeler details 3. View, post and edit those details
Alternate flow	
Post condition	Upload the vehicle details

Table 15 use case description for UC40

3.1.5 Use case diagram for handle Customer details

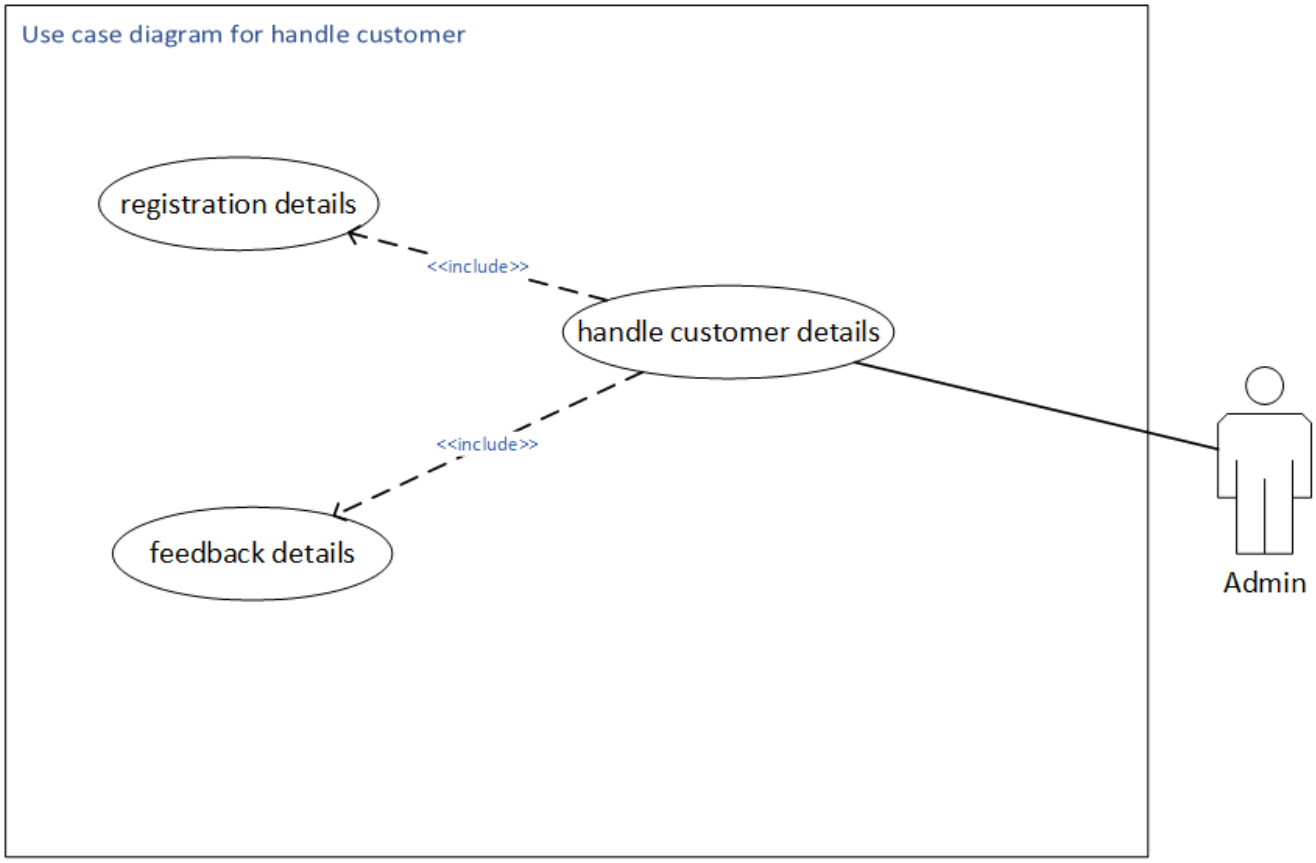

Figure 13 use case diagram for handling customer details

Use case ID	UC50
Use case Name	Handle customer details
Actors	Admin, system
Description	Admin can easily view the customer registration and feedback details
Pre-condition	Registration and post feedbacks
Normal flow	1. Admin request customer details 2. Show the registration and feedback details 3. Delete option to delete the records of the feedbacks
Alternate flow	
Post condition	

Table 16 use case description for UC50

3.1.6 Use case Diagram for handle bookings

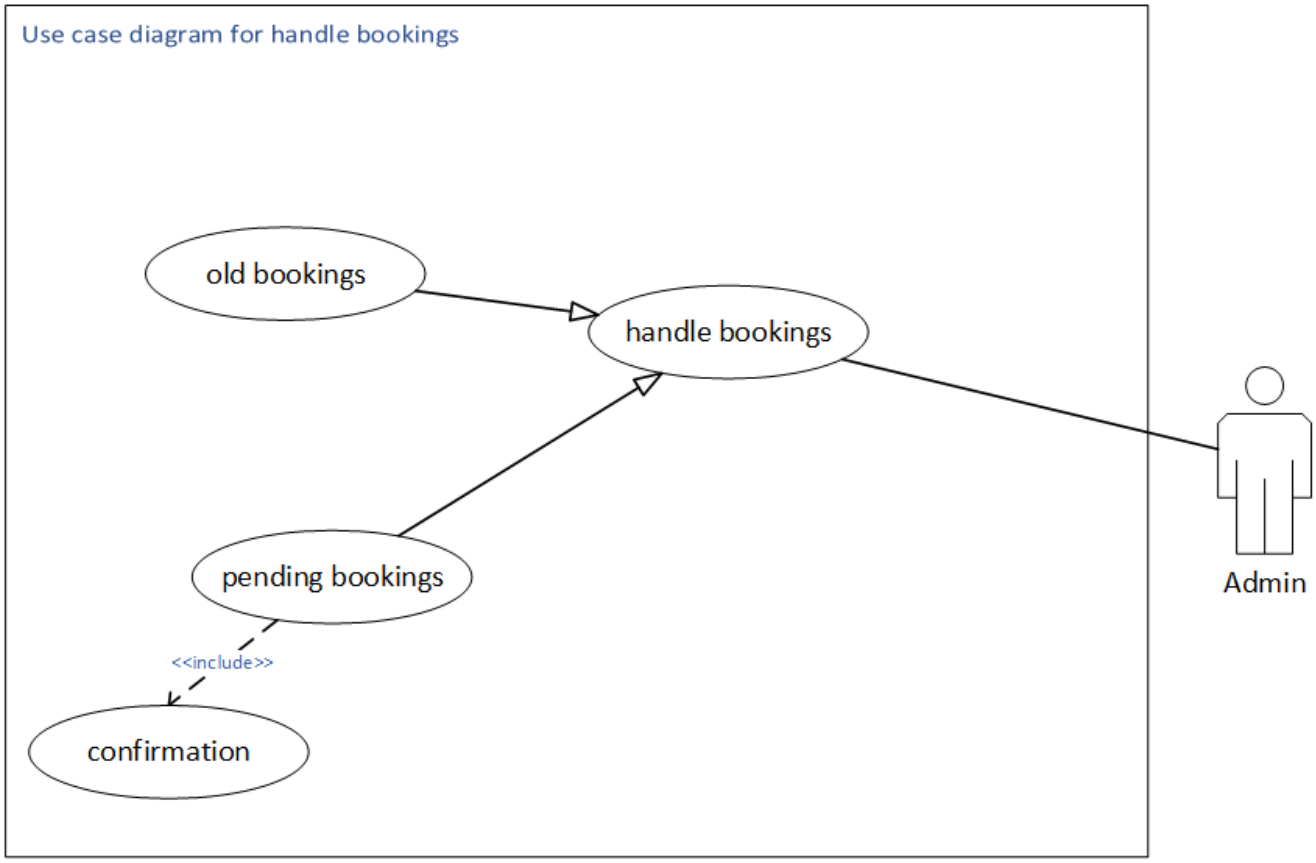

Figure 14 use case diagram for handling bookings

Use case ID	UC60
Use case Name	Handle booking
Actors	Admin, System
Description	Here admin can confirm the booking and view , delete the old booking details
Pre-condition	Booking vehicles
Normal flow	1. View the old and new bookings 2. Verify the booking and confirm the booking 3. Send the confirmation
Alternate flow	
Post condition	Successfully send the confirmation message

Table 17 use case description for UC60

3.1.7 Use case diagram for handle inquiries

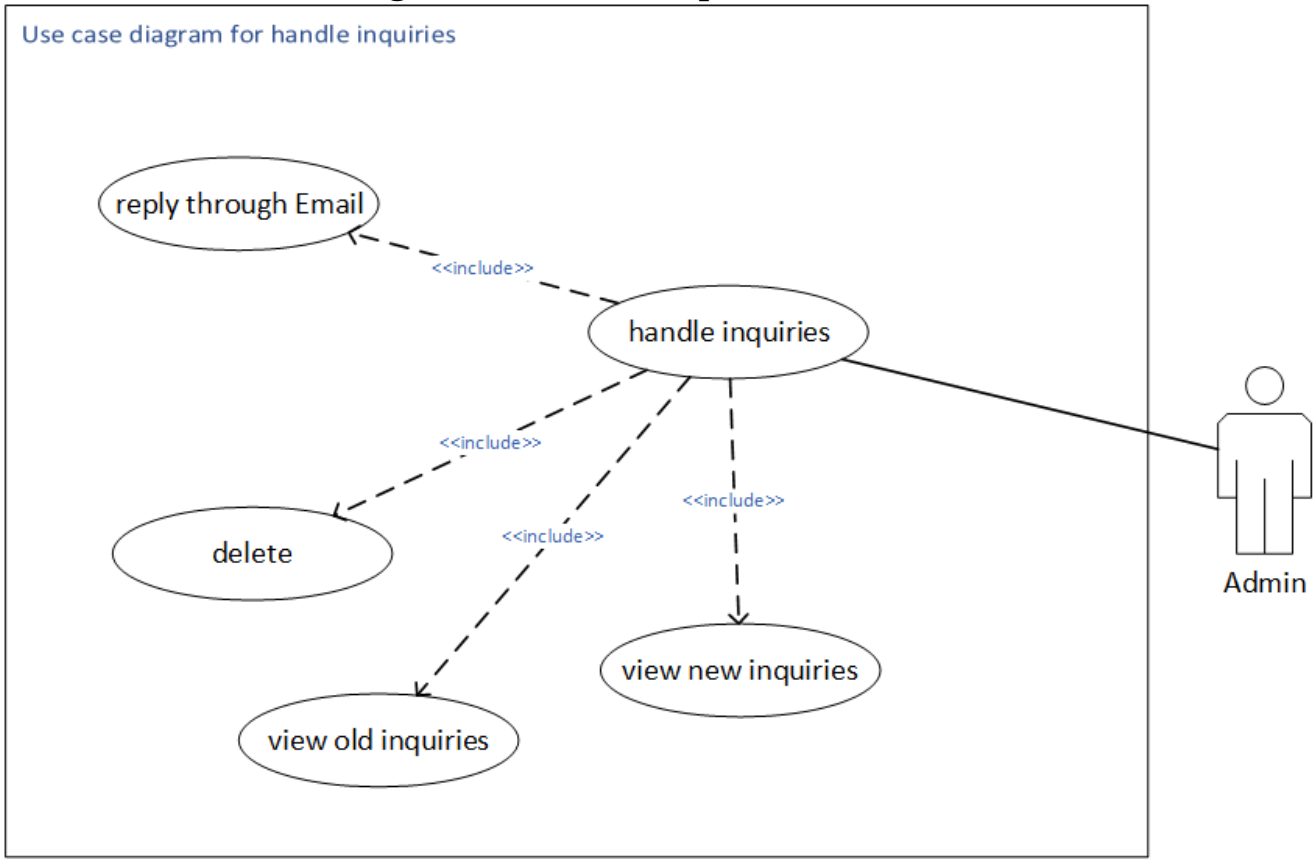

Figure 15 use case diagram for handling inquiries

Use case ID	UC70
Use case Name	Handle inquiries

Actors	Admin, System
Description	Here admin can view the inquiries of both register and unregistered customers
Pre-condition	Submit inquiries
Normal flow	1. Admins request the inquiry details 2. View the inquiries 3. Replying to inquiries 4. Delete it
Alternate flow	
Post condition	Reply through email

Table 18 use case description for UC70

3.1.8 Use case diagram for handle reports

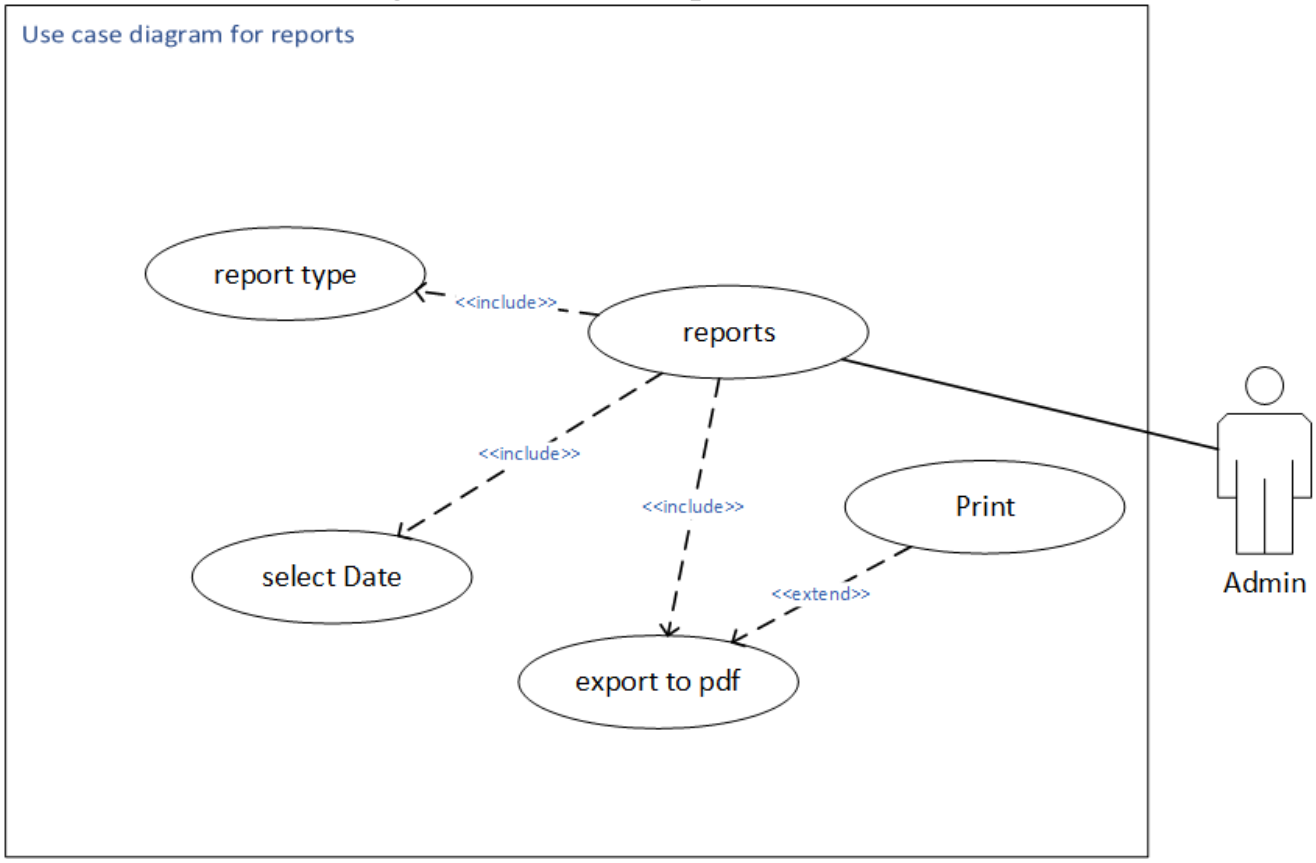

Figure 16 use case diagram for handling reports

Use case ID	UC80
Use case Name	reports
Actors	Admin, System

Description	Here customer can generate reports and make it as a pdf document
Pre-condition	Booking details
Normal flow	1. Request report type 2. Enter date 3. Generate the report
Alternate flow	
Post condition	Export to pdf and print out

Table 19 use case description for UC80

3.2 Activity diagram for proposed system

Activity diagrams are drawn in order to model a task represented by a use case in a logical way

3.2.1 Activity diagram for reservation

It represents how placing order is fulfilled by customer.

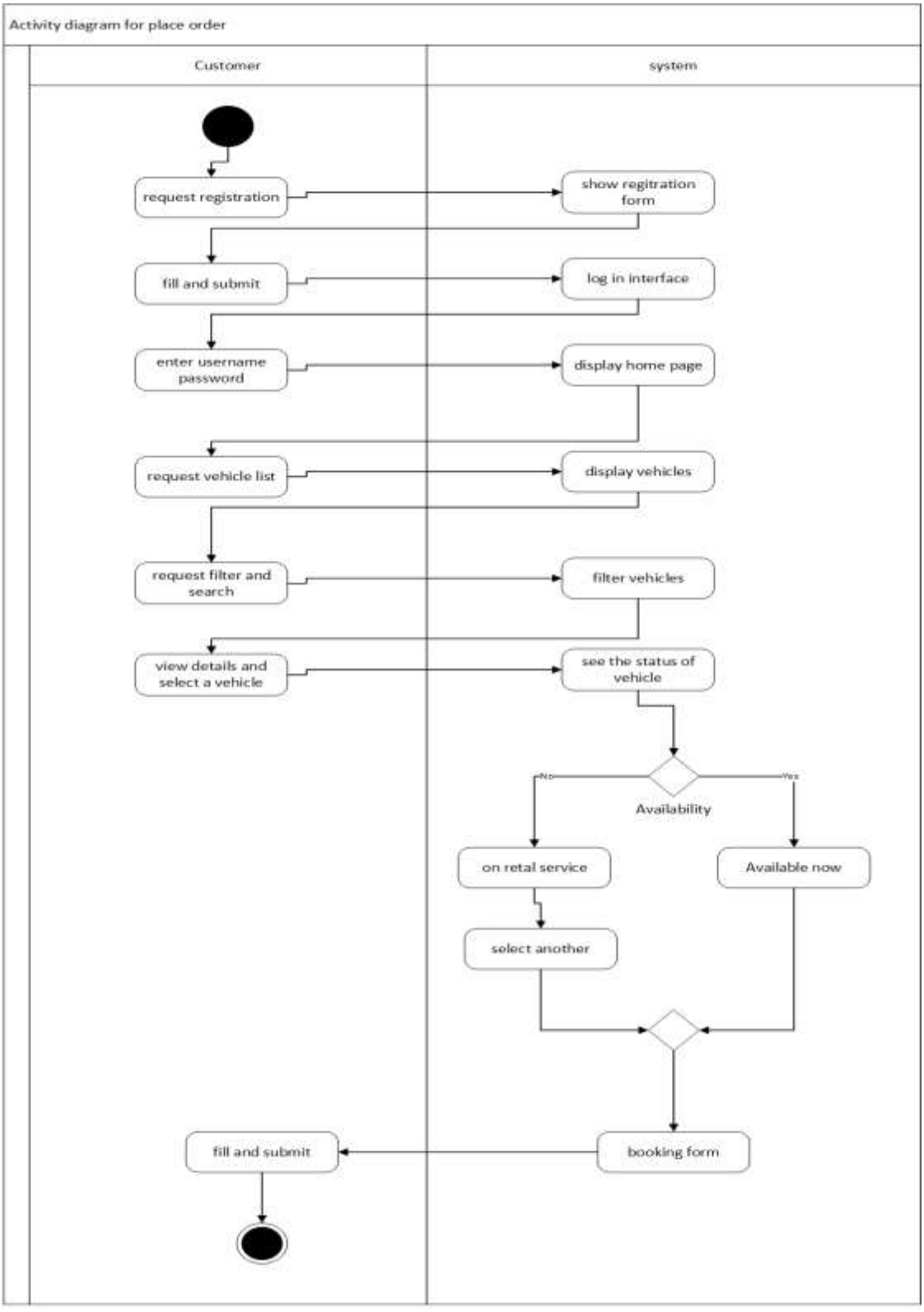

Figure 17 Activity diagram for reservation

3.2.2 Activity diagram for bill paying

It shows how bill is generated by the system

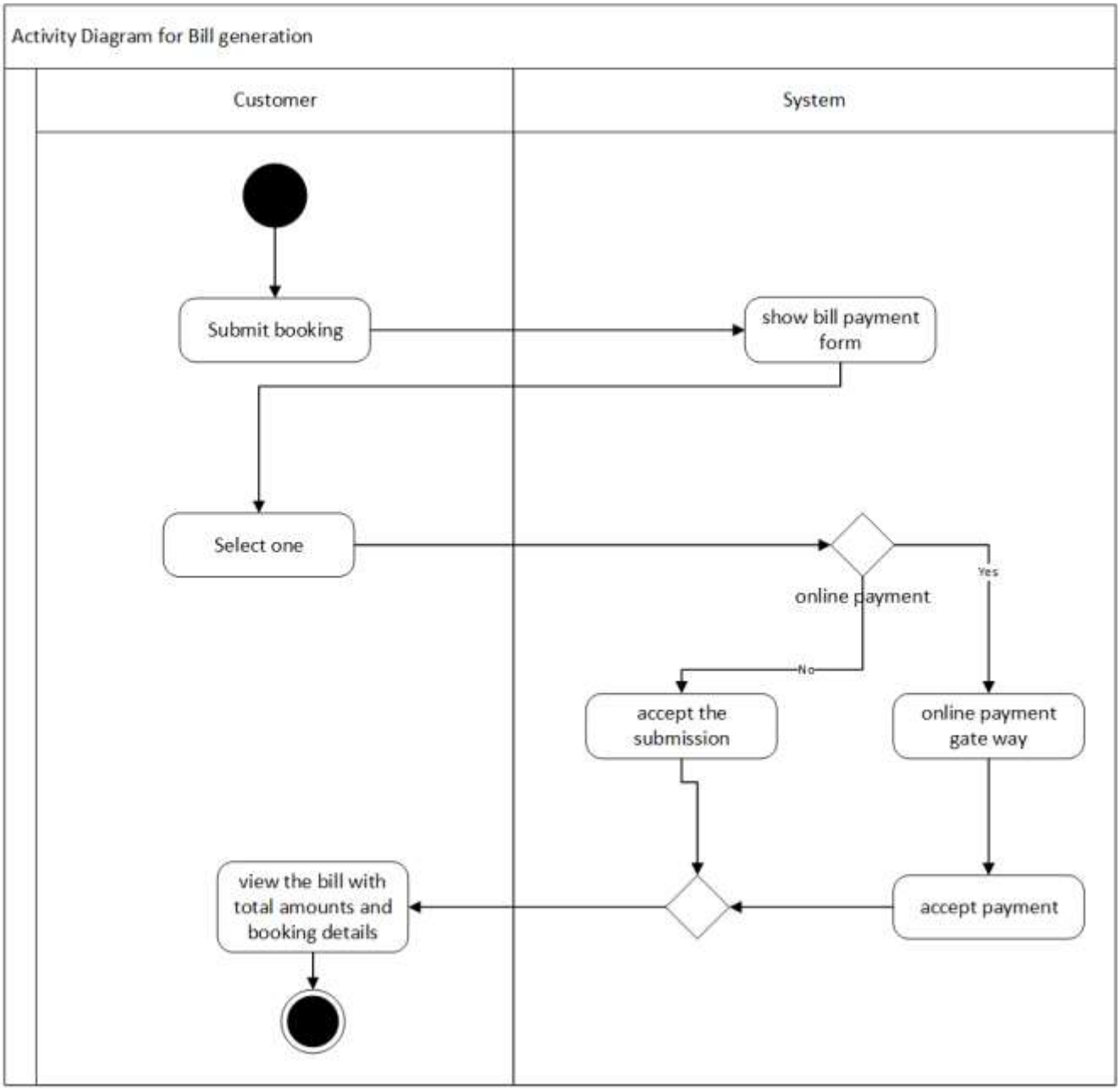

Figure 18 Activity diagram for bill paying

3.2.3 Activity diagram for handle my booking

It shows how customer interact with feedback and his booking details and confirmation

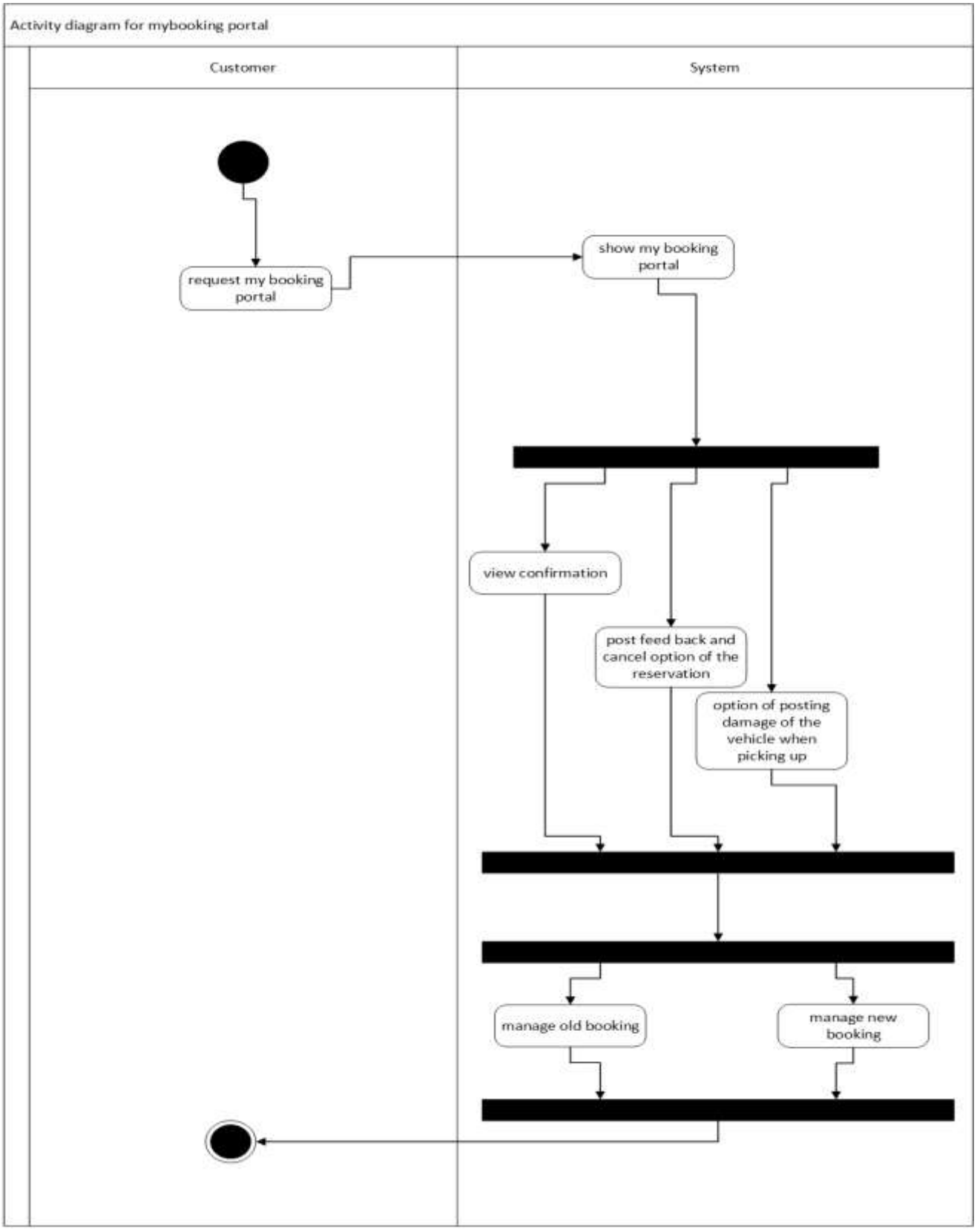

Figure 19 Activity diagram for handle my bookings

3.2.4 Activity Diagram for handle vehicles

it shows how admin manage the vehicle details

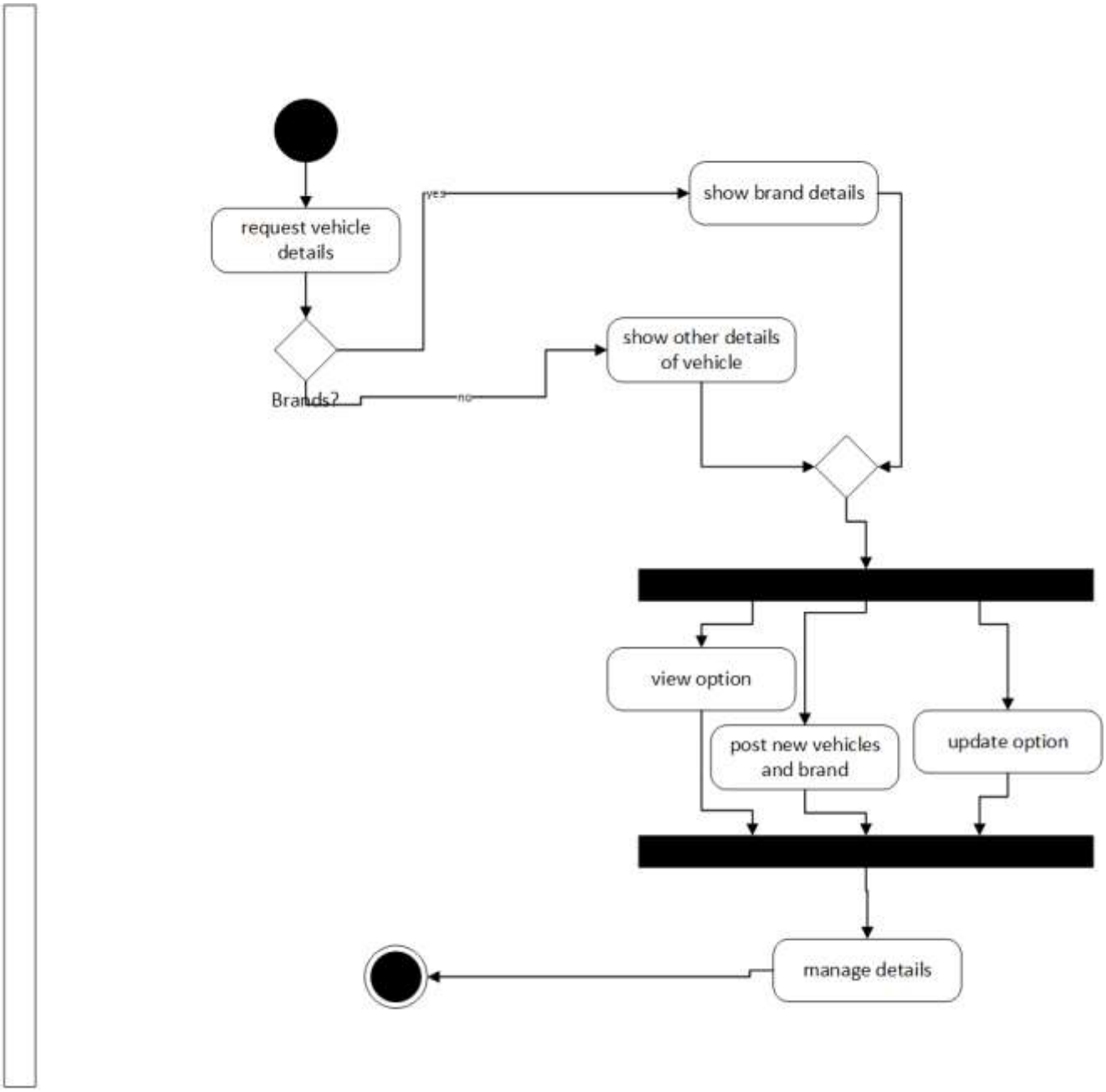

Figure 20 Activity diagram for handle vehicles

3.2.5 Activity Diagram for handle Customers

it shows how manager manage the customer details

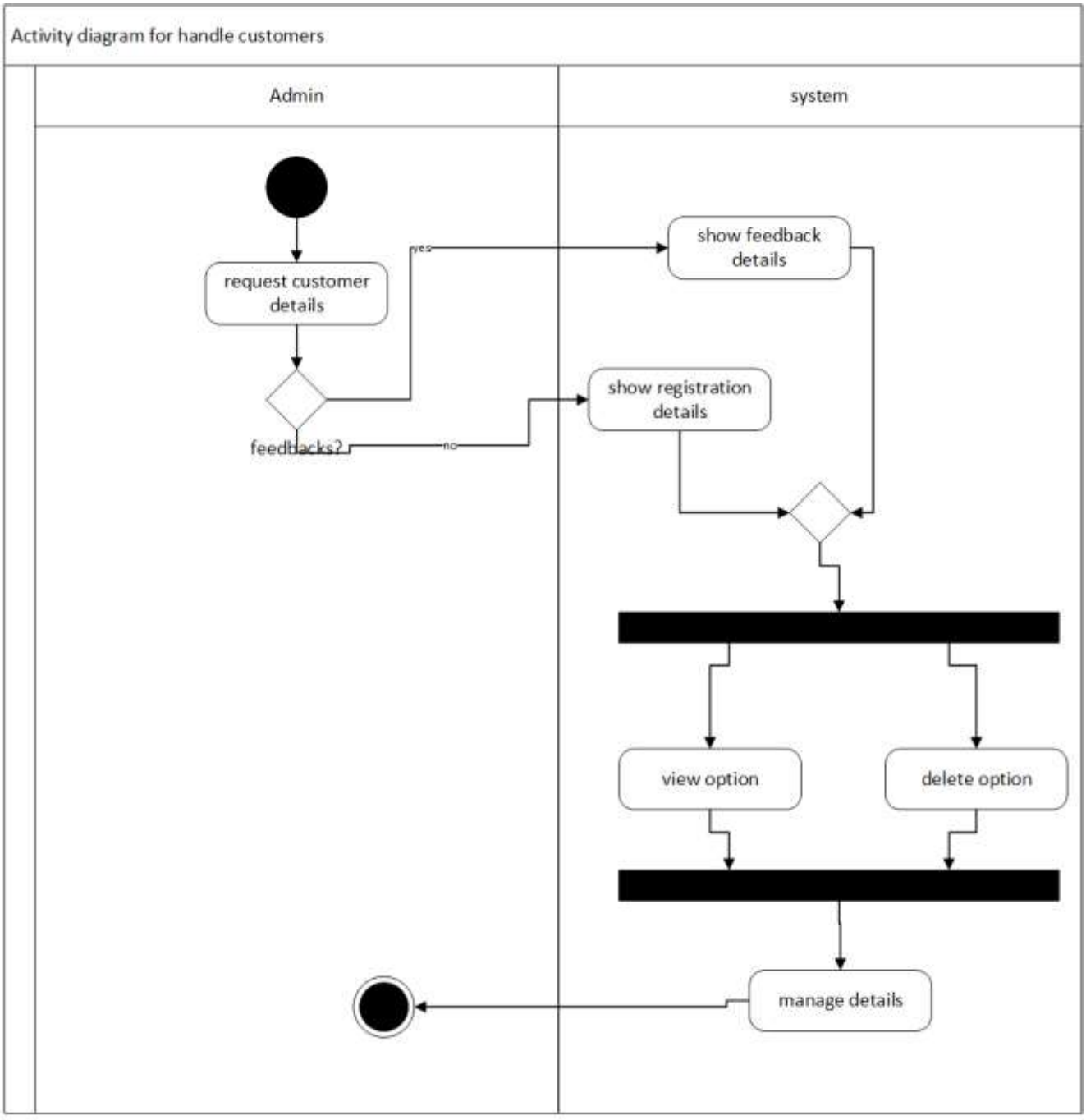

Figure 21 Activity diagram for handle customers

3.2.6 Activity diagrams for handling the bookings

It shows how admin managing the booking and confirm the pending bookings

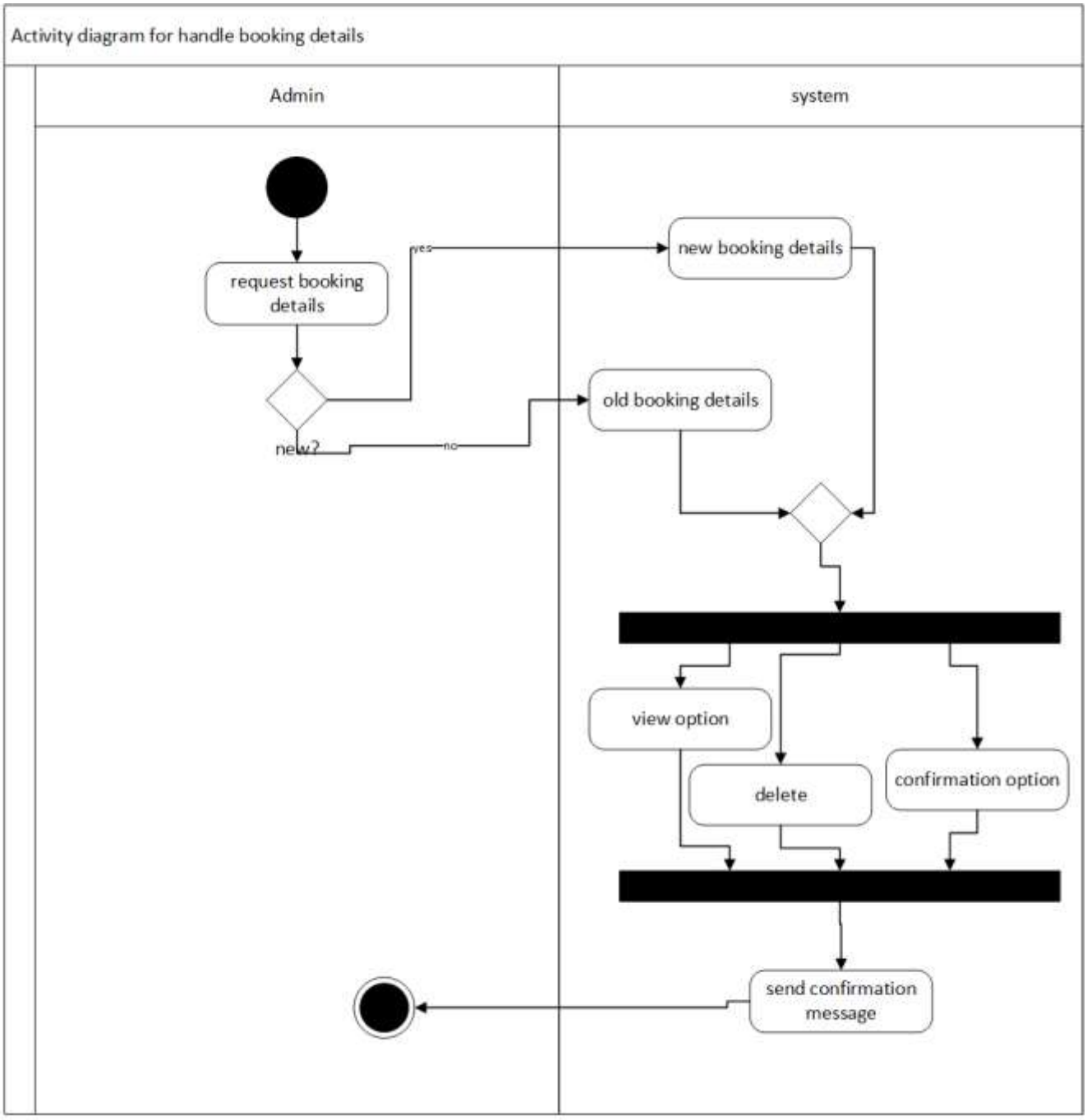

Figure 22 Activity diagram for handling the bookings

3.2.7 Activity diagram for handling inquiries

it shows how admin manage the inquiry details from customers

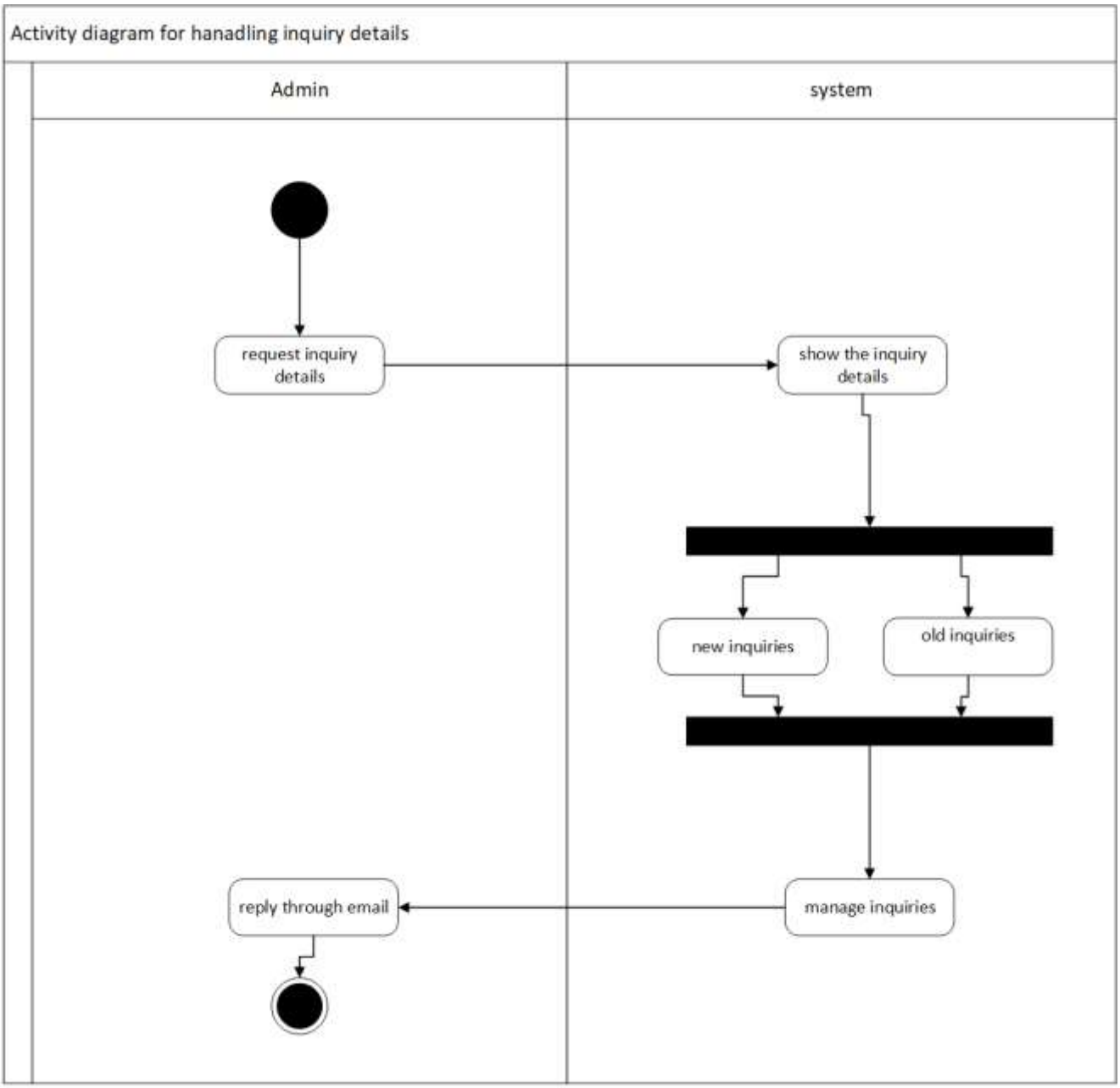

Figure 23 Activity diagram for handling inquiries

3.2.8 Activity Diagram for handling reports

it shows how admin generate the report

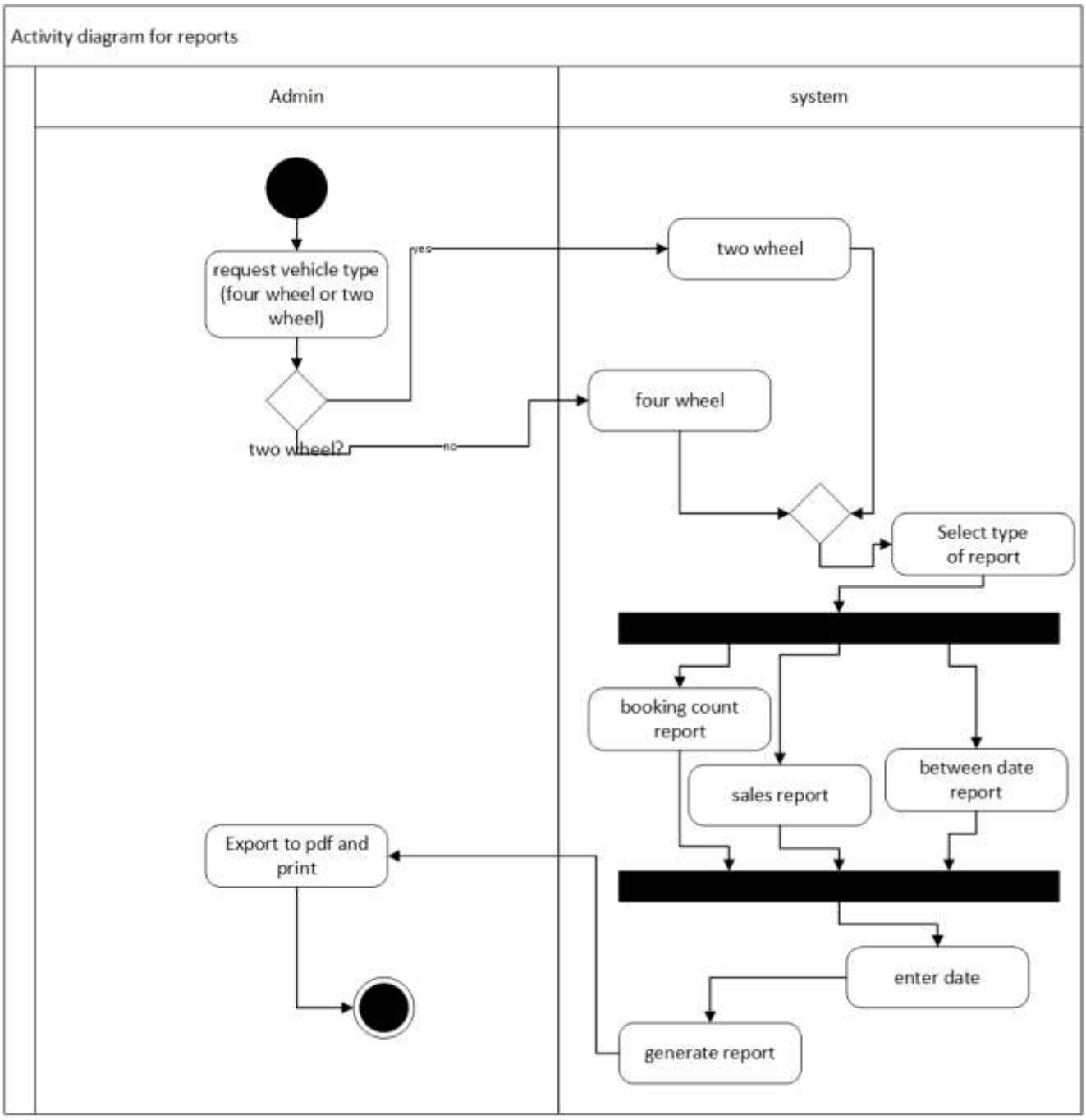

Figure 24 Activity diagram for handling reports

3.3 Class diagram

Class diagram shown below describes the structure of a proposed system by showing the system's classes their attributes and operations and also the relationship among the classes

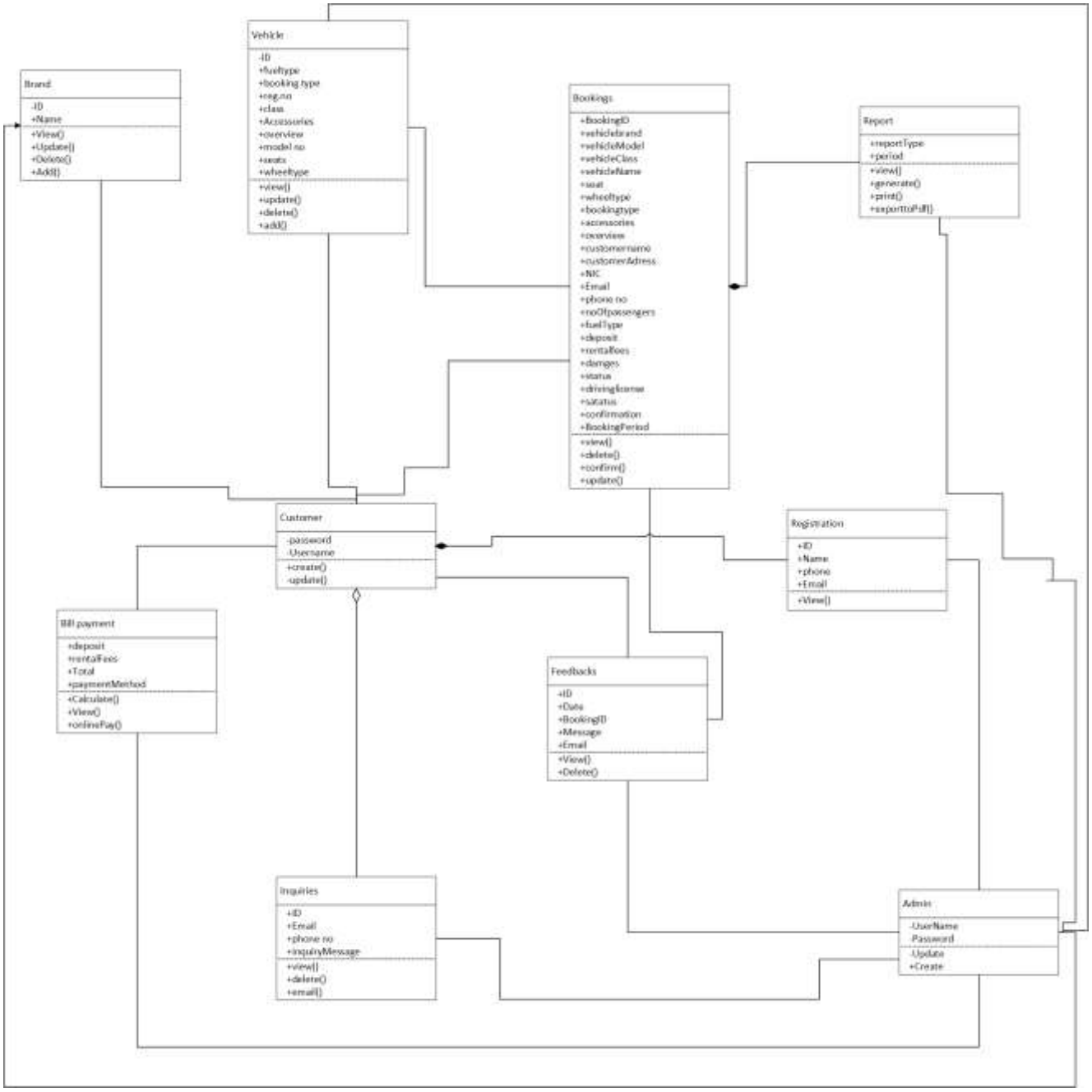

Figure 25 Class diagram for proposed system

3.4 Entity relationship Diagram

Following ER model is composed of entity types of the proposed system and specifies relationships that can exist between instances of those entity type

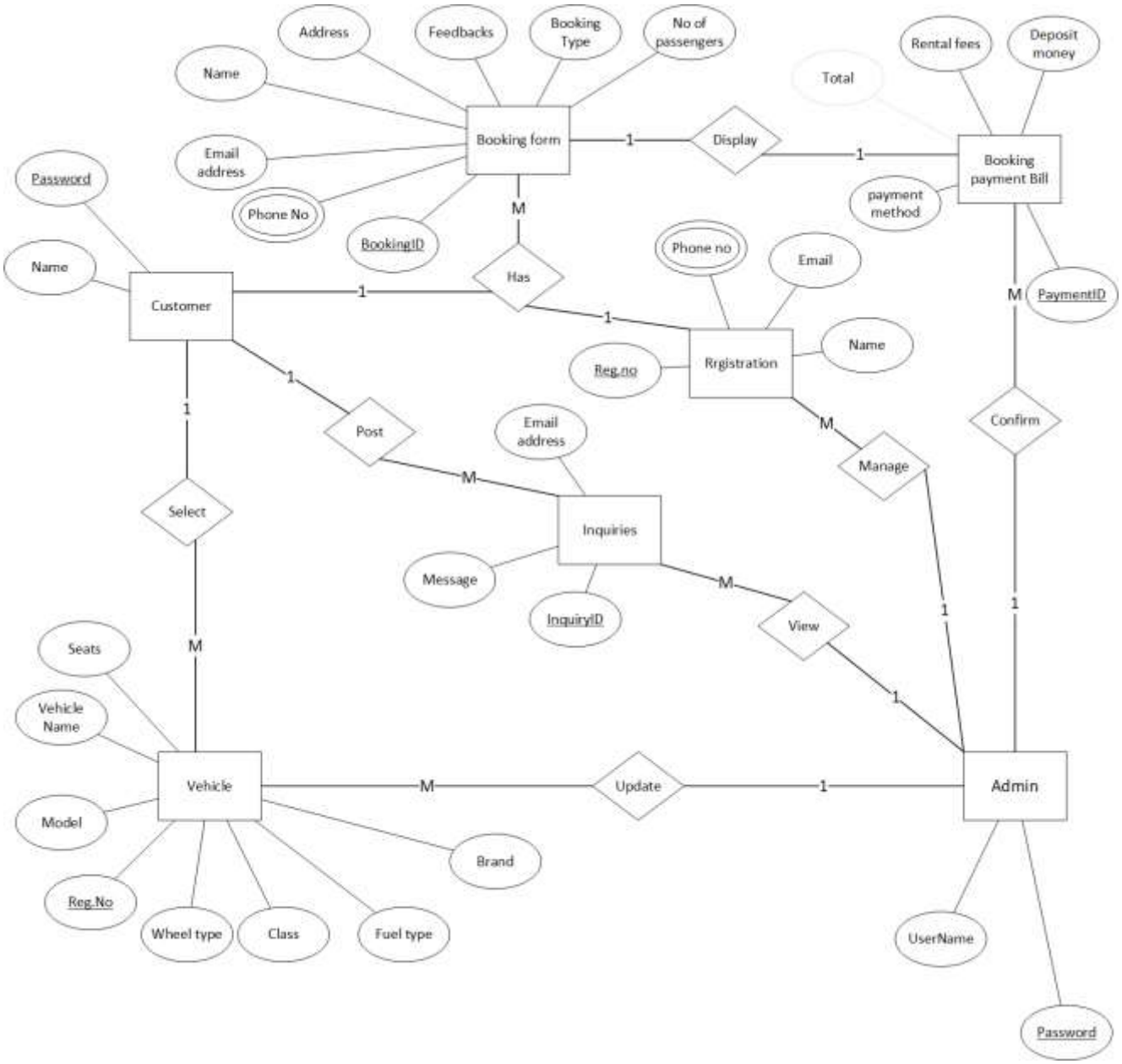

Figure 26 Entity relationship diagram for proposed system

3.5 Normalized data base design

This picture represents the normalized data base design for the proposed system with database model that is used to implement this system.

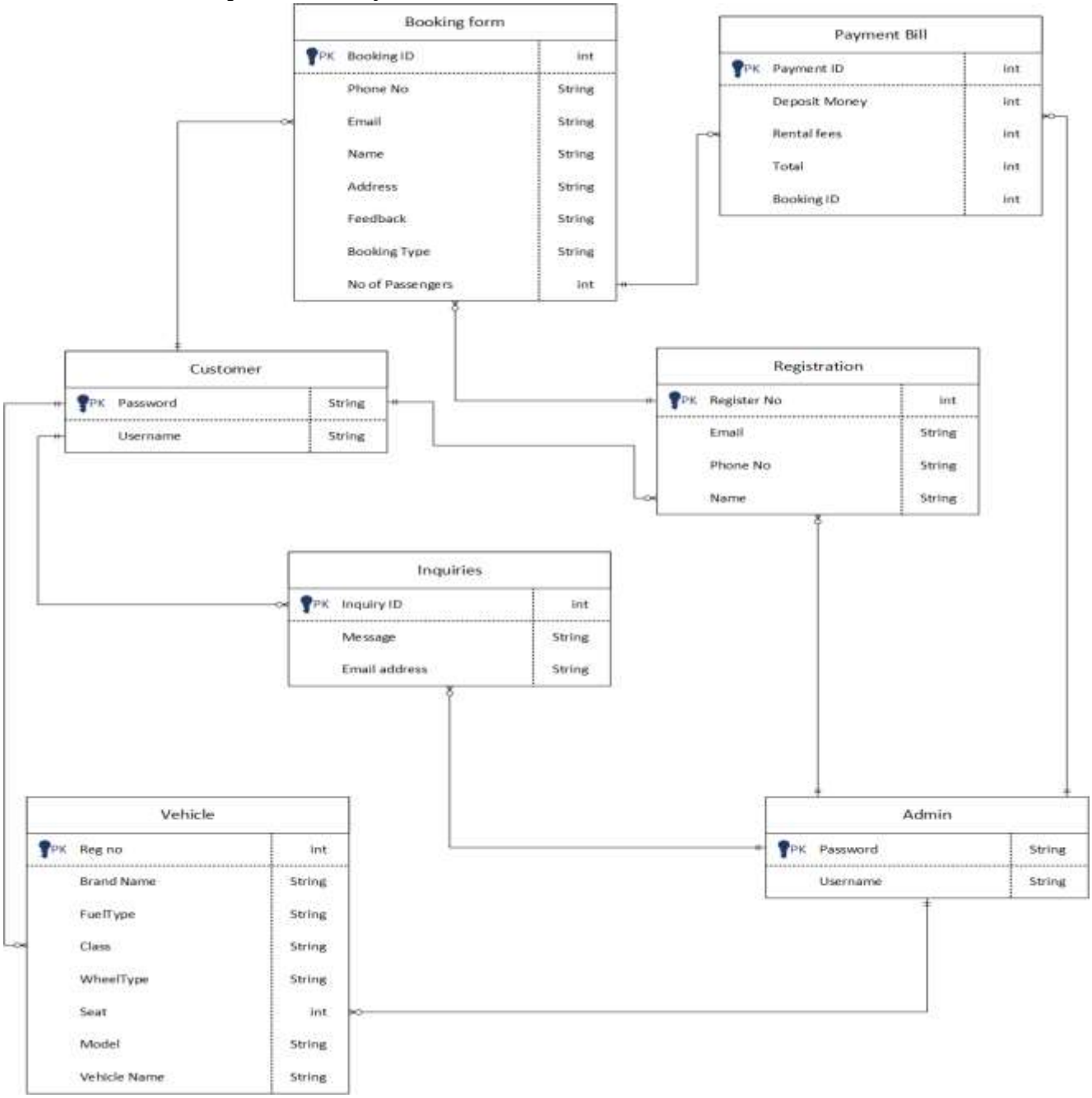

Figure 27 Normalize database design for proposed system

3.6 Sequence Diagram

Sequence diagrams show how the system interacts with the actors in a use case functionality. Each actor is represented with a horizontal lifeline and the data transactions are drawn from one lifeline to another or within one lifeline. following sequence diagrams describe some of the main use cases which are a bit difficult to understand with only use case description

3.6.1 Use case diagram for reservation

This reservation has some phases of action that is shown below using sequence diagrams

I. Sequence diagram for sign up and log in

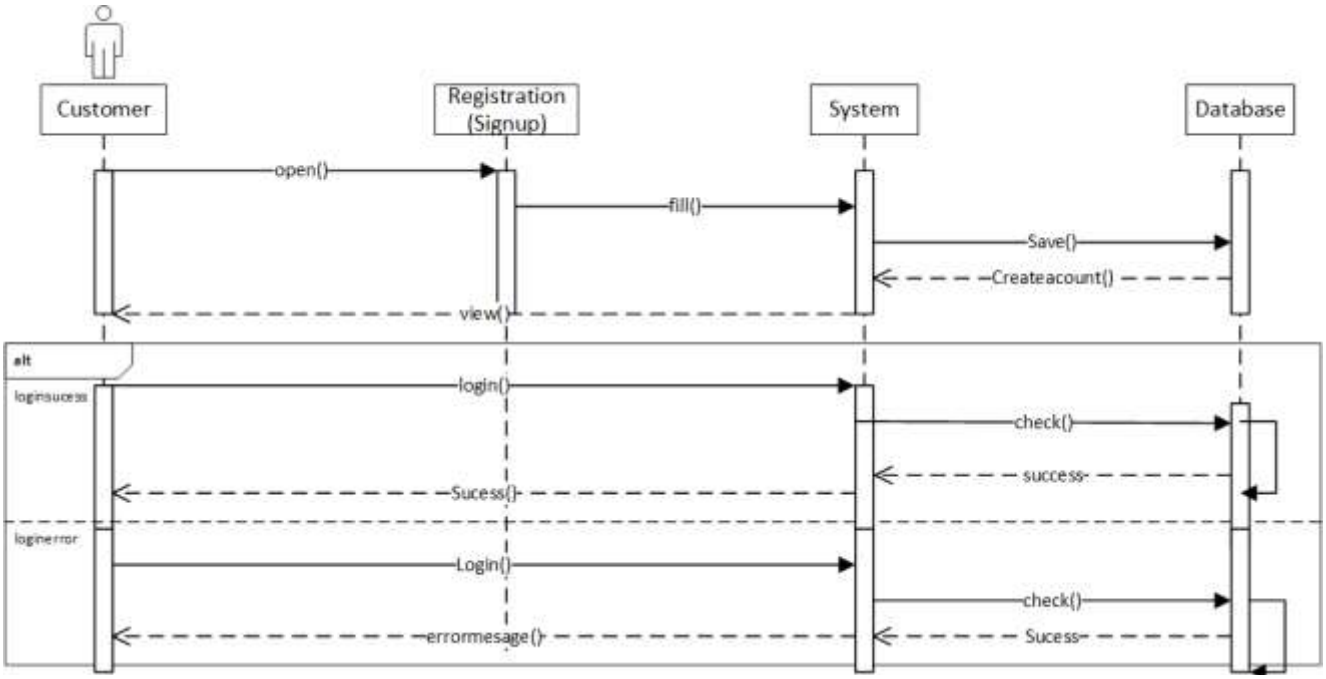

Figure 28 sequence diagram for customer sign up

II. Sequence diagram for customer inquiries

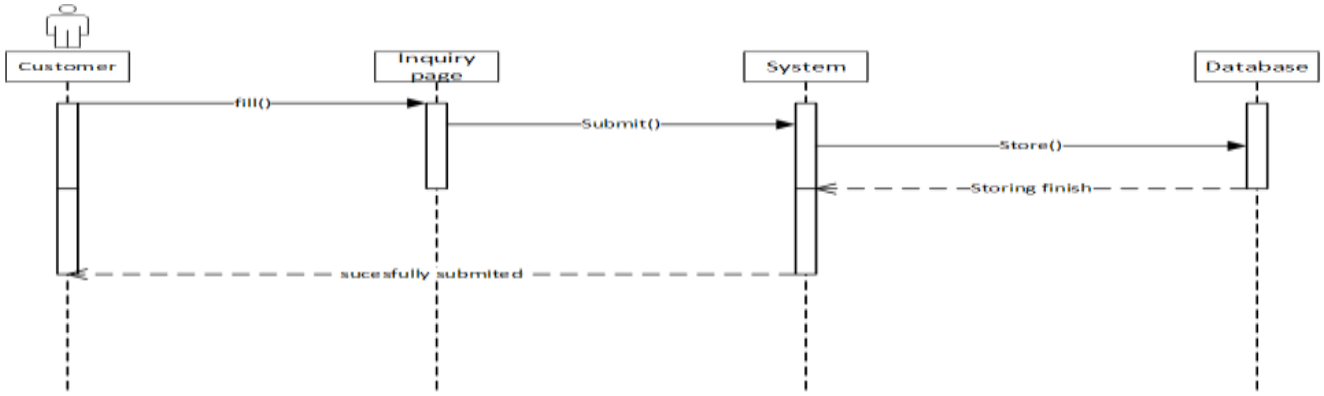

Figure 29 sequence diagram for customer inquiries

III. Sequence Diagram for filter and search

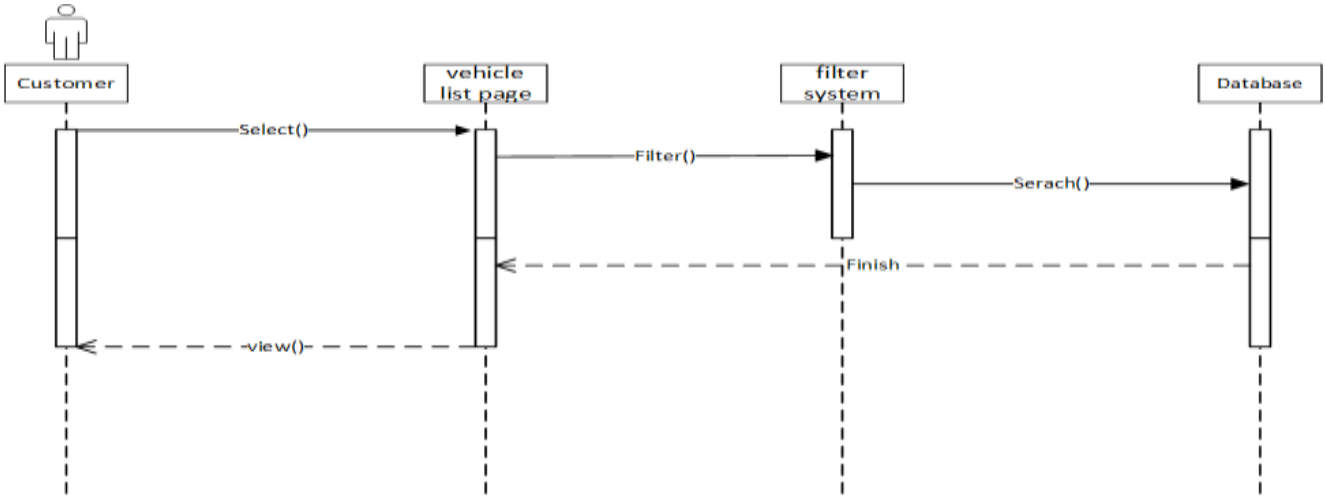

Figure 30 sequence diagram for filter and search

IV. Sequence diagram for filling booking form

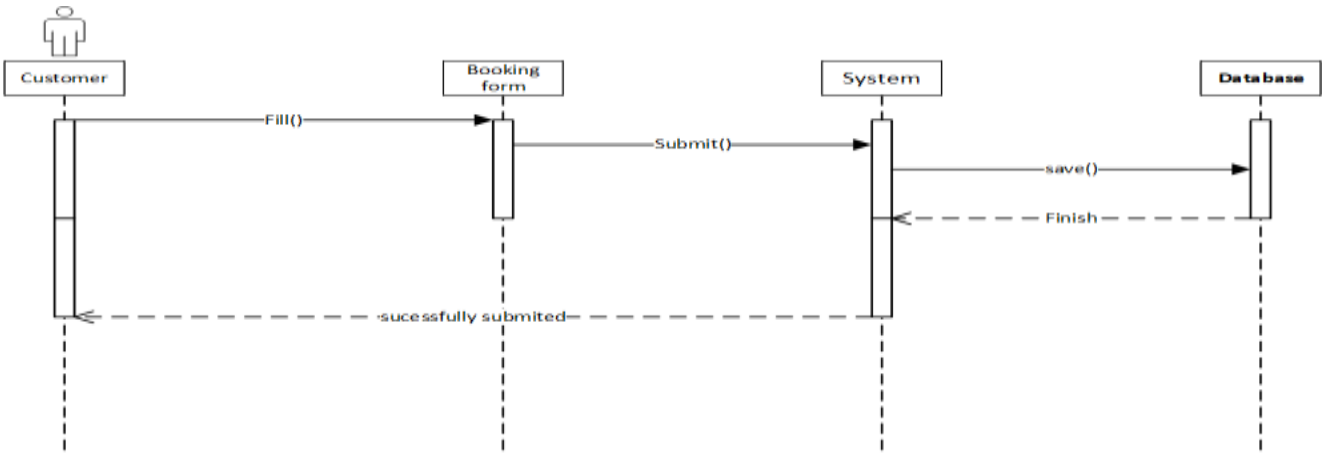

Figure 31 sequence diagram for filling booking form

3.6.2 Use case Diagram for Bill paying

It shows how bill was generated

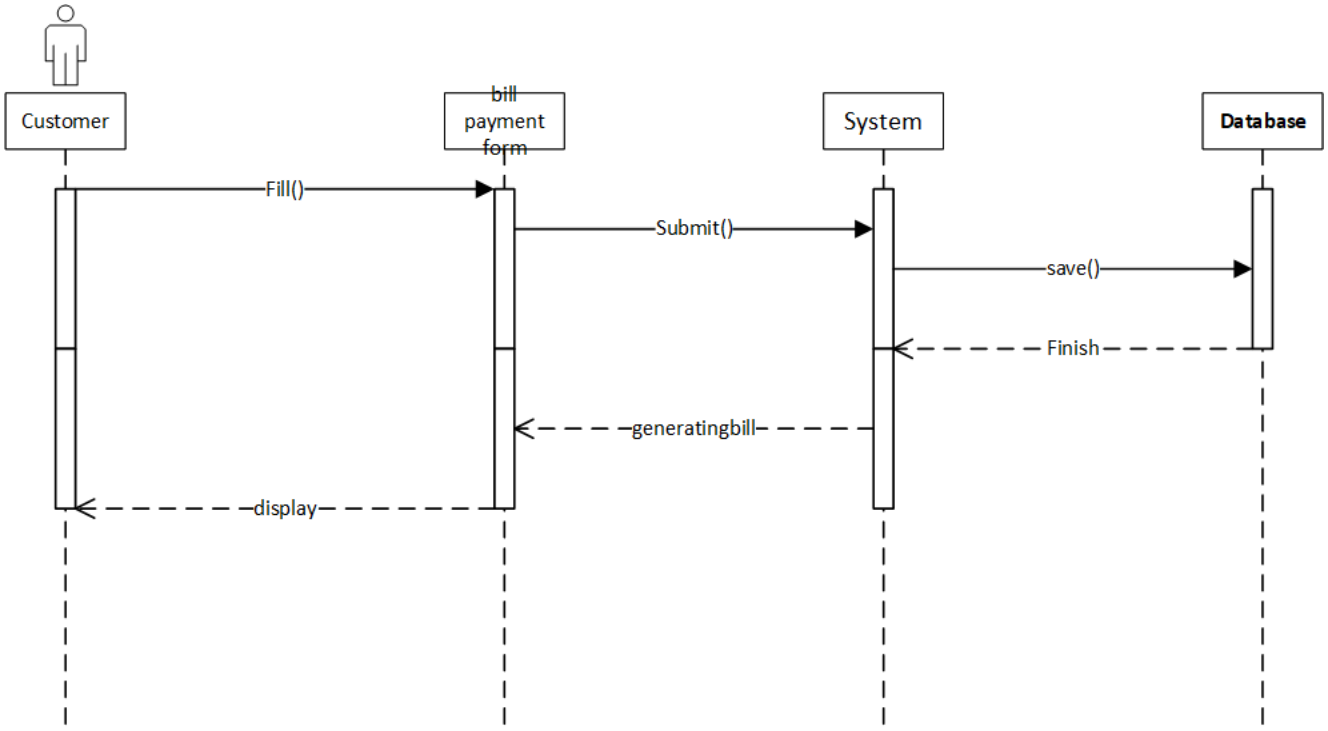

Figure 32 sequence diagram for bill paying

3.6.3 Sequence diagram for handle my bookings

It shows how customer interact with his booking details and confirmation of the booking

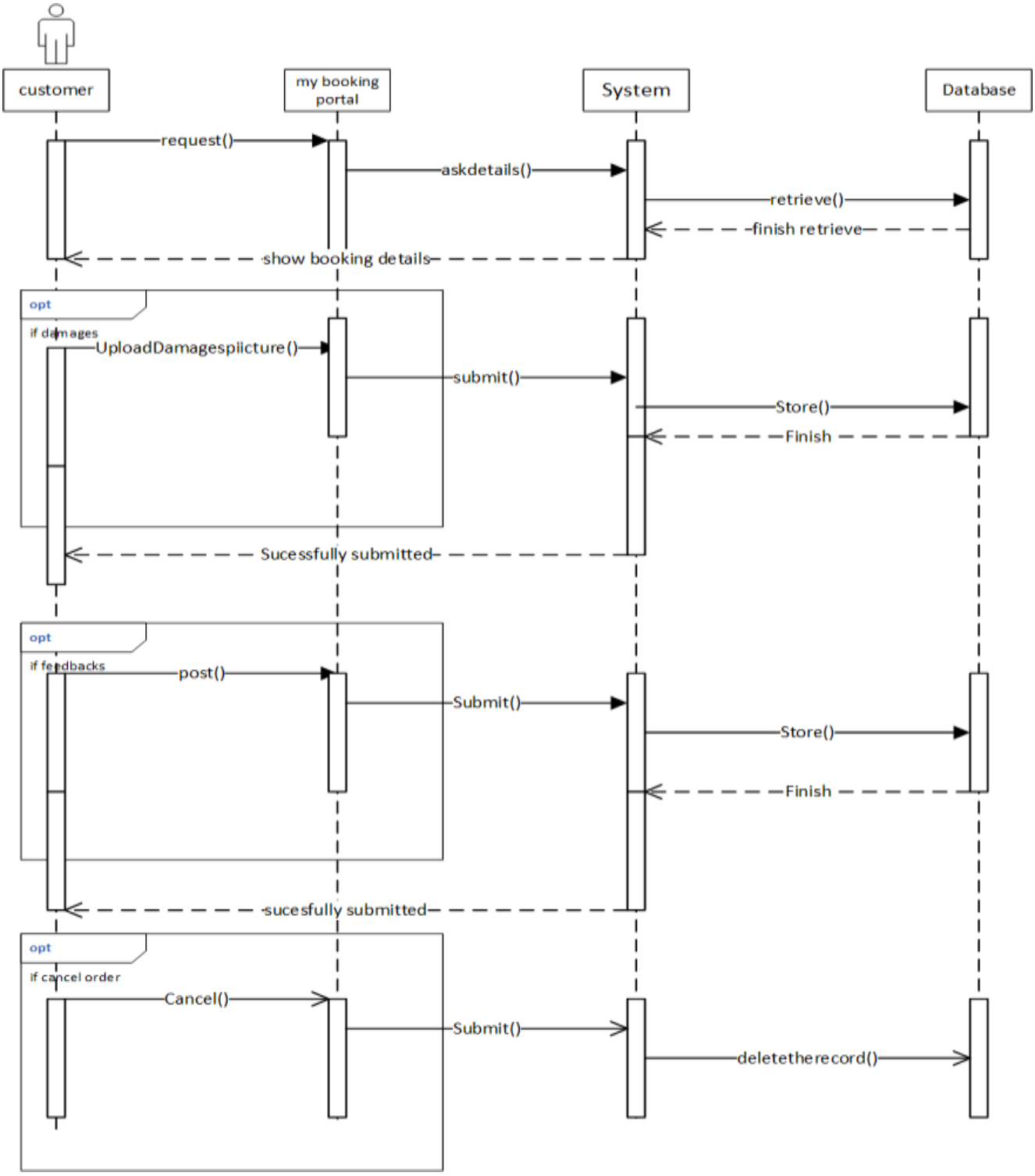

Figure 33 sequence diagram for handle my bookings

3.6.4 Sequence diagram for handling the customer details

I. Sequence diagram for admin log in

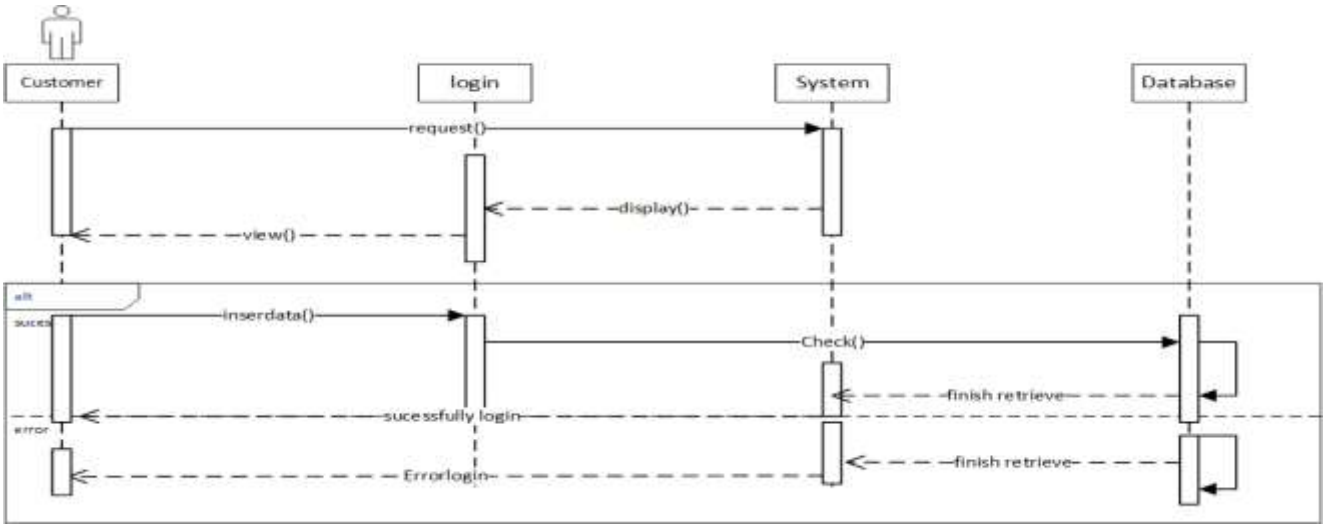

Figure 34 sequence diagram for admin log in

II. Sequence diagram for handling customer registration and feedback details

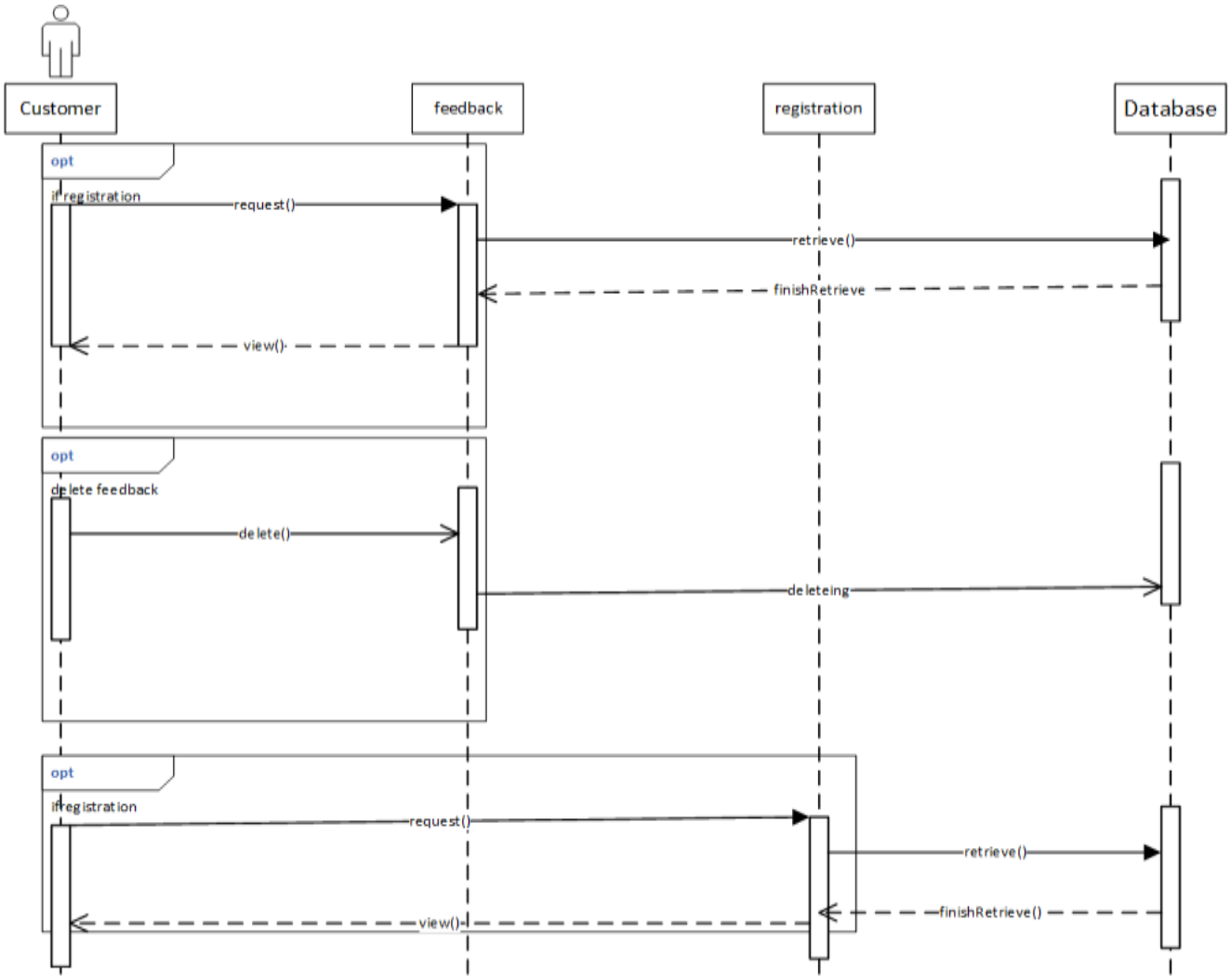

Figure 35 sequence diagram for handle customer registration and feedbacks

3.6.5 Sequence diagram for handling inquiry details

it shows how admin handle the inquiries on the proposed system

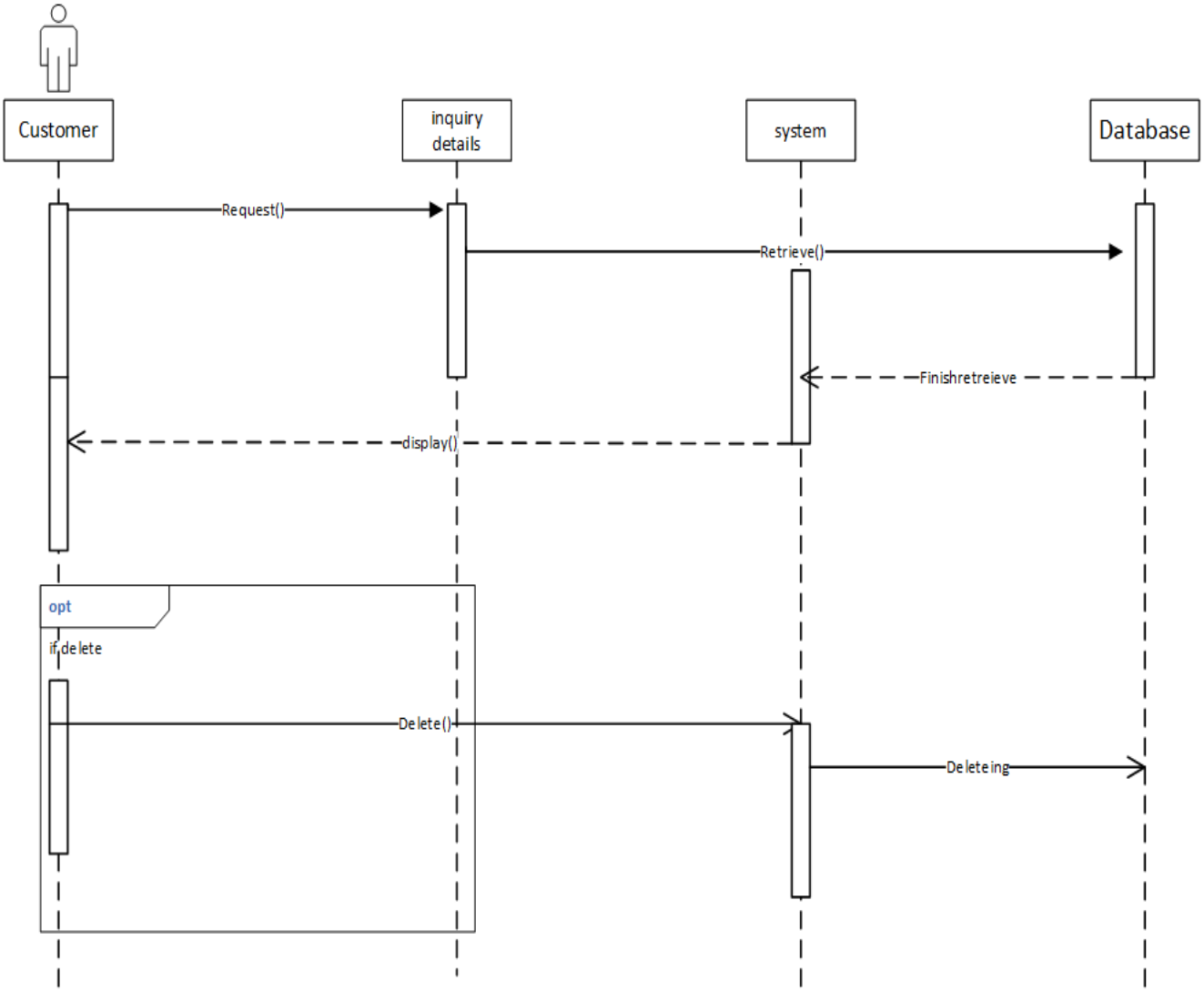

Figure 36 sequence diagram for handling inquiries

3.6.6 Sequence diagram for handling vehicle details

it shows how admin interacts with system in managing vehicle details

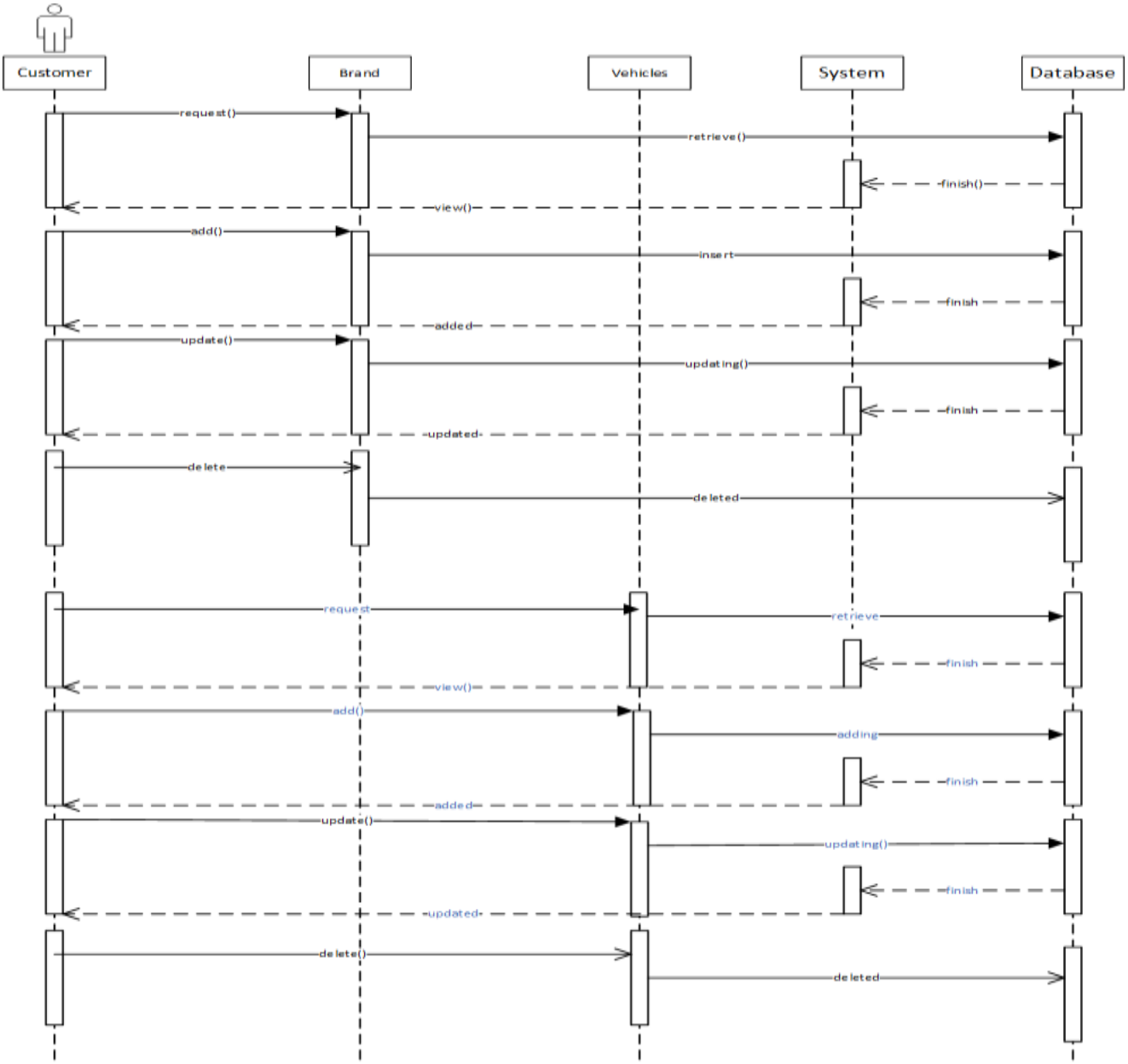

Figure 37 sequence diagram for handling vehicle details

3.6.7 Sequence Diagram for handle bookings

It shows how admin interacts with booking details and confirmation of the booking

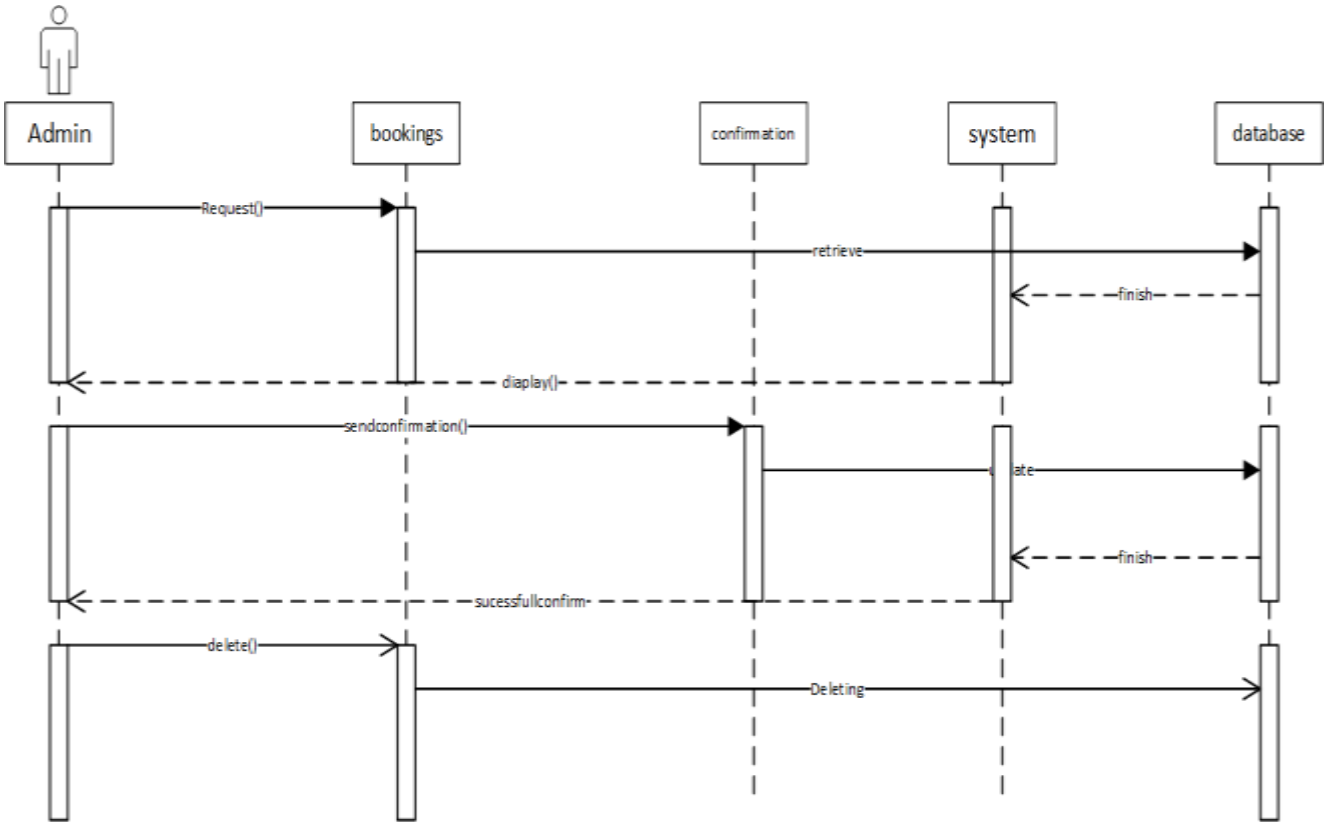

Figure 38 sequence diagram for handling bookings

3.6.8 Sequence diagram for handling report

it shows how admin generate report using proposed system

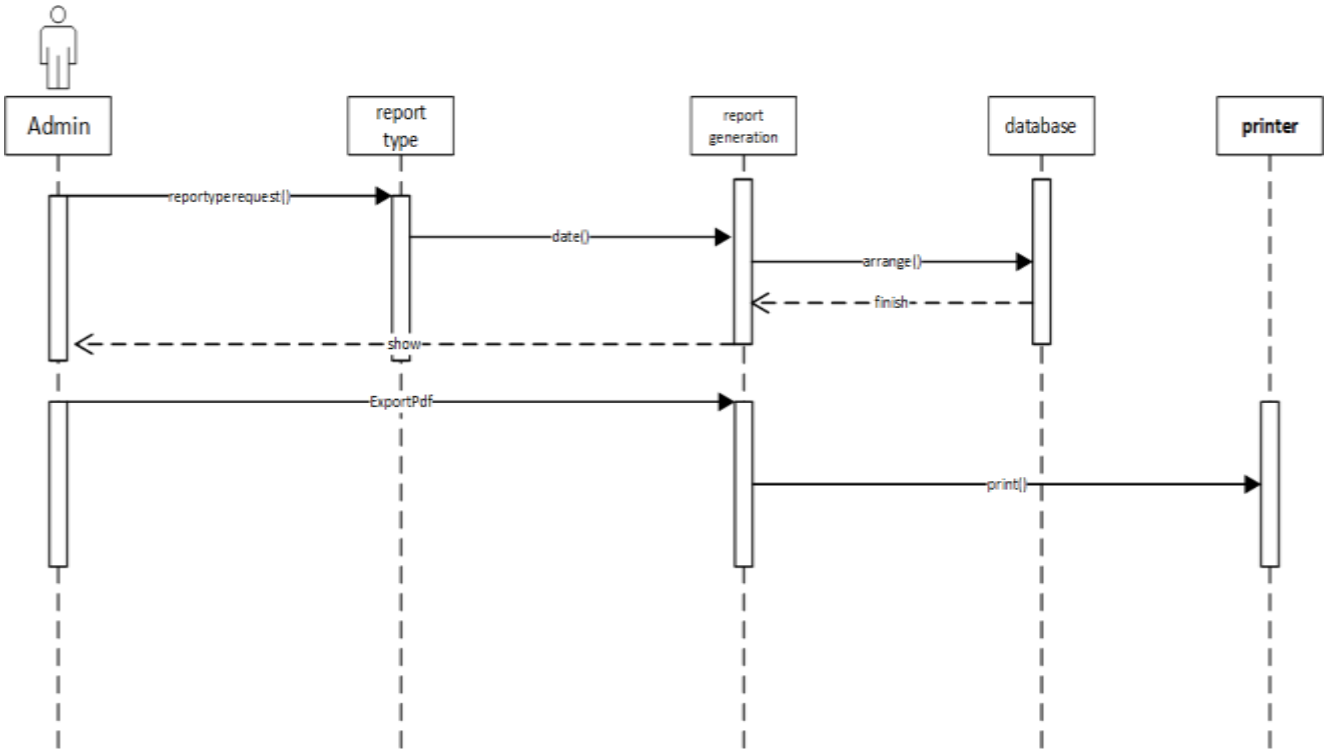

Figure 39 sequence diagram for handling report

3.7 Graphical User Interface

Graphical User Interface (GUI) is one of the key components in a web application that communicates with the Users of the System. User friendly GUI is the one of the major nonfunctional requirements of the system. The main design consideration related with GUI's are listed below where these factors are considered in the system GUI design.

- Attractive User interfaces
- User friendly interfaces, easy to use and easily learnable user interfaces
- Easy to navigate forward and backward and keeping the process flow of the actions
- Give good error messages with information to recover from the error occurred
- Prevent errors as much as possible and use client-side validations to give immediate feedback.
- Provide feedback of all the actions if succeeded or not

3.7.1 User interface for vehicle reservation

This picture illustrates the home page of the application

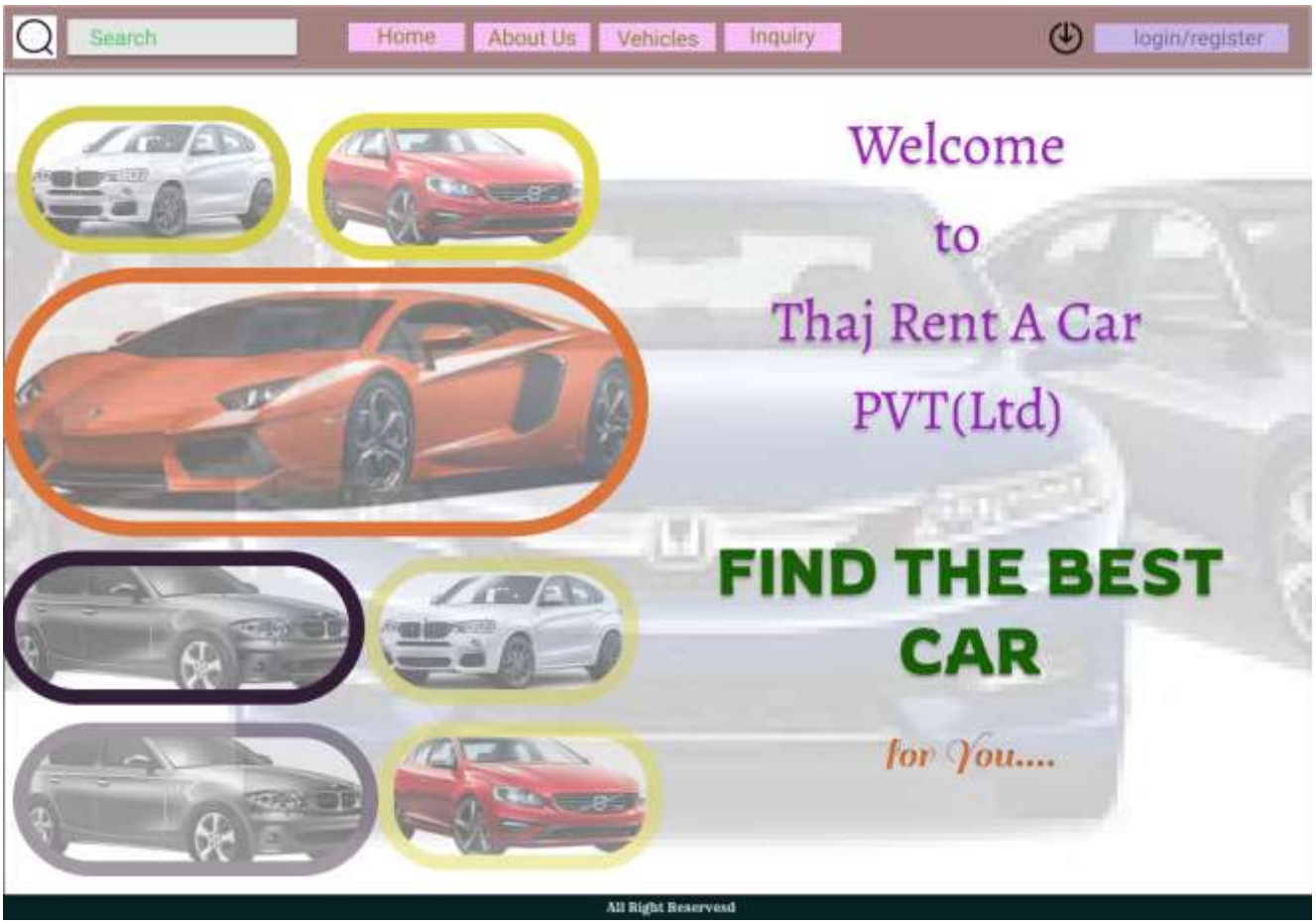

Figure 40 GUI for home page

This picture illustrates the inquiry option of the system

Figure 41 GUI for inquiry option

This picture illustrates the search and filter option of the system

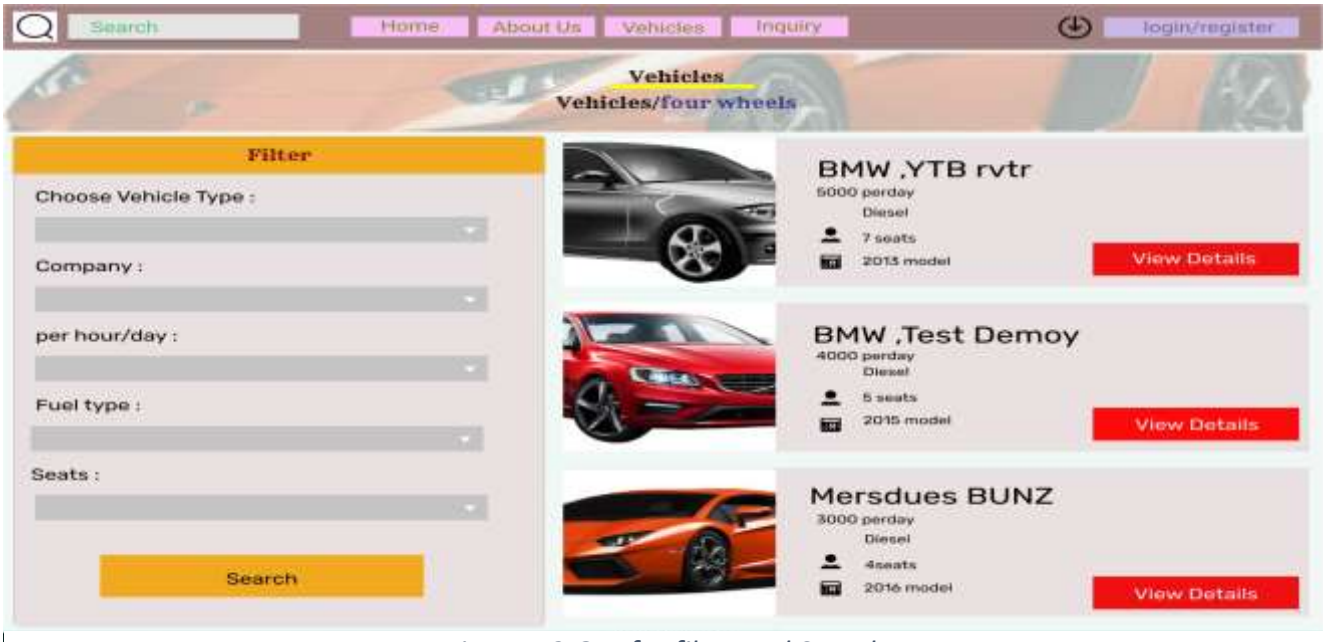

Figure 42 GUI for filter and Search

This picture illustrates the booking form and vehicle full details where customer should log in to the system if not, he should register to log in to the system

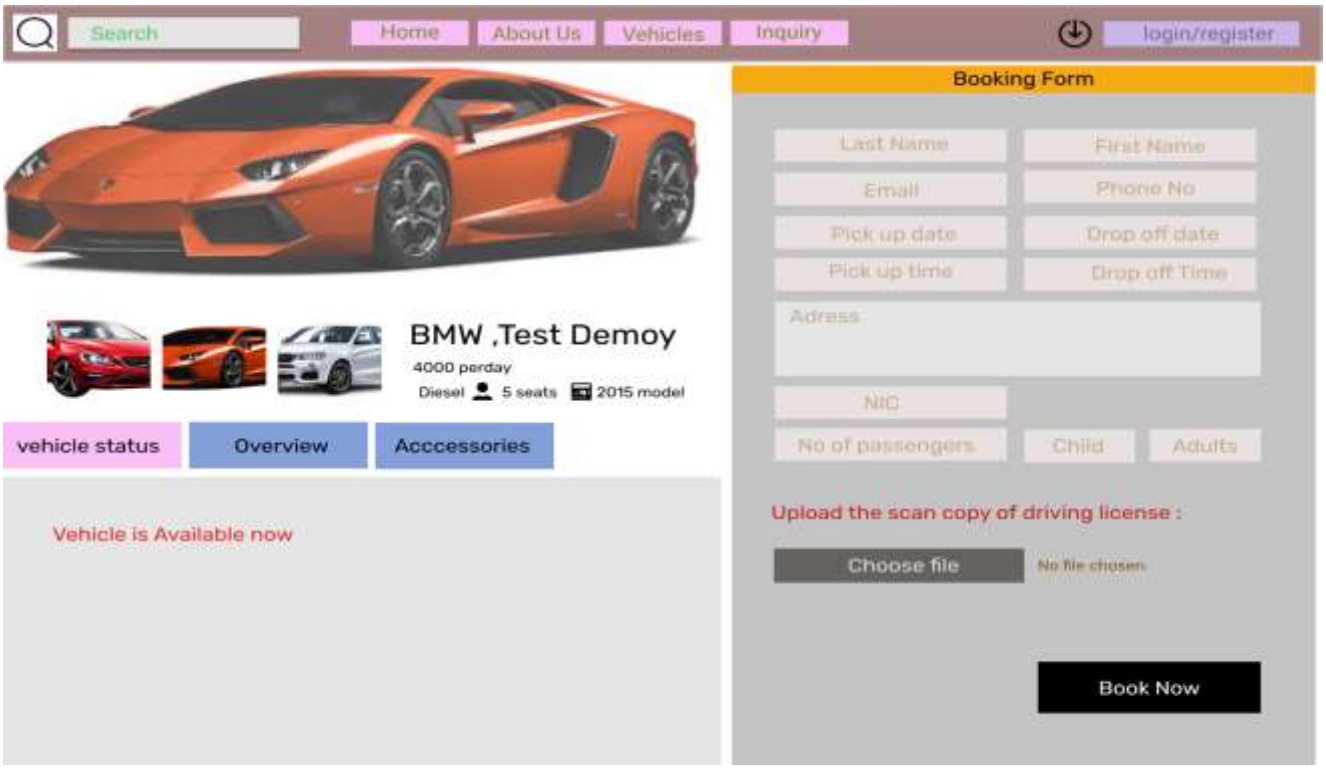

Figure 43 GUI for my booking form

This picture illustrates the Customer Registration process

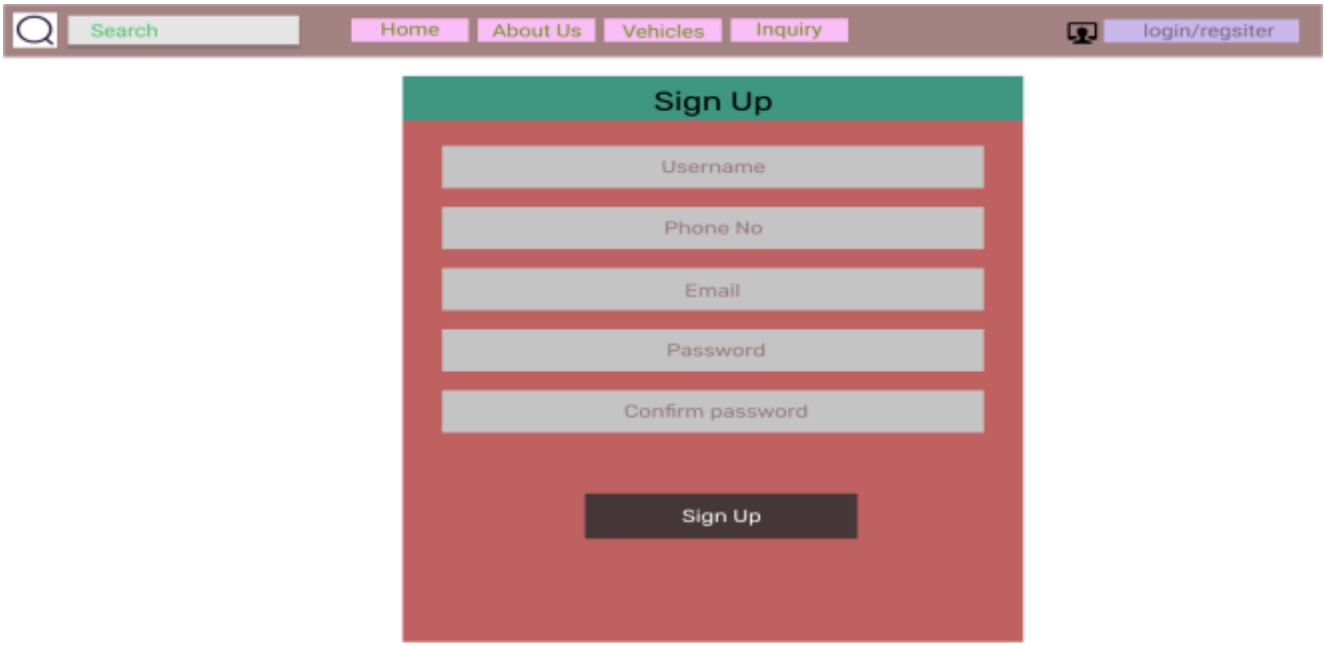

Figure 44 GUI for customer sign up

This picture illustrates the customer log in process after the registration

Figure 45 GUI for customer log in

After the registration and log in to the system customer is allowed to book the vehicle but unregistered customer can only search, inquiry and view vehicle details without login.

3.7.2 User interface for bill generation

This picture illustrates the selection of payment method and bill generation of particular reservation

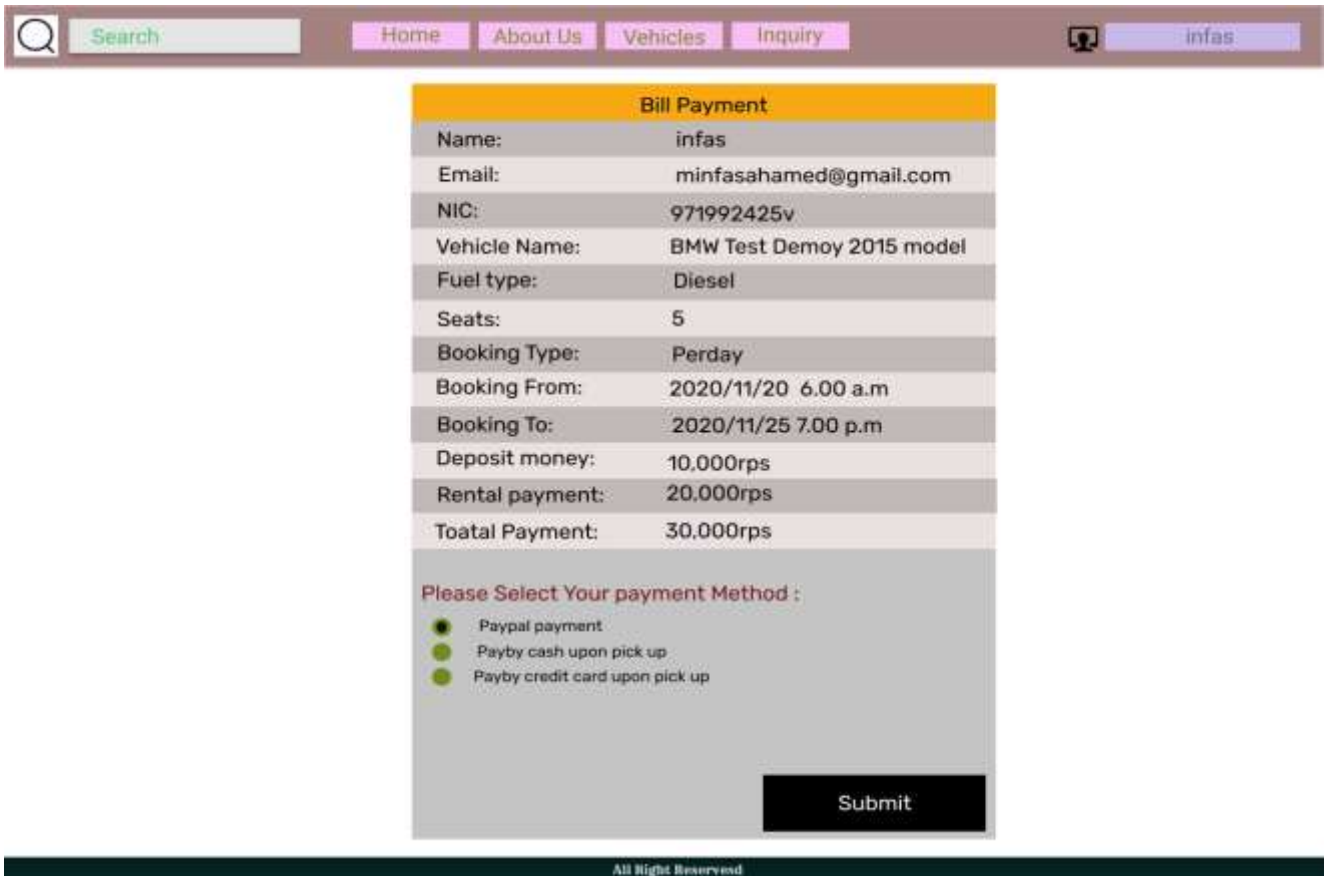

Figure 46 GUI for bill generation

This picture illustrates the online payment gateway if customer select the online payment method

Figure 47 GUI for online payment gate way

3.7.3 User interface for my booking portal

Here customer can view current booking details and old booking details, post the feedback of their service, cancel the reservation mentioning reservation, upload the driving license images and also can upload images of the particular vehicles damages upon picking up the vehicle to notify the administration about damages otherwise those damages will be considered to be the current customers faults who is now using the rental vehicle.

So, this kind of user interface is useful to reduce the misconception between the admin and customer

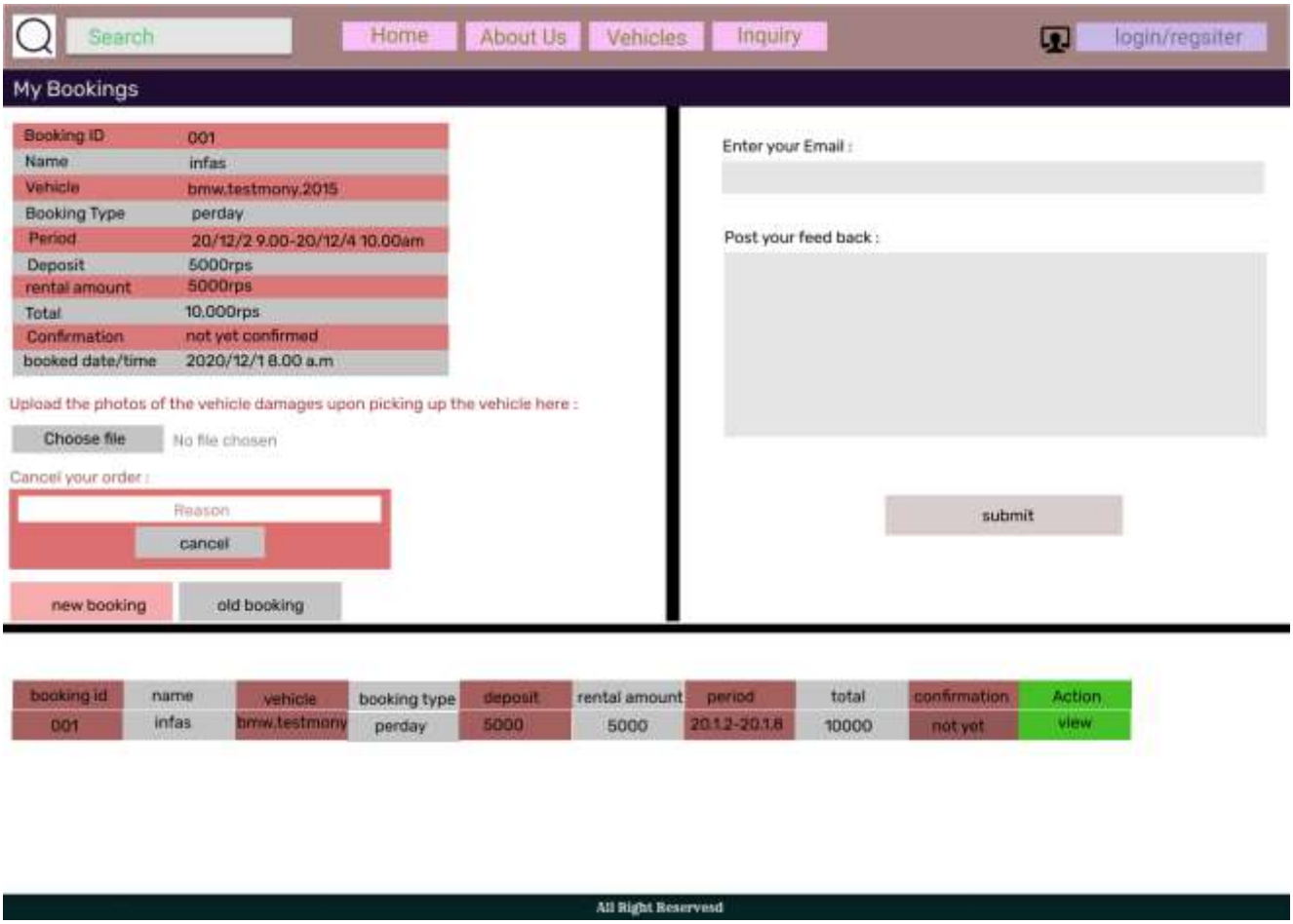

Figure 48 GUI for my booking portal

3.7.4 User interface for Admin login

This picture illustrates the log in system of customer

Figure 49 GUI for Admin log in

3.7.5 User interface for Admin Dashboard

it illustrates the admin dashboard which appear after the login of the admin where all admin activities are well organized.

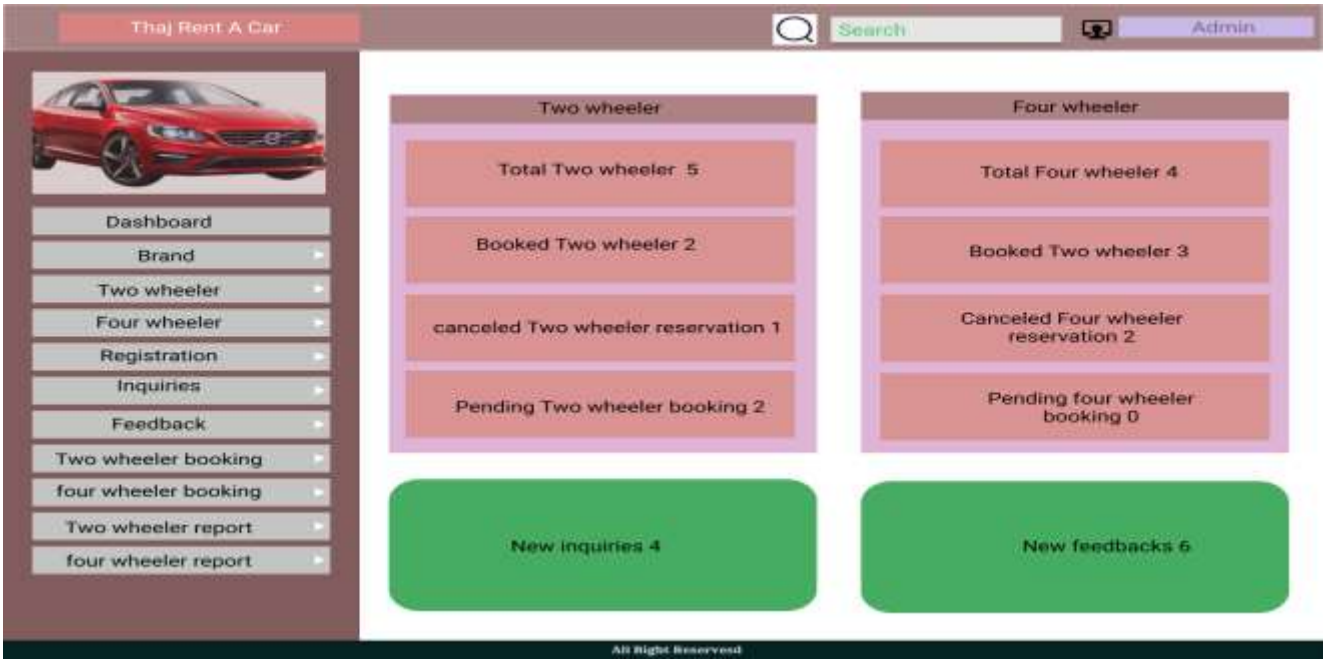

Figure 50 GUI for Admin dashboard

3.7.6 User Interface for handle vehicles

This picture illustrates the vehicle brand details where all vehicle brand data are managed

Figure 51 GUI for vehicle brands

This picture illustrates the post vehicle brands

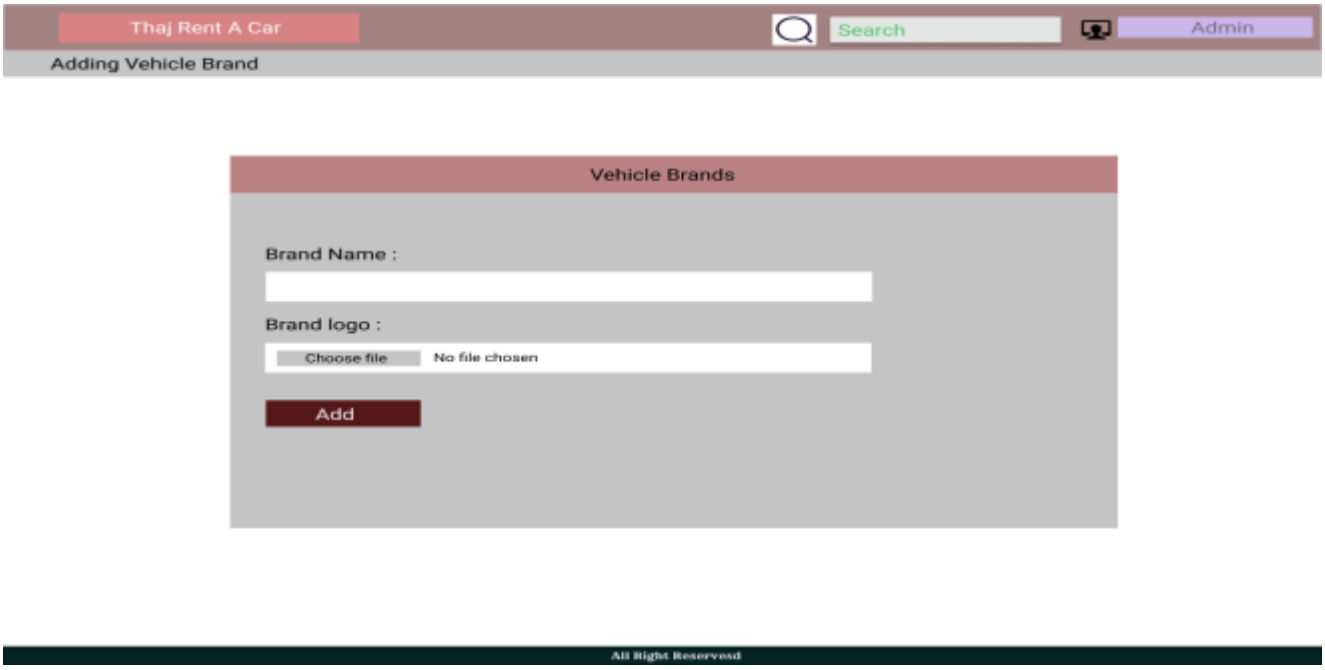

Figure 52 GUI for post new vehicle brands

This picture illustrates Update brands of the vehicles

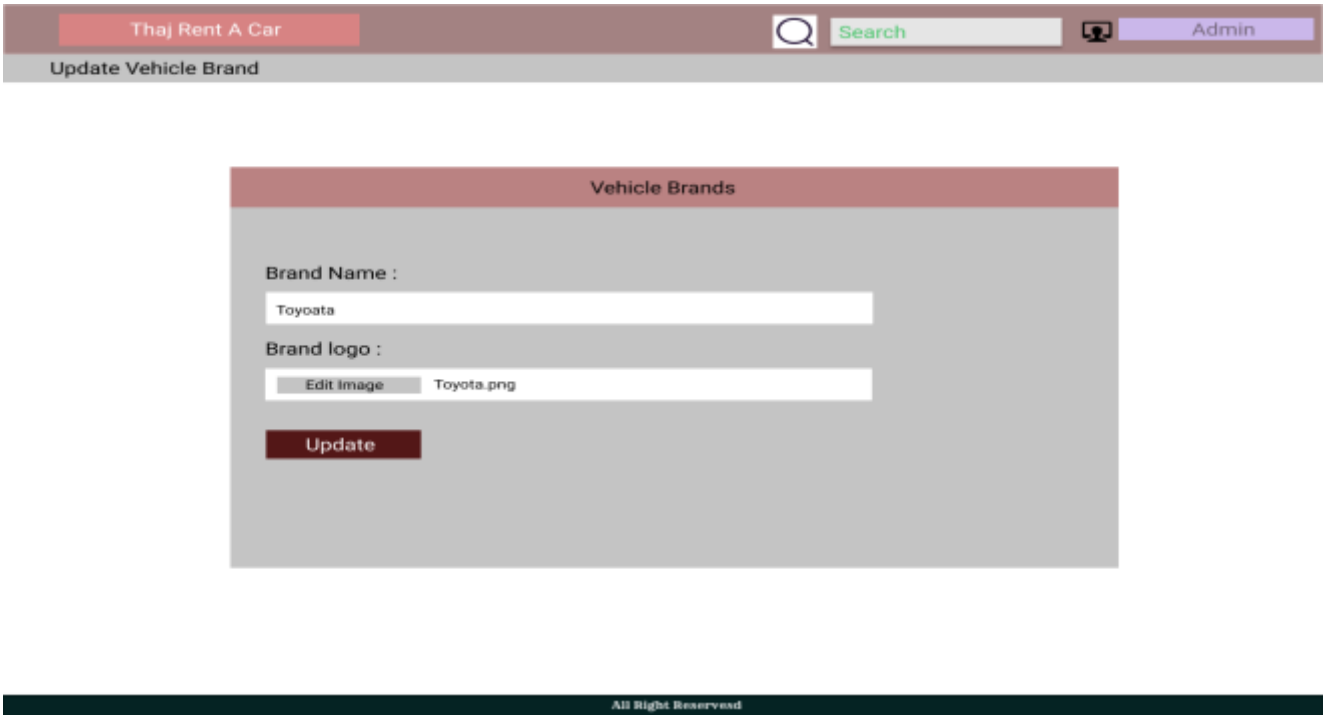

Figure 53 GUI for update vehicle brands

This picture illustrates post vehicle details of the organization

Figure 54 GUI for post new vehicles

This picture illustrates the manage vehicle details

Figure 55 GUI for vehicle details

This picture illustrates the updating process of vehicle on the system.

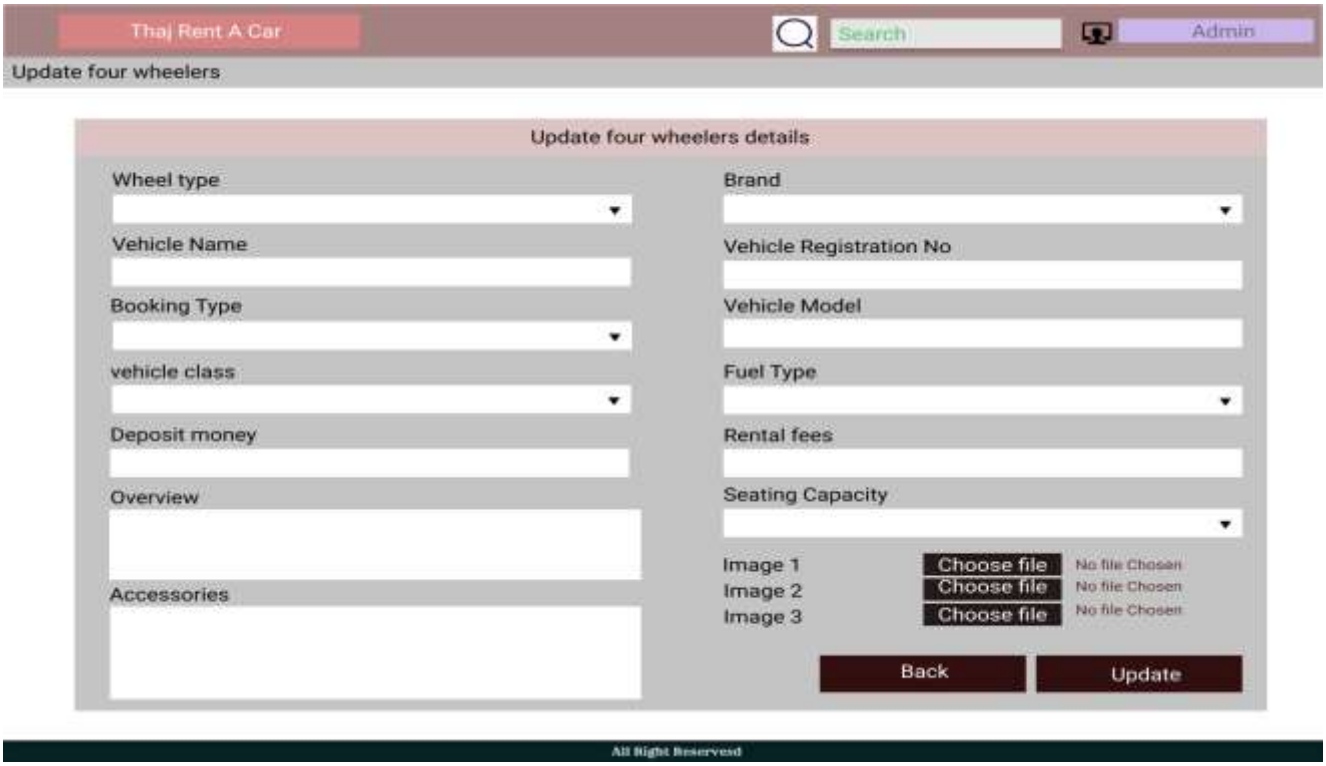

Figure 56 GUI for update vehicle details

3.7.7 User interface for handle the inquiries

This picture illustrates the customer inquiry details handling on through the system

Figure 57 GUI for inquiry details

3.7.8 User interface for handling customer details

It illustrates the customer registration details who registered into the system

Figure 58 GUI for customer registration details

This picture illustrates the feedback details of the customer

Figure 59 GUI for customer feedback details

3.7.9 User interface for handle the bookings

This picture illustrates the manage vehicle bookings

Figure 60 GUI for booking details

This picture illustrates the confirmation process of bookings

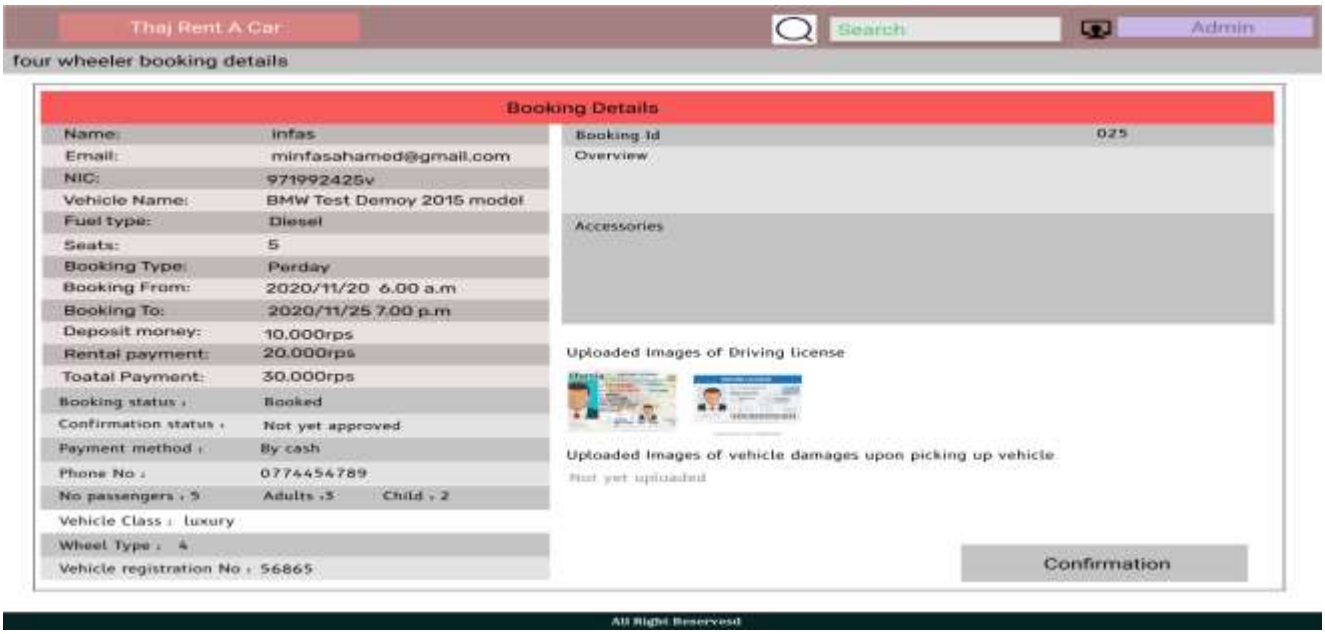

Figure 61 GUI for booking confirmation

This picture illustrates the sending confirmation message of admin to customer booking portal

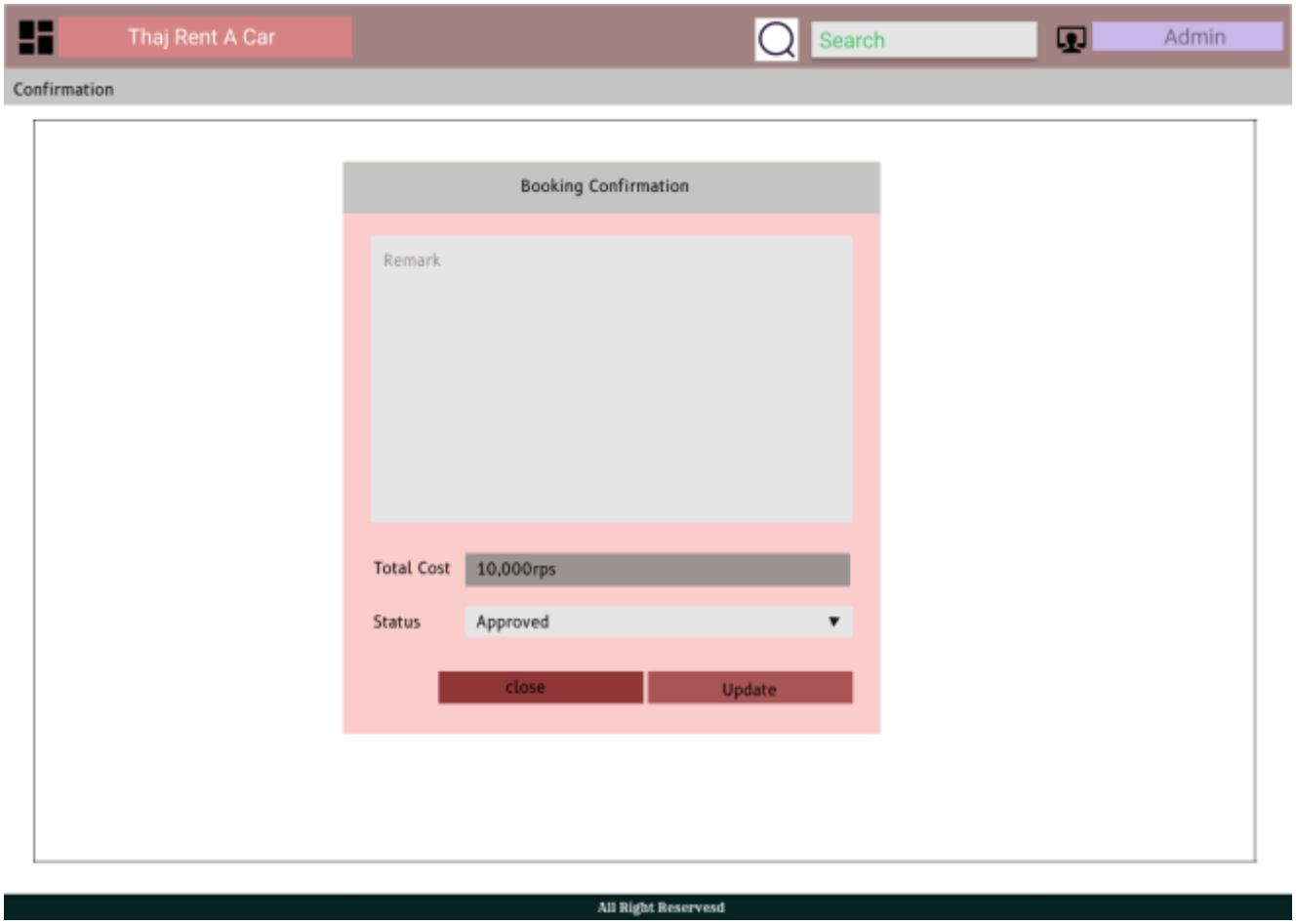

Figure 62 GUI for sending confirmation message

3.7.10 User interfaces for report generation

This picture shows the between date report generation

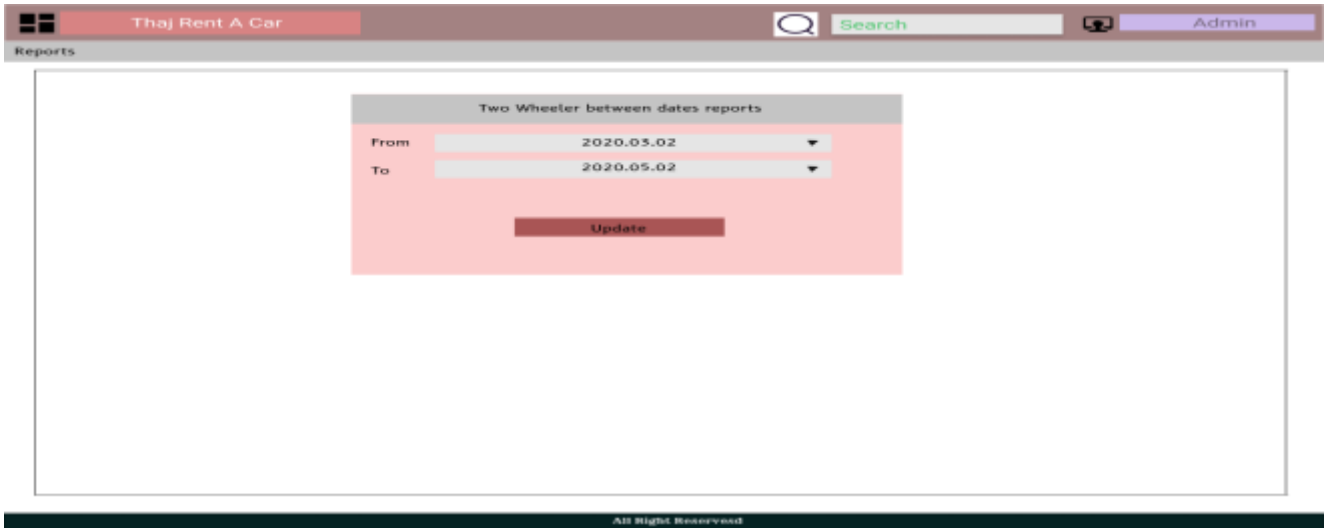

Figure 63 GUI for B/W report generation

This picture shows the sample between date reports

Figure 64 GUI for sample B/W report

This picture shows generating booking count report

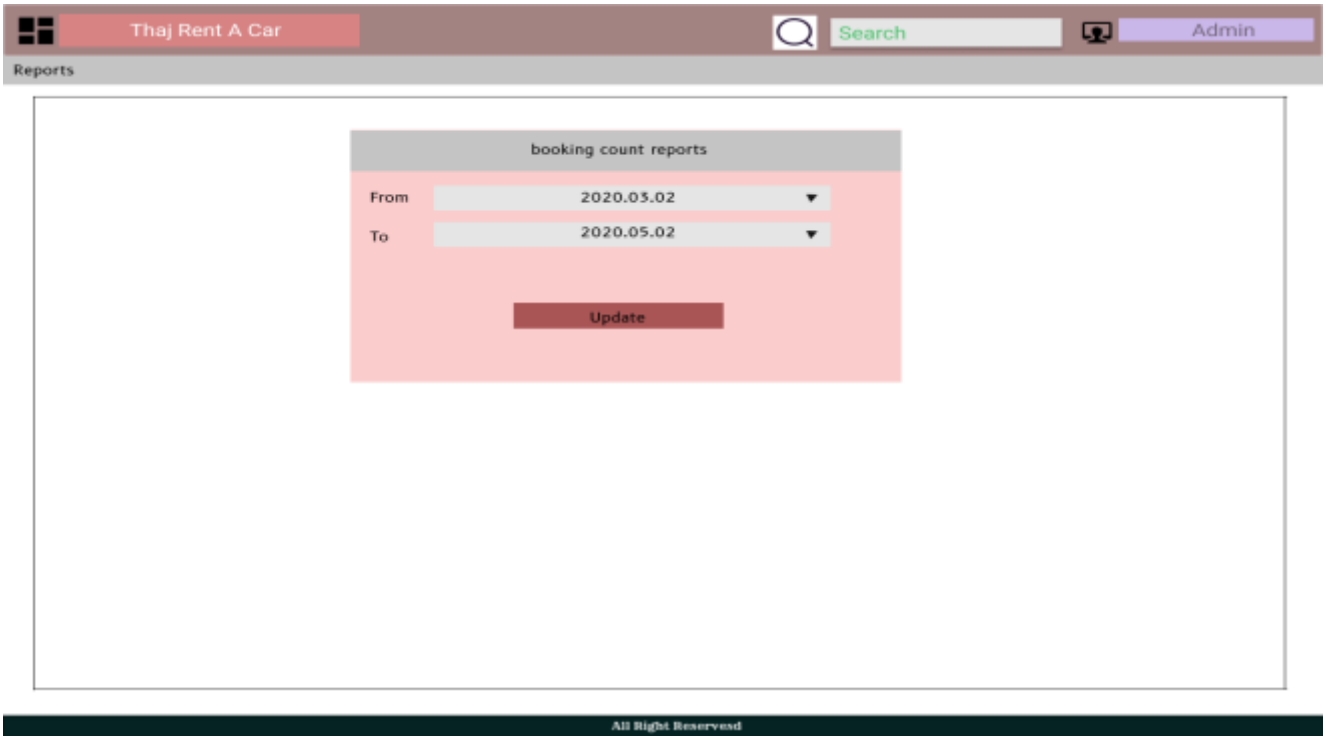

Figure 65 GUI for booking count report

This picture shows the sample of booking count report

Figure 66 GUI for sample booking count report

This picture shows generating sales report

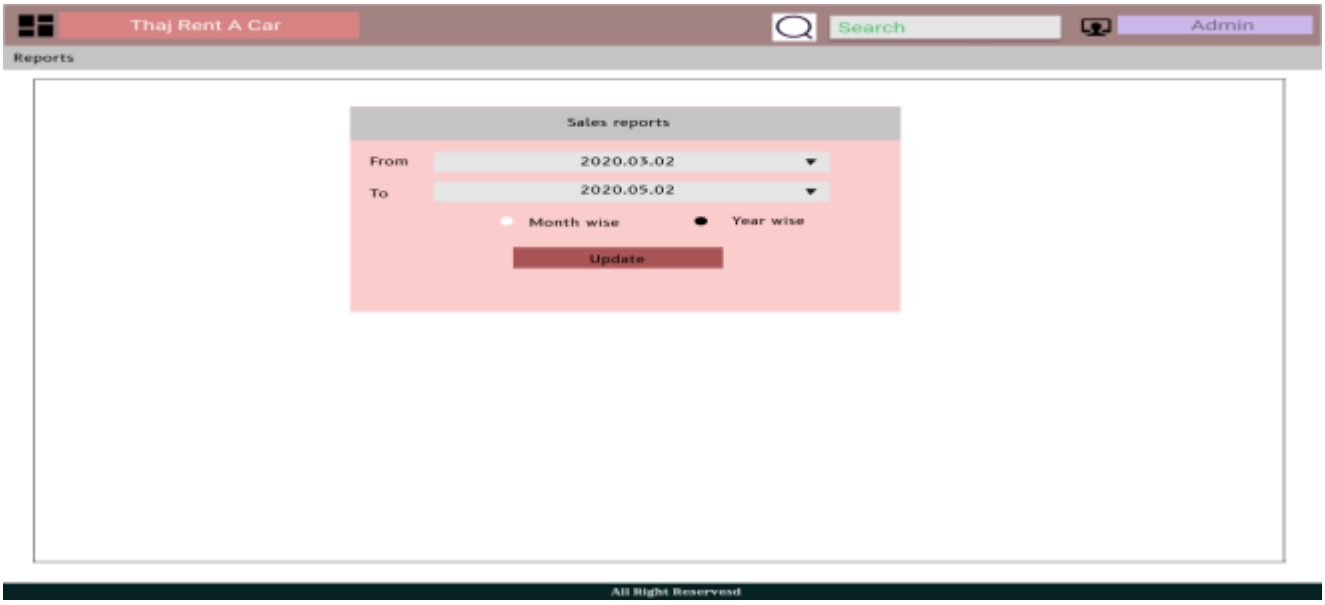

Figure 67 GUI for sales report generation

This picture shows the sample sales report

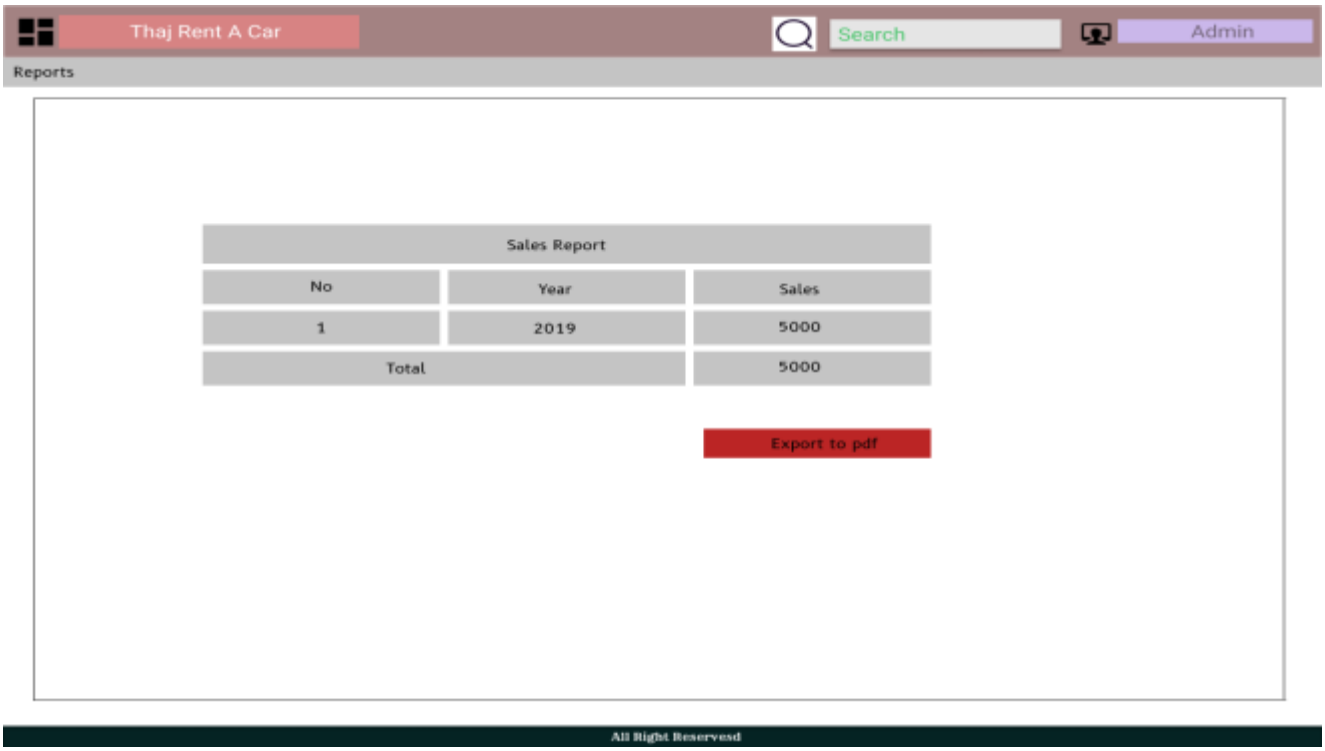

Figure 68 GUI for Sample sales report

3.8 Summary

This chapter depicted the system design where it showed how the functionality is achieved. this was depicted through object-oriented approach. Furthermore, the database design and the graphical user interfaces were elaborated

CHAPTER 4 – SYSTEM DEVELOPMENT

This Chapter evaluate the technologies being used for developing this project to consider those things in a collective way which would be helpful to identify easily and understand the systems capability for further developments.

Outline Of the Chapter

4.1 Programming Languages

4.2 Development tools and techniques

4.3 Third party components and Libraries

4.1 Programming Languages

Web based online vehicle rental system is a web application developed using server side php and MySQL technology as a backend development whereas jQuery, Ajax, Bootstrap frameworks were used to develop this web-based system where HTML, JavaScript and CSS languages were used in these frameworks to develop this system while using the php language for backend development.

4.1.1 JavaScript (JS)

JavaScript is a unique PC programming language. It is lightweight and most regularly utilized as a piece of pages, whose executions permit customer side content to communicate with the client and make dynamic pages. It is a deciphered programming language with object-arranged abilities. HTML pages are fine for showing static substance, for example a basic picture or text. Nonetheless, most pages these days are once in a while static. A considerable lot of the present pages have menus, structures, slideshows and even pictures that give client collaboration. JavaScript is the language utilized by web engineers to give such collaboration. Since JavaScript works with HTML pages, an engineer has to realize HTML to tackle this prearranging language's maximum capacity. While there are different dialects that can be utilized for prearranging on the Web, practically speaking it is basically all JavaScript. JavaScript was at first made as a program just language yet is presently utilized in numerous different conditions too. In my venture JavaScript is utilized as both the customer side and worker side programming language.

4.1.2 Hyper Text Markup Language

HTML is an abbreviation which represents Hyper Text Markup Language which is utilized for making website pages and web applications. How about we see what is implied by Hypertext Markup Language, and Web page. Hyper Text basically signifies "Text inside Text." A book encapsulates a connection, is a hypertext. At whatever point you click on a connection which carries you to another page, you have tapped on a hypertext. Hyper Text is an approach to connect at least two website pages (HTML records) with one another. A markup language is a coding that is utilized to apply design and organizing shows to a book archive. Markup language makes text more intelligent and dynamic. It can transform text into pictures, tables, joins, and so forth A site page is a report which is regularly written in HTML and interpreted by an internet browser. A page can be recognized by entering a URL. A Web page can be of the static or dynamic sort. With the assistance of HTML no one but, we can make static site pages.

Subsequently, HTML is a markup language which is utilized for making appealing website pages with the assistance of styling, and which glances in a decent arrangement on an internet browser. A HTML archive is made of numerous HTML labels and every HTML tag contains distinctive substance.

4.1.3 Cascading Style Sheet (CSS)

Cascading Style Sheets, affectionately alluded to as CSS, is a straightforward plan language expected to work on the way toward making site pages adequate. CSS handles the look and feel a piece of a site page. Utilizing CSS, you can handle the shade of the content, the style of text styles, the separating between passages, how sections are estimated and spread out, what foundation pictures or shadings are utilized, format plans, varieties in show for various gadgets and screen measures just as an assortment of different impacts. CSS is not difficult to learn and see however it gives amazing authority over the introduction of a HTML archive. Most normally, CSS is joined with the markup dialects HTML or XHTML.

4.1.4 PHP

PHP is a admin side prearranging language planned fundamentally for web advancement yet in addition utilized as a broadly useful programming language. PHP initially represented Personal Home Page, yet it presently represents the recursive abbreviation PHP: Hypertext Preprocessor. PHP code might be implanted into HTML code, or it tends to be utilized in blend with different web layout frameworks, web content administration frameworks and web systems. PHP code is generally prepared by a PHP mediator carried out as a module in the web worker or as a Common Gateway Interface (CGI) executable. The web worker joins the aftereffects of the deciphered and executed PHP code, which might be any sort of information, including pictures, with the created page. PHP code may likewise be executed with an order line interface (CLI) and can be utilized to carry out independent graphical applications.

4.2 Development Tools and Techniques

4.2.1 XAMMP

XAMPP is a free and open-source cross-stage web worker arrangement stack bundle created by Apache Friends, comprising basically of the Apache HTTP Server, MariaDB data set, and translators for scripts written in the PHP and Perl programming dialects. XAMPP represents Cross-Platform (X), Apache (A), MariaDB (M), PHP (P) and Perl (P). It is a straightforward, lightweight Apache dispersion that makes it incredibly simple for designers to make a nearby web worker for testing and arrangement purposes. XAMPP is likewise cross-stage, which implies it functions admirably on Linux, Mac and Windows. Since most genuine web worker arrangements utilize similar segments as XAMPP, it makes progressing from a neighborhood test worker to a live worker very simple too.

4.2.2 MySQL

MySQL is an open-source social data set administration framework (RDBMS). Its name is a blend of "My", the name of fellow benefactor and "SQL", the shortening for Structured Query Language. MySQL is a focal segment of the LAMP open-source web application programming stack (and other "AMP" stacks). Light is an abbreviation for "Linux, Apache, MySQL, Perl/PHP/Python". Applications that utilization the MySQL data set include: TYPO3, MODx, Joomla, WordPress, phpBB, MyBB, and Drupal.

4.2.3 Visual Studio Code

Visual Studio Code is a smoothed-out code manager with help for advancement activities like troubleshooting, task running, and form control. It expects to give simply the apparatuses an engineer needs for a speedy code-construct troubleshoot cycle and passes on more perplexing work processes to more full highlighted IDEs, like Visual Studio IDE.

Visual Studio Code is an incredible editorial manager for PHP advancement. You get highlights like linguistic structure featuring and section coordinating, IntelliSense (code finishing), and scraps out of the case and you can add greater usefulness through local area made VS Code expansions including HTML, CSS and JavaScript language also.

4.3 Third Party Components and Libraries

4.3.1 Bootstrap

Bootstrap is a front-end system for HTML, CSS and JavaScript that is outstanding for creating portable first and responsive sites. With some essential information on HTML and CSS, you can make Bootstrap structures, tables, catches, typography, route, modals, picture merry go rounds and discretionary JavaScript modules, by utilizing the premade formats Bootstrap gives you.

4.3.2 jQuery

jQuery is a cross-stage JavaScript library intended to improve on the customer side prearranging of HTML. jQuery is the most mainstream JavaScript library being used today, with establishment on 65% of the best 10 million most elevated dealt locales on the Web. jQuery is free, open-source programming authorized under the MIT License. jQuery's linguistic structure is intended to make it simpler to explore an archive, select DOM components, make movements, handle occasions, and foster Ajax applications. jQuery likewise gives capacities to designers to make modules on top of the JavaScript library. This empowers engineers to make deliberations for low-level cooperation and movement, progressed impacts and significant level, topic capable gadgets. The measured way to deal with the jQuery library permits the formation of amazing unique site pages and Web applications.

4.3.3 Font Awesome

Font Awesome is a textual style and symbol tool stash dependent on CSS and Less. Starting at 2020, Font Awesome was utilized by 38% of destinations that utilization outsider text style scripts, putting Font Awesome in runner up after Google Fonts.

4.3.4 html2pdf.js

html2pdf.js converts any webpage or element into a printable PDF entirely client-side using html2canvas and jsPDF.

CHAPTER 5 – System Testing

Outline Of the Chapter

5.1 Test Plan and Test Strategy
5.2 Test Cases
5.3 Test Report

5.1 Test Plan and Test Strategy

Testing is done to guarantee that the framework is lined up with the client prerequisites. The various functionalities are tried to improve and keep up with the nature of the item. The testing plan portrays the capacities to be tried by their significance according to the client's perspective. As indicated by the test plan, experiments are created by their relating use case portrayals. All the experiments are physically executed, and the outcomes were recorded as needs be. The breakdowns and bugs were recognized and remedied to be tried again to guarantee that the usefulness is improved.

5.2 Test Cases

An experiment is a bunch of test inputs, execution conditions and expected outcomes created for a specific levelheaded, for example, to practice a specific program way or to confirm consistence with a particular prerequisite.

5.2.1 Test Case 01 – User Registration

1. User Registration				
ID	Test Case Description	Input Data	Expected Output	Status
1.1	Register Case Steps I. Open Registration Form II. Input User Details III. Click On submit Button	• Full Name • Mobile Number • Email Address • Password • Confirm Password • Agree Terms	Message indicating Successfully Registered	Yes
1.2	Registration Detail Validation	• Empty Data	Message indicating that please fill out the fields	Yes

Table 20 Test Case 01 - User Registration

5.2.2 Test Case 02 – User Log In

2. User Log in				
ID	Test Case Description	Input Data	Expected Output	Status
2.1	User Log in Steps I. Open Log In form II. Input Log in details III. Click On Log in button	• Email Address • Password	Message indicating Successfully Log In	Yes
2.2	Log In Detail Validation	• Empty Data	Message indicating that please fill out the fields	Yes

Table 21 Test Case 02 - User Log In

5.2.3 Test Case 03 – Filter and Search

3. Filter and Search				
ID	Test Case Description	Input Data	Expected Output	Status
3.1	Filter and Search step I. Select corresponding data II. Or Enter key word III. Click filter button or search icon	• Input the key word or select data from drop down menu	Corresponding filtered out put appeared	Yes

Table 22 Test Case 03 - Filter and Search

5.2.4 Test Case 04 – Reservation (Booking)

4. Reservation (Booking)				
ID	Test Case Description	Input Data	Expected Output	Status
4.1	Reservation method I. Select vehicle II. Fill booking form III. submit	• Input Booking form details	Appear on booking details and display successful message	Yes
4.2	Validation I. Registered user II. Fill out the registration form	• Tend to input data without register	Asked to register	yes

Table 23 Test Case 04 - Reservation Booking

5.2.5 Test Case 05 – Add Subscription

5. Add Subscription				
ID	Test Case Description	Input Data	Expected Output	Status
5.1	Enter the valid email address on the subscription newsletter otherwise invalid message will appear	• Input the valid email address	Success full message appeared	Yes

Table 24 Test Case 05 - Add Subscription

5.2.6 Test Case 06 – Contact Us

6. Contact Us				
ID	Test Case Description	Input Data	Expected Output	Status
6.1	Click Contact Us page I. Enter your details II. Enter your message III. Send Message	• Message • Email • Full Name • Phone Number	Successfully Send messages appeared	Yes
6.2	Validation	• Empty data	Fill out field message appear	Yes

Table 25 Test Case 06 - Contact Us

5.2.7 Test Case 07 – Admin Log In

7. Admin Log In				
ID	Test Case Description	Input Data	Expected Output	Status
7.1	I. Click Admin Log In Form II. Enter Details III. Click Log In Button	• Input Admin log In details Username and password	Admin dashboard appeared	Yes
7.2	Validation	• Empty Data	Fill Out the field message appeared	Yes

Table 26 Test Case 07 - Admin Log In

5.2.8 Test Case 08 – Post New Vehicle

8. Post New Vehicle				
ID	Test Case Description	Input Data	Expected Output	Status
8.1	Admin Dashboard I. Select vehicles II. Select post vehicles III. Input the Data	• Images • Overview • Price • Brand • Model • Fuel type • Seating capacity • Accessories	Successful message appeared	Yes

Table 27 Test Case 08 - Post New Vehicles

5.2.9 Test Case 09 – Create New Brand

9. Create New Brand				
ID	Test Case Description	Input Data	Expected Output	Status
9.1	Dashboard I. Click Post Brand II. Enter Data III. Submit	• Brand	Created Successfully message appeared	Yes

Table 28 Test Case 09 - Create New Brand

5.2.10 Test Case 10 – Booking Confirmation

10. Booking Confirmation				
ID	Test Case Description	Input Data	Expected Output	Status
10.1	Dashboard I. Click Bookings II. New Booking III. View IV. Confirm or cancel	• Click confirm button or cancel button	Confirmation message appeared	Yes

Table 29 Test Case 10 - Booking Confirmation

5.2.11 Test Case 11 – Manage Pages

11. Manage Pages				
ID	Test Case Description	Input Data	Expected Output	Status
11.1	Dashboard I. Click Manage Pages II. Input page details III. Click Update	• Page Details • Page type	Updated page shown	Yes

Table 30 Test Case 11 - Manage Pages

5.2.12 Test Case 12 – Update Contacts

12. Update Contacts				
ID	Test Case Description	Input Data	Expected Output	Status
12.1	Dashboard I. Update contact info II. Input data III. Update	• Address • Email • Contact No	Updated Details appeared in contact pages	Yes

Table 31 Test Case 12 - Update Contact

5.2.13 Test Case 13 – Booking Count Report

13. Booking Count Report				
ID	Test Case Description	Input Data	Expected Output	Status
13.1	Dashboard I. Click Booking count Report II. Click Date Range III. Click Filter IV. Click Download	• Date range	Booking Details of the corresponding date range appear and pdf download appeared.	Yes

Table 32 Test Case 13 - Booking Count Report

5.3 Test Report

Testing is done as a feature of the advancement interaction, and not toward the finish of the entire cycle. Assuming it isn't done all through the advancement cycle, the testing is done toward the end, provided that this is true the framework will take numerous progressions even in the interface plan and interaction of interface routes as well. Consequently, changing these toward the end is exorbitant and tedious. Tests were performed iteratively. Number of bugs recognized by experiments and test information was decreased with every cycle. A few bugs took additional time than anticipated to fix. Be that as it may, fixing those bugs was imperative to framework to work appropriately. Bugs which were found during the tests were fixed right away. Assuming it couldn't be fixed, and there, it was recorded and retried later. Unit testing, Integrated Testing, Functional Testing were finished by the designer with the assistance of companions.

- Concept Testing – Acceptable
- All Units Testing - Passed
- All Integrated Testing – Passed
- UI Testing - Acceptable
- All Functional Testing - Completed
- System Testing – Completed

Idea testing, Unit Testing, Integrated testing, Functional testing tests the usefulness of the framework and contrasts and the prerequisites of the framework which expands the dependability and nature of the framework. UI testing builds the ease of use of the framework, which then, at that point expands the nature of the framework. Blunders were found in Unit, Integrated and Functional Testing, yet they were not disastrous or genuine mistakes and were mediocre. Engineer had the option to deal with the special cases discovered while troubleshooting the framework. Blunders found in UI and Concept testing were taken in to thought and were re-adjusted by their reality in the plan stage and advancement stage.

CHAPTER 6 – System Installation

Outline of the Chapter

6.1 Installation Guide

6.2 User Manual

6.1 Installation Guide

This section consists of the Hardware and Software requirements of the proposed system.

6.1.1 Installation Guide

Minimum Hardware Requirements of the client machine

- Intel Core i3 or above 2.0 GHz or Similar
- 4GB RAM
- Router with firewall to be connected always with internet
- 40GB or above Hard Disk

Server Requirements

- XAMPP server 5.0 or above

6.1.2 Software Requirements

Operating System

- Windows 10

Backend Software

- MySQL 8.0.21 or above

6.1.3 Installation of website development tools

- Download the XAMPP Server installer by choosing among 32-bits or 64-bits version depending on the Windows version.
- Run the downloaded installer to initiate the setup. Complete the setup by following all wizard instructions until the end. (XAMPP Server will require around 350MB+ space on the disk). It is recommended to install XAMPP on *C:/XAMPP*.
- Open web browser and follow this address 'http://localhost/phpmyadmin
- Create "Carrental" database
- Go to Import section of PhpMyAdmin
- Upload the project sql file in to Import section
- Click on go button. Then database will be created

6.2 User Manuals

This user manual will guide you through the system functionality enabling the user to easily manage activities and processes of the system. This software is created by M. Infas Ahamed with special customized features to satisfy the requirements of Thaj Rent A car Pvt (Ltd)
There are 3 levels of access in system:

1) Guest User
   a) Filter and Search
   b) Contact Us
   c) Registration
   d) Subscribe

2) Registered User
   a) User Log In
   b) Reservations (Booking)
   c) Profile Setting
   d) My Bookings
   e) Testimonials
   f) Update password

3) Admin
   a) Admin Log In
   b) Update password
   c) Dashboard
      i) Handling Brands
      ii) Handling Vehicles
      iii) Handling Bookings
      iv) Handling Testimonials
      v) Handling Registered Users
      vi) Update Pages
      vii) Update Contact
      viii) Handling Contact queries
      ix) Reports.

6.2.1 User Manuals for Guest User

I. Home page

Here guest user can see the options of contact Us, FAQs , Terms and Conditions and subscription option and so on .

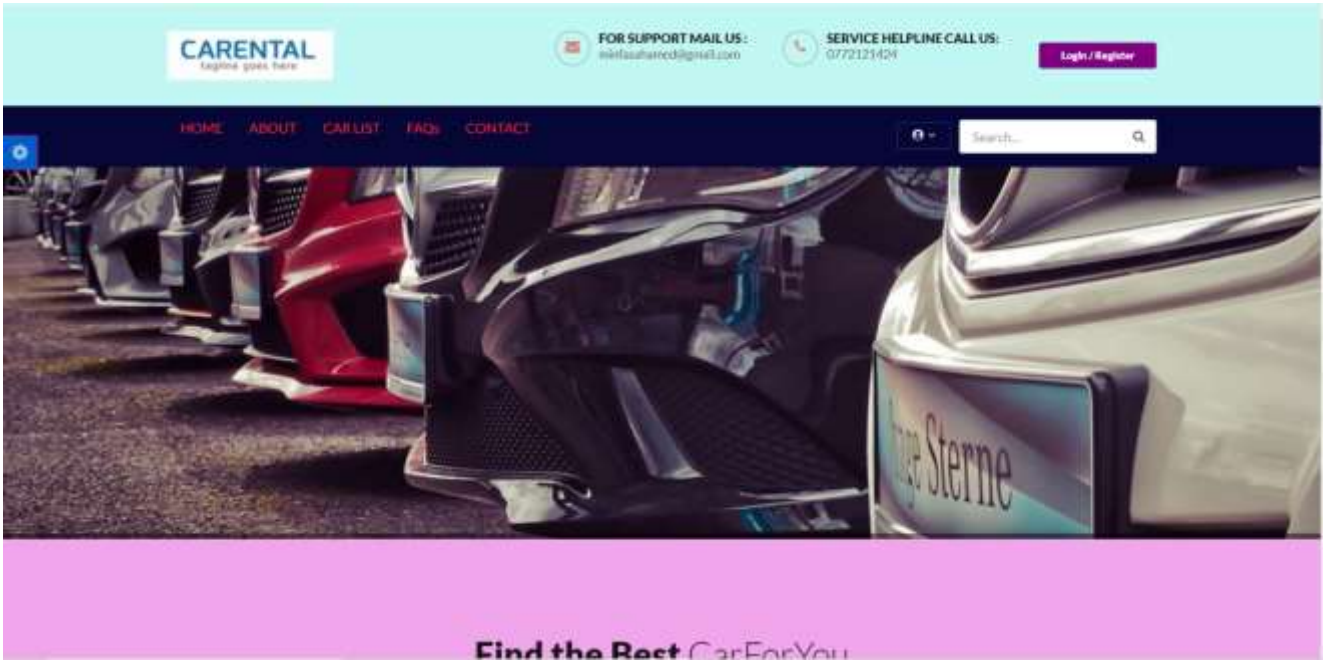

Figure 69 Home Page

II. Search and filter vehicles

Here guest user can search by keyword and options so as to select the desired vehicles as per his or her wishes

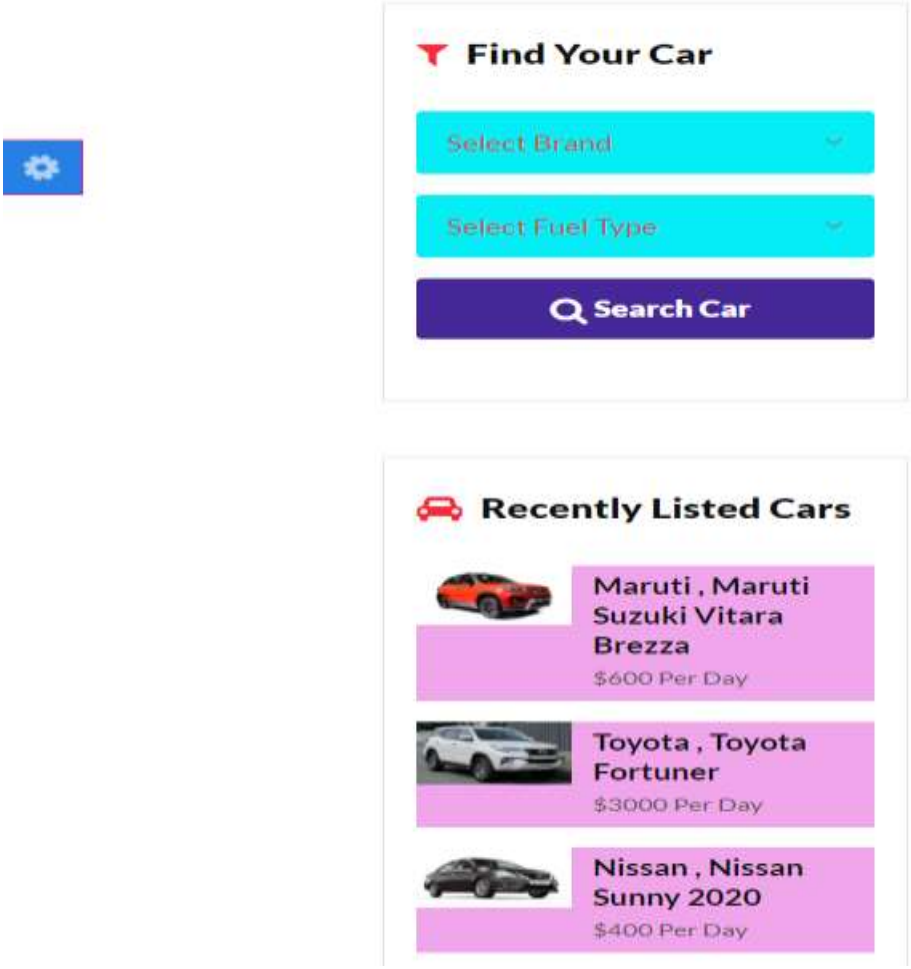

Figure 70 Filter Vehicle

III. Vehicle List

Here Guest User can see list of vehicles to be rent for customers

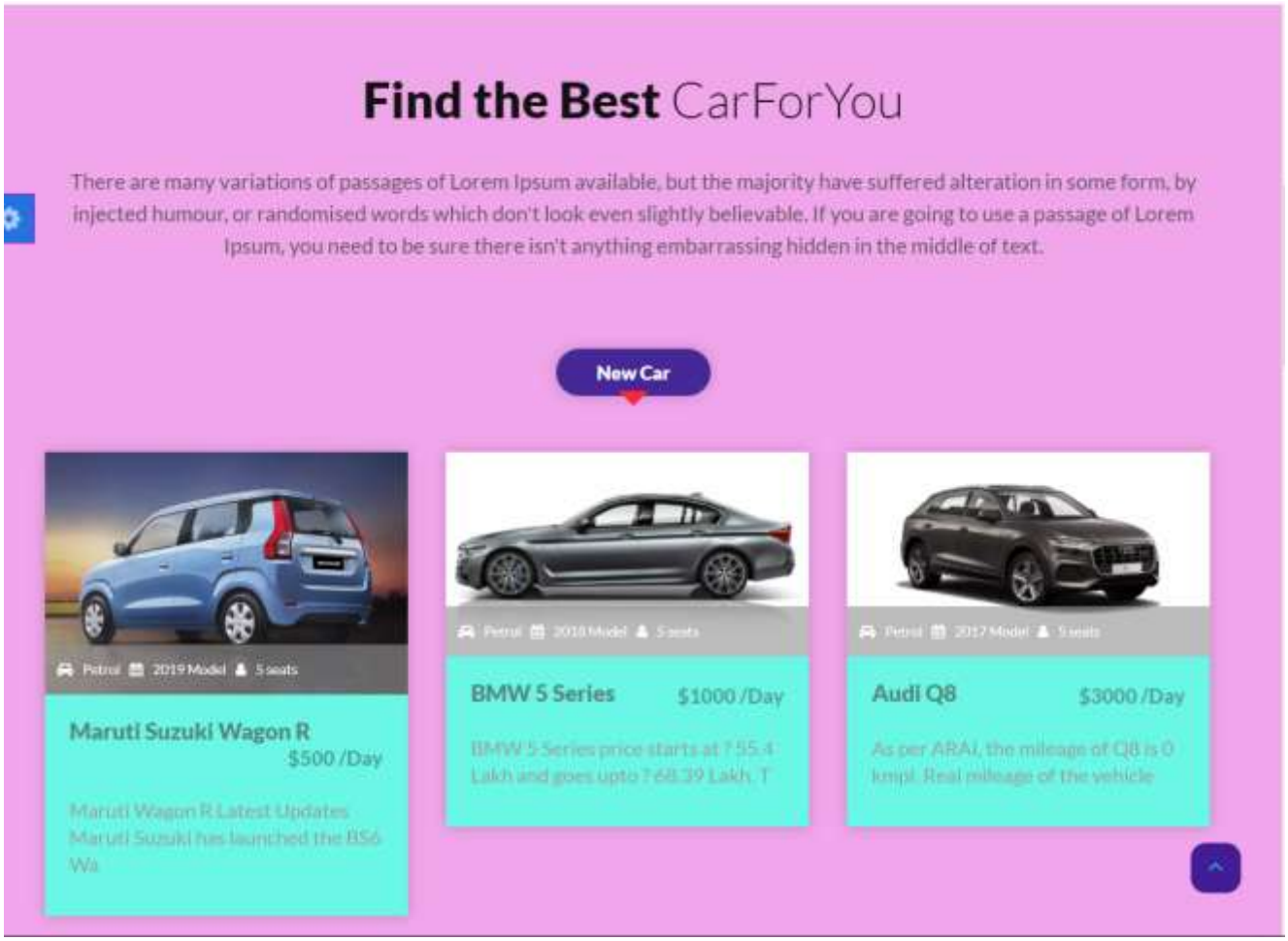

Figure 71 Vehicle list

IV. View vehicle details

Here guest user can see the vehicle details and accessories with booking form along with corresponding vehicles images and price per day

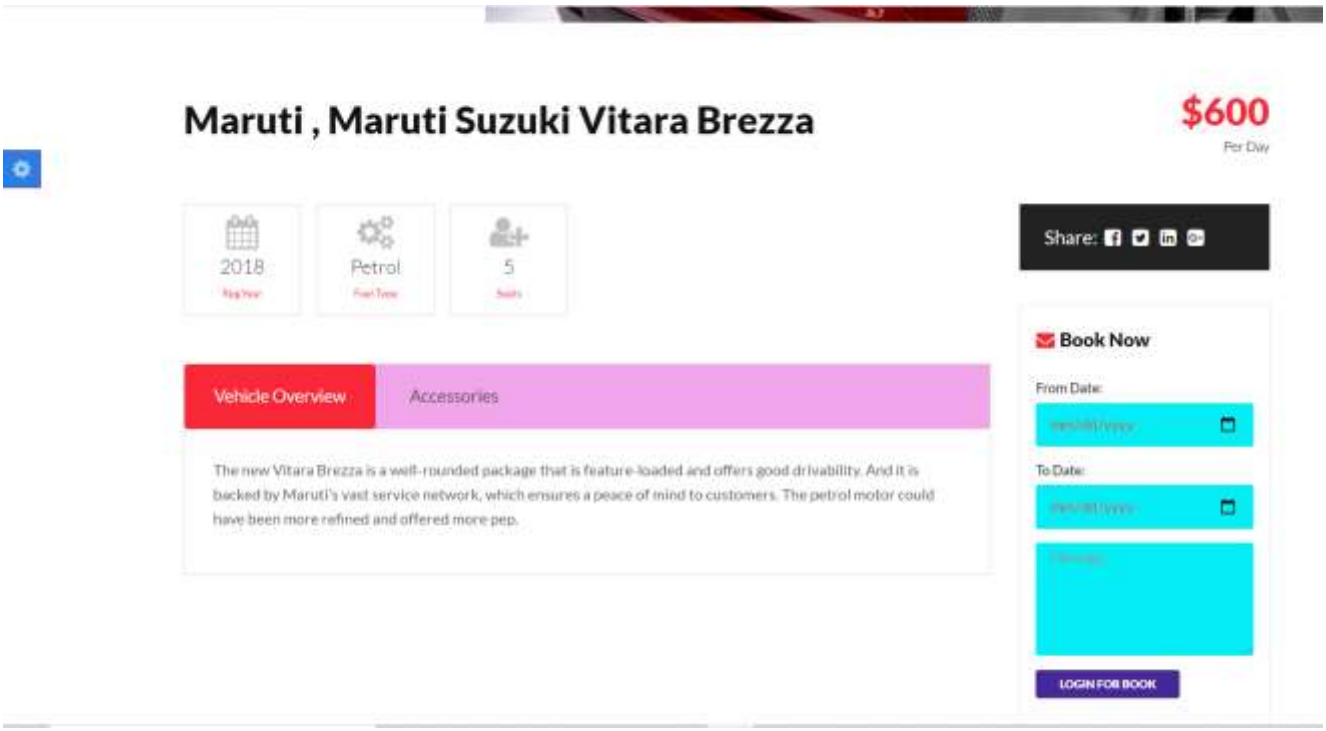

Figure 72 Vehicle Details

V. Subscription newsletter

Here guest user can subscribe to the website

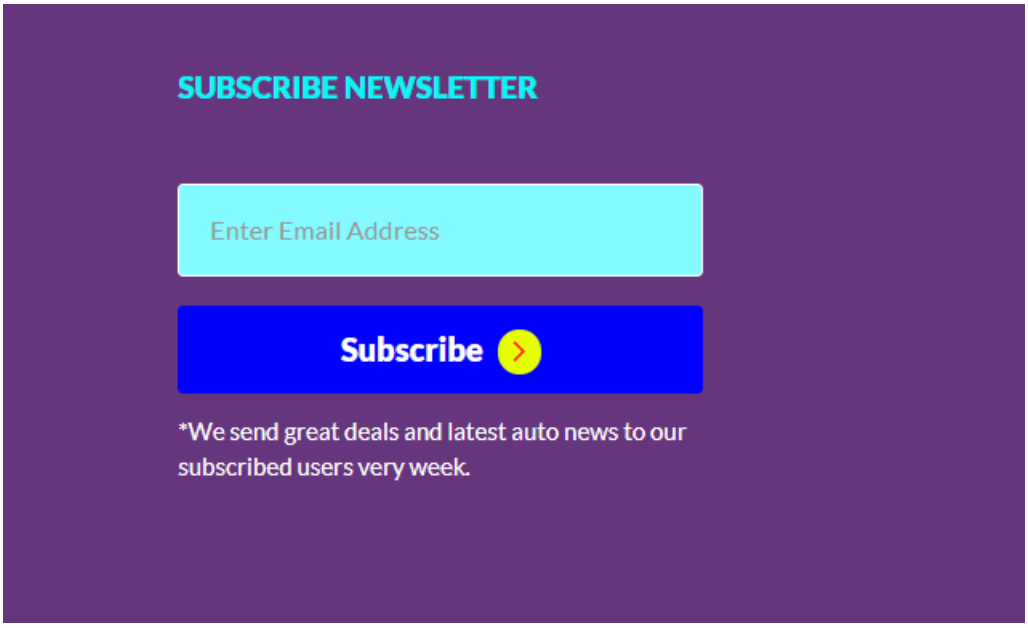

Figure 73 Subscribe Newsletter

VI. Contact Us page

This is used to send messages to organization via websites which is useful to get customer requirements

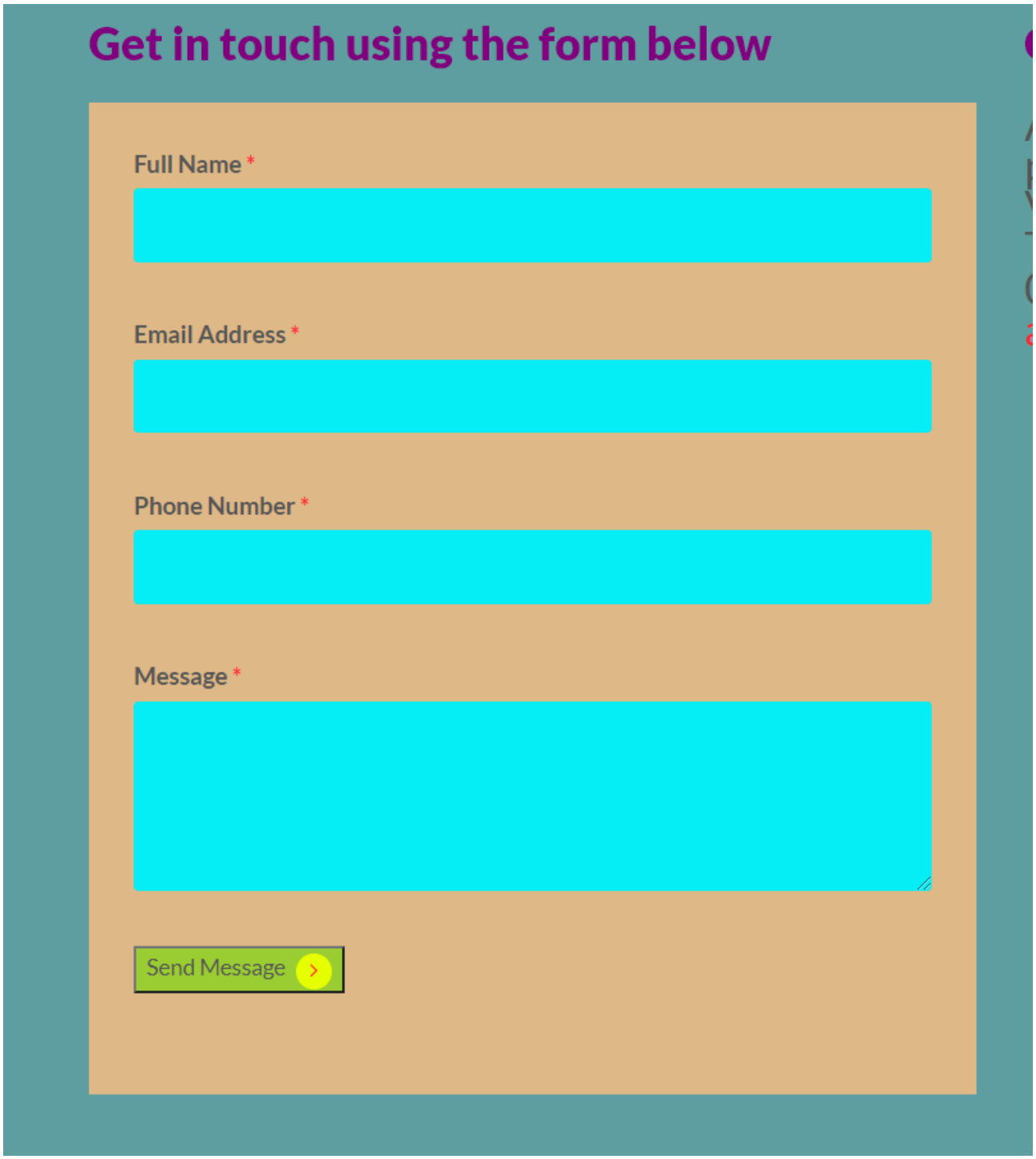

Figure 74 Contact Us page

VII. Customer Registration

Here guest users get registered themselves giving the inputs asked by customers

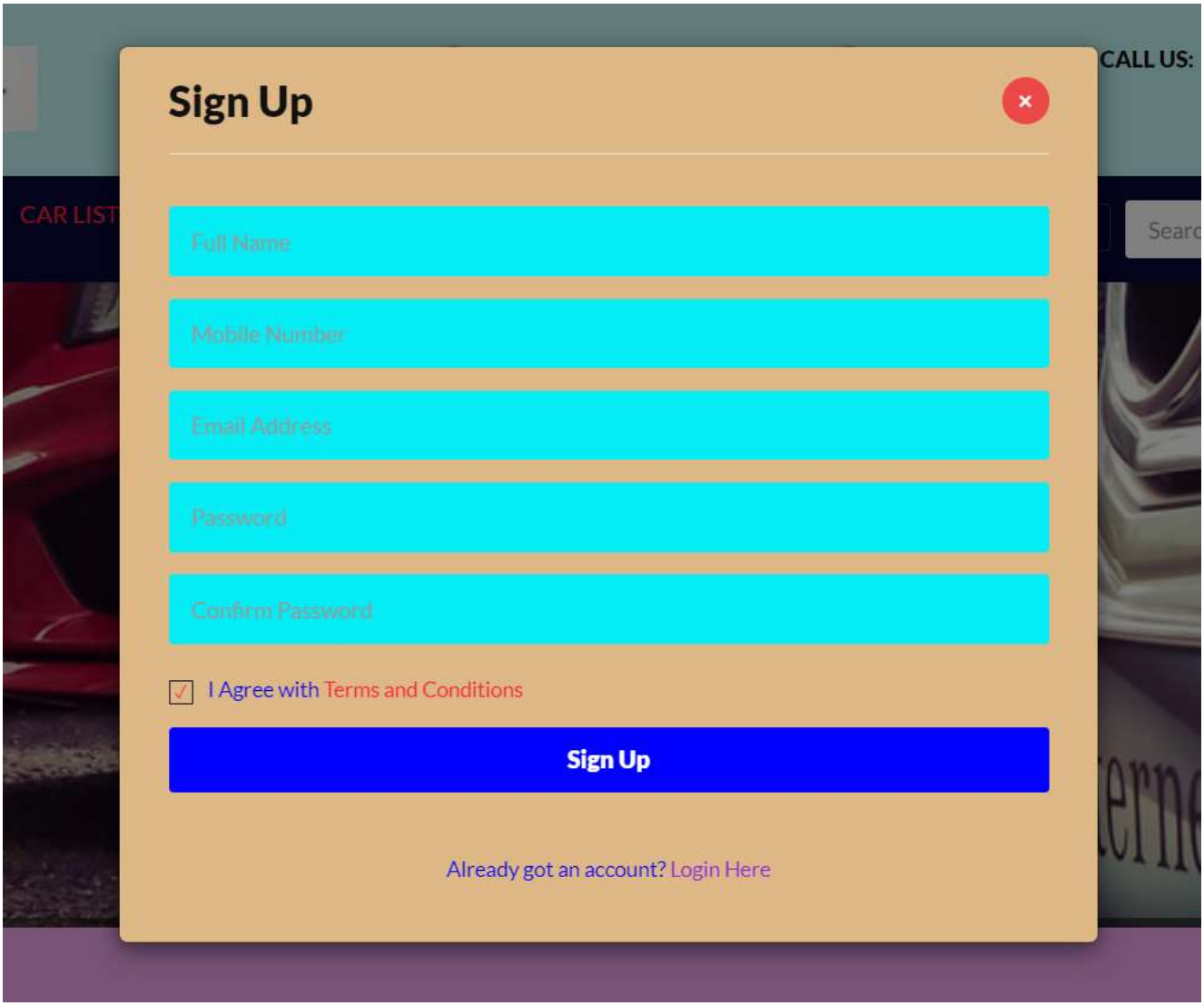

Figure 75 Customer Registration

6.2.2 User Manuals for Registered User

I. User Log In

Here customer can log in to the system after input the username and password

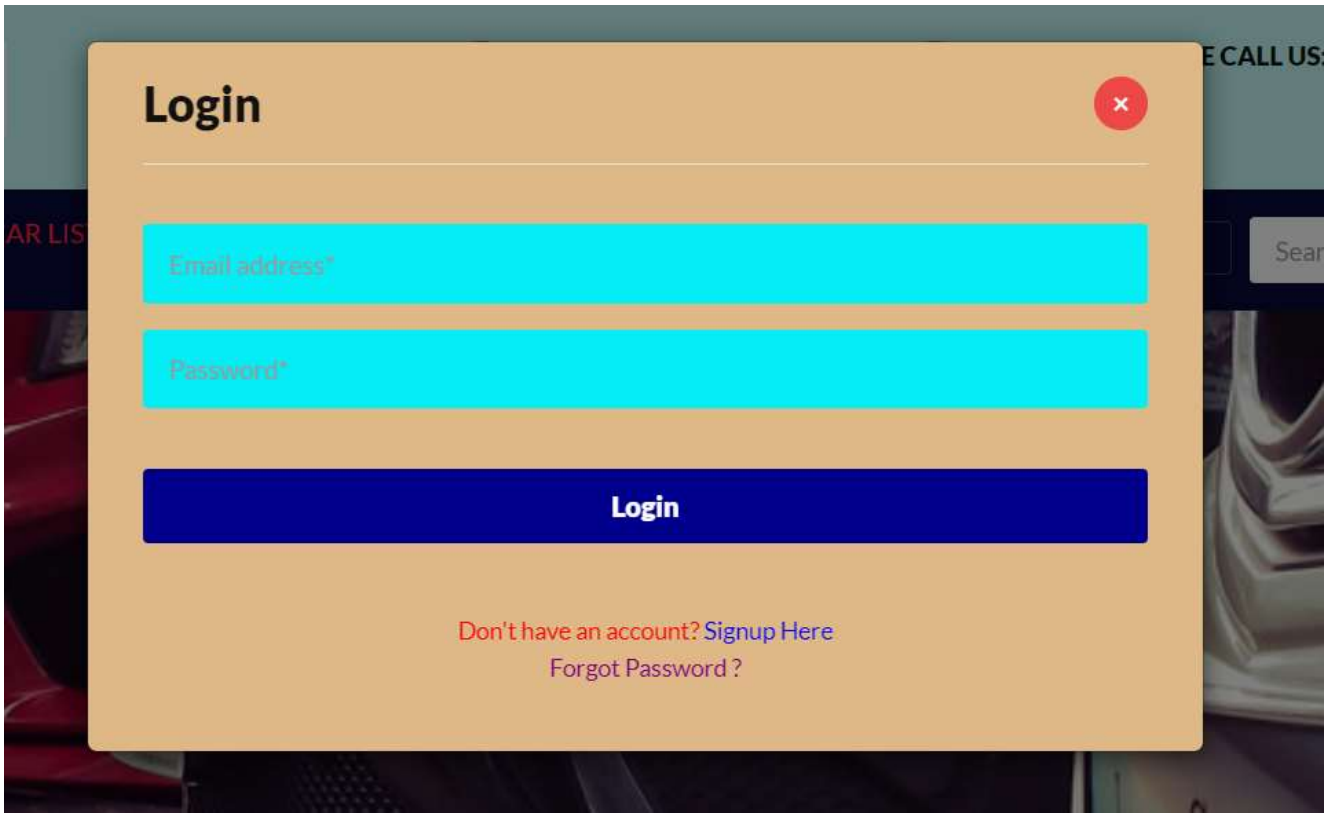

Figure 76 User Log In

II. Forgot Password

Here customer could reset the password if he forgot to remind the password

Figure 77 Reset Password

III. User Setting

Here user could identify the options for his needs in vehicle reservation

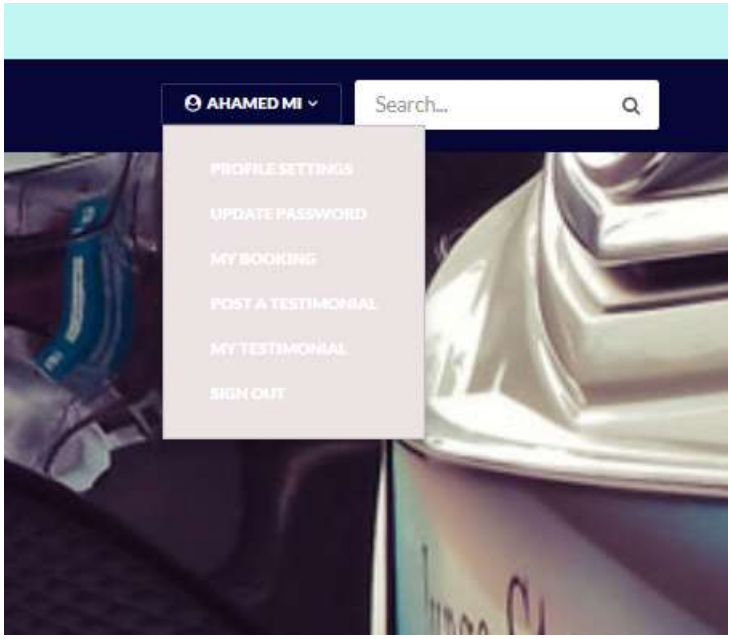

Figure 78 User Settings

IV. Vehicle Reservation

Here customer can book the vehicles and can get notification message whether booking is success full or not

Figure 79 Booking form and booking successful notification

V. Profile Setting

Here customer can reset his profile Details

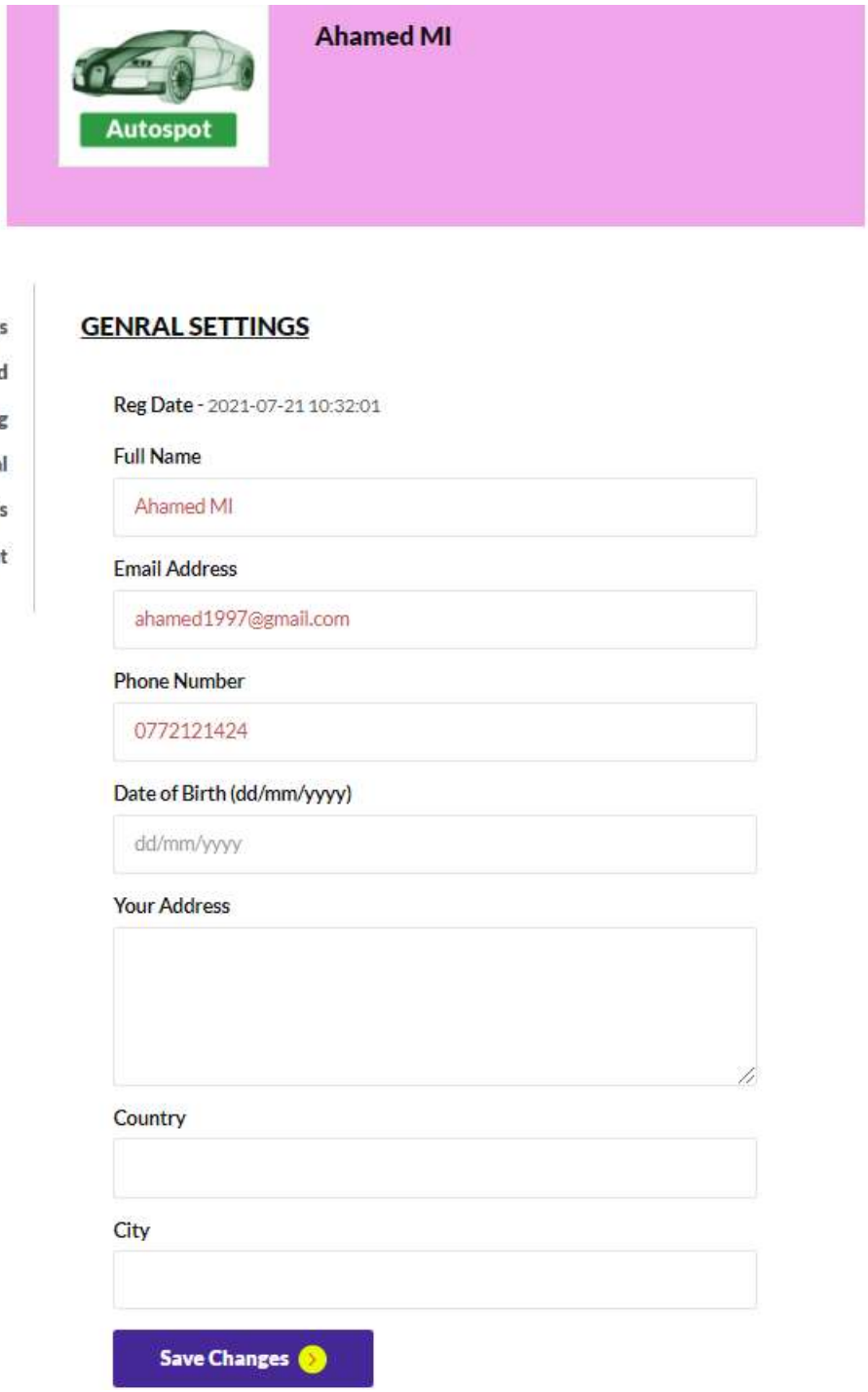

Figure 80 Booking Form

V. Update password

Here customer can update their passwords.

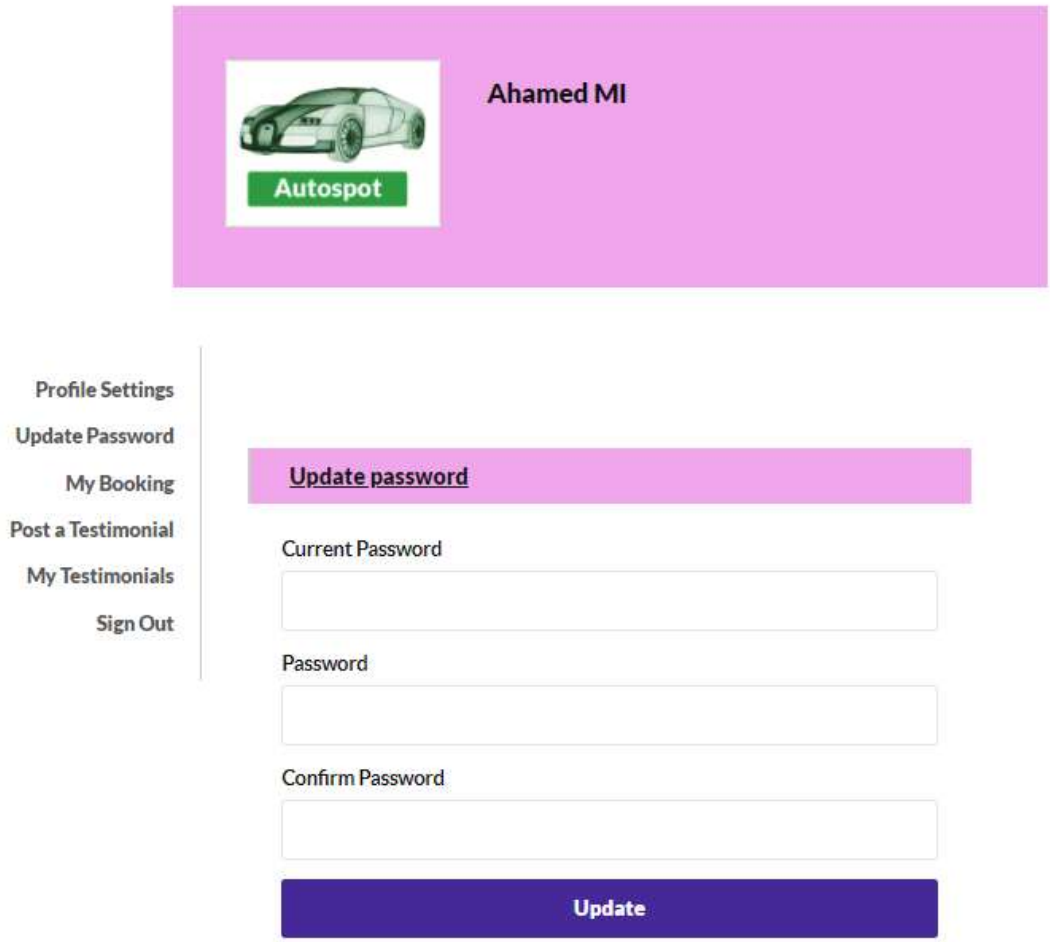

Figure 81 Password Update

VI. Post Testimonials

In this page customer can post the testimonials as their feedback

Figure 82 Post Testimonials

VII. My Testimonials

In this page customer can see they past testimonials that they posted.

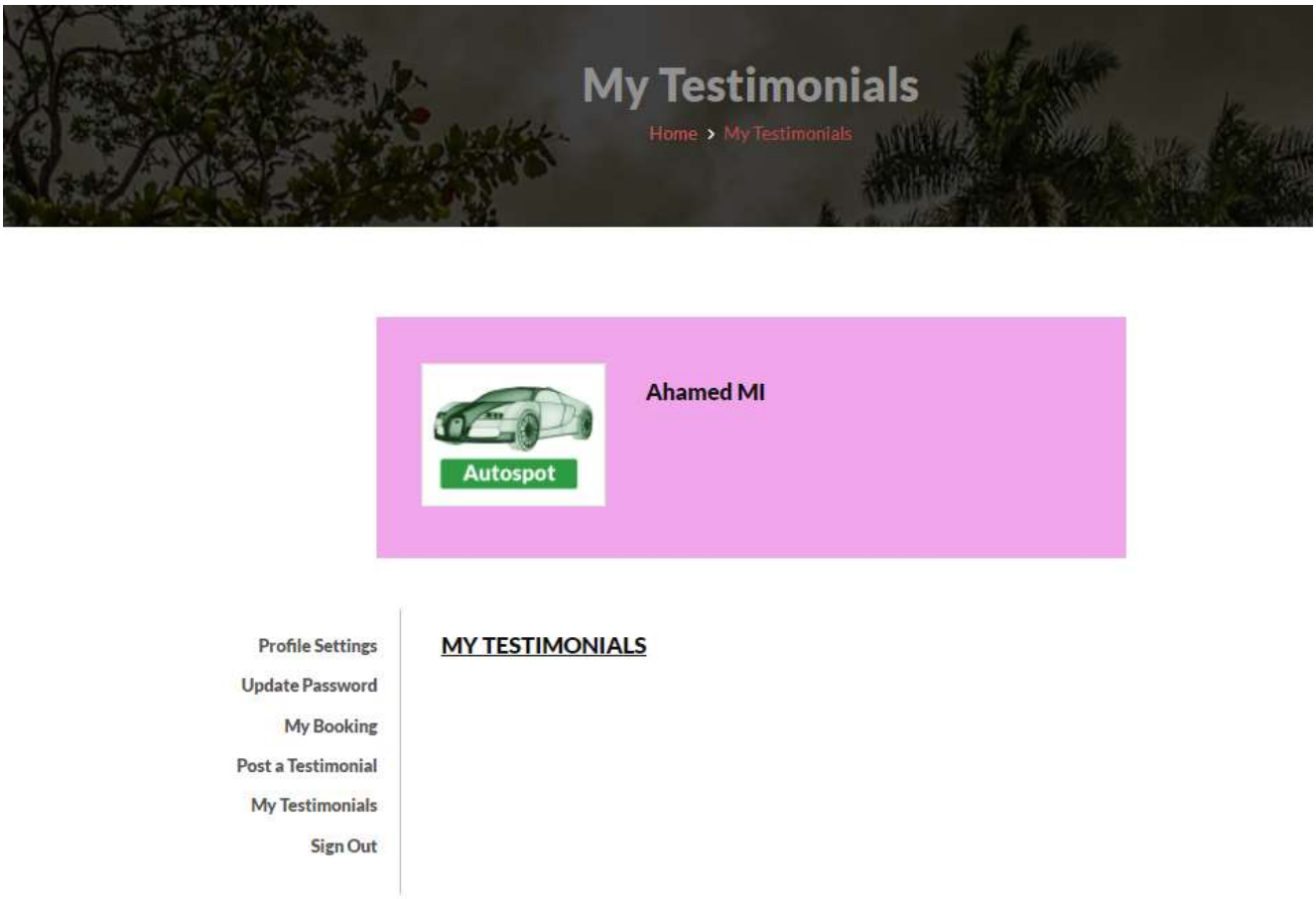

Figure 83 My Testimonials

VIII. My Bookings

Here customer can see his booking details and also, they can be able to see if their booking was excepted or not.

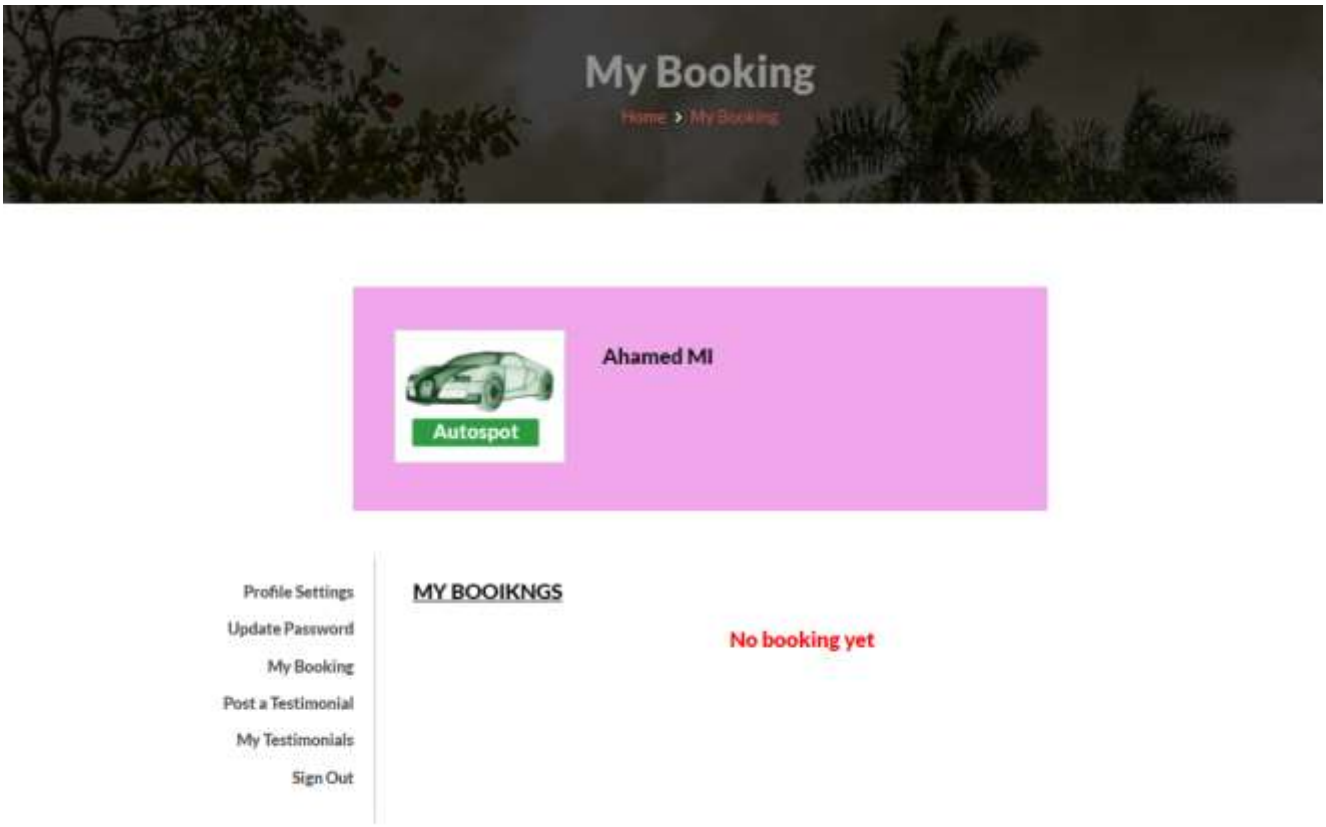

Figure 84 My Booking

6.2.3 User Manuals for Admin

I. Admin Dashboard
Here Admin manage their daily rentals services using these options .

Figure 85 Admin Dashboard

II. Admin Login

Here Admin can log in to the dashboard system using username and password

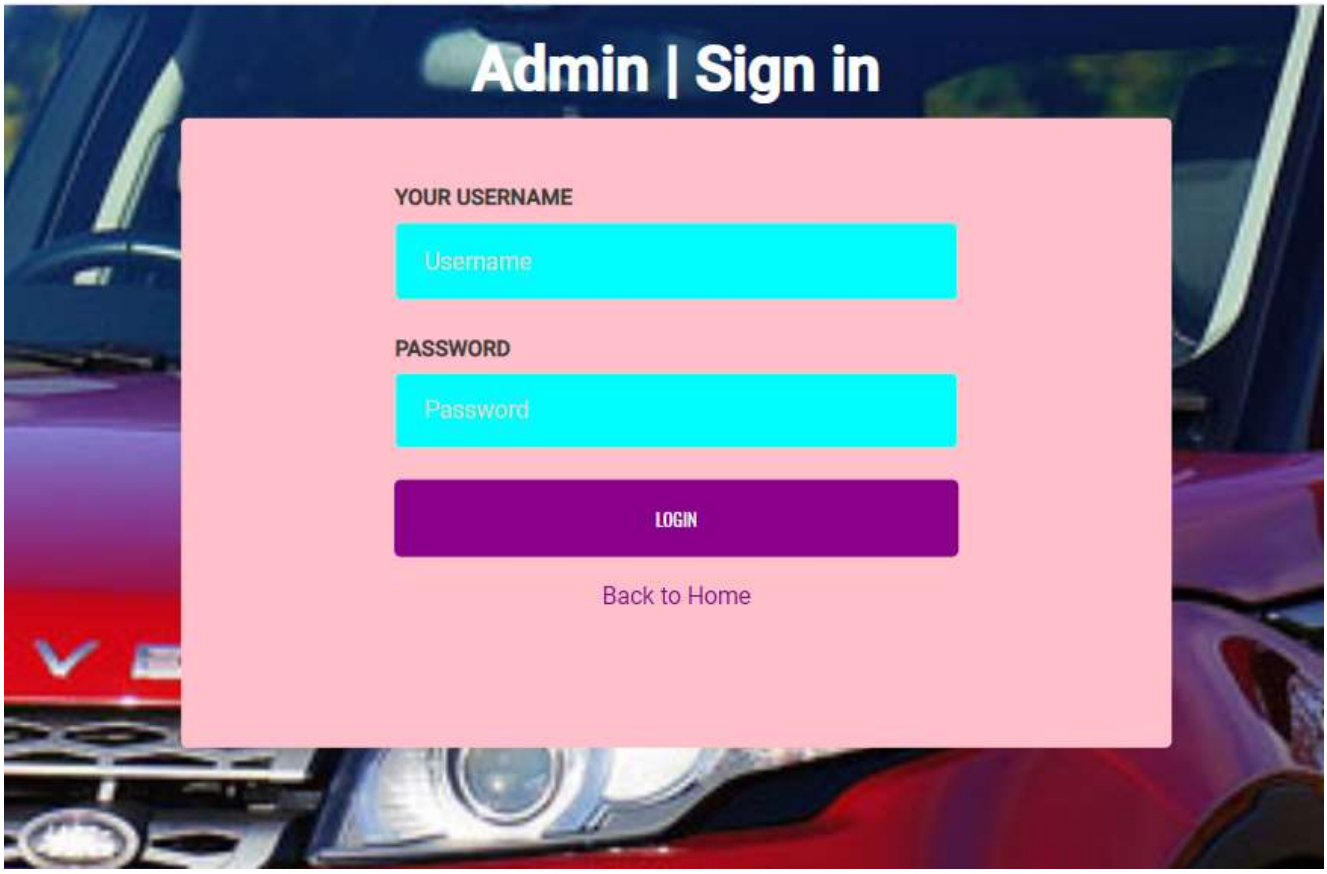

Figure 86 Admin Log In

III. Create Brands

Admin can post new brands here.

Figure 87 Create Brand

IV. Mange Brands

Here Admin Can manage the brands of vehicles such as update , edit and delete.

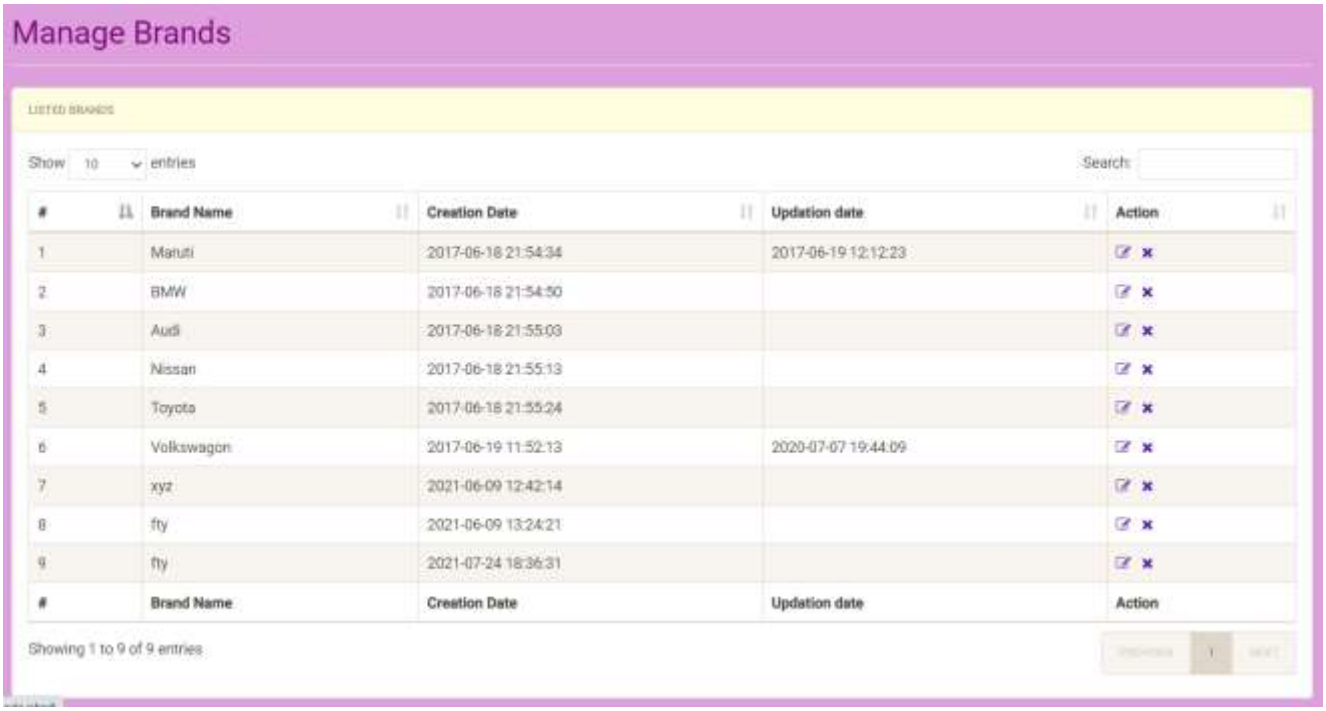

Figure 88 Manage Brands

V. Manage Testimonials

In this part Admin can view and make it active or inactive using this option.

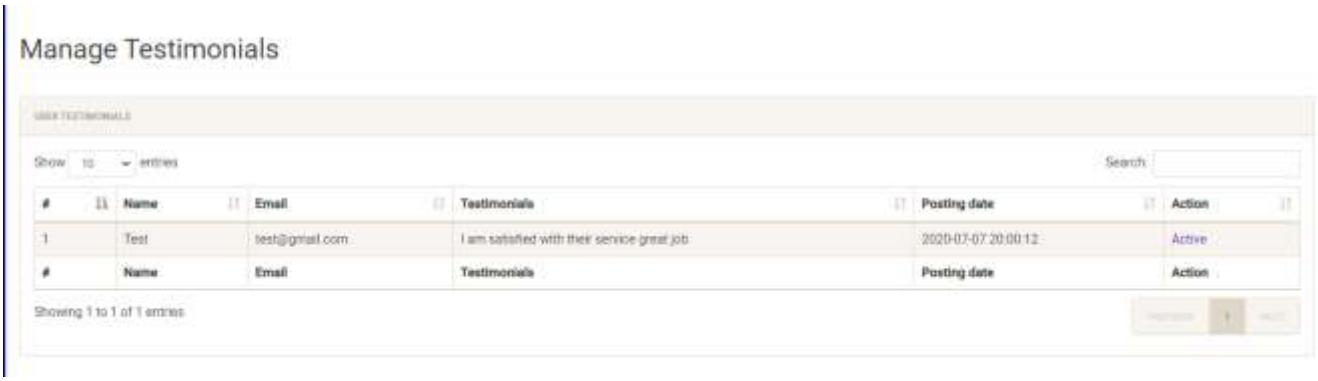

Figure 89 Manage Testimonials

VI. Manage Subscription

Here Admin can handle the details of subscribers

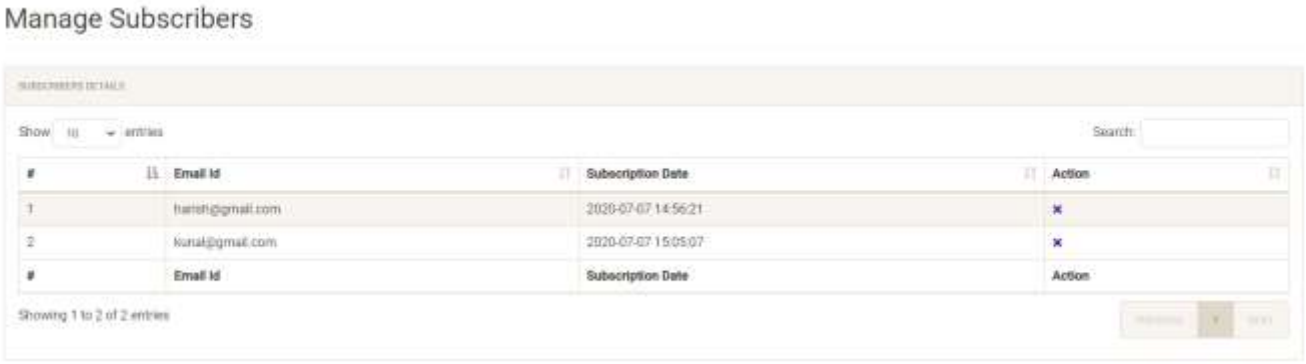

Figure 90 Manage Subscription

VII. Manage Registered User

In this part admin can manage the list of registered customers

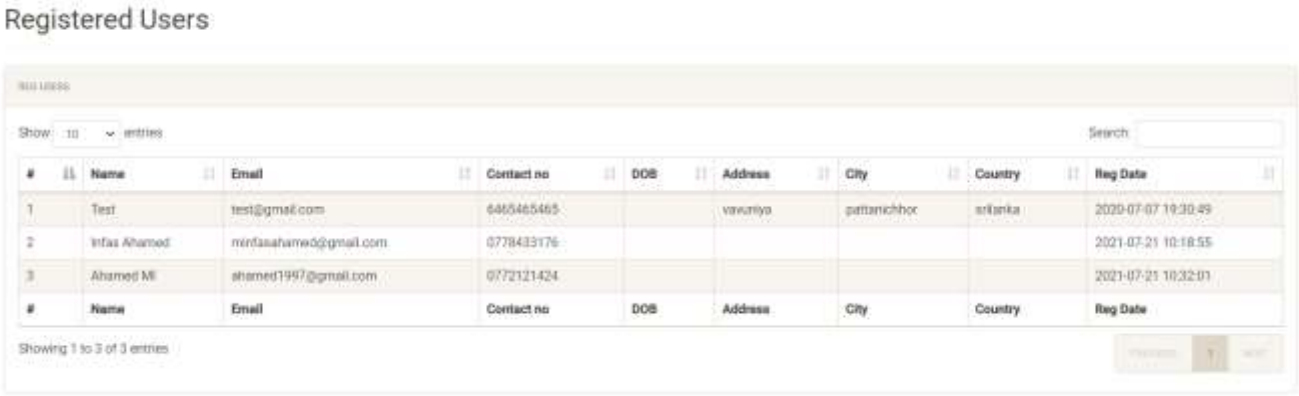

Figure 91 Registered Users

VIII. Change Password

Admin can update their password in this option.

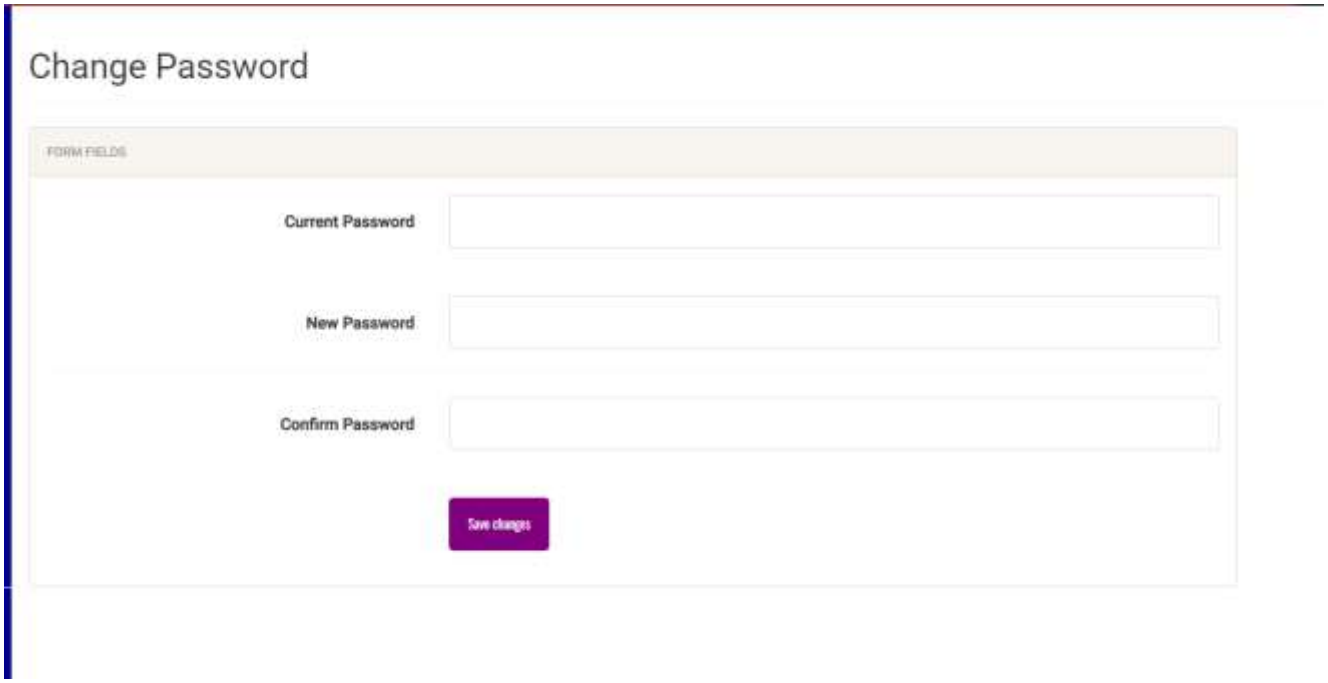

Figure 92 Change Password

IX. Manage Contact Queries

Admin can see the message sent by customers

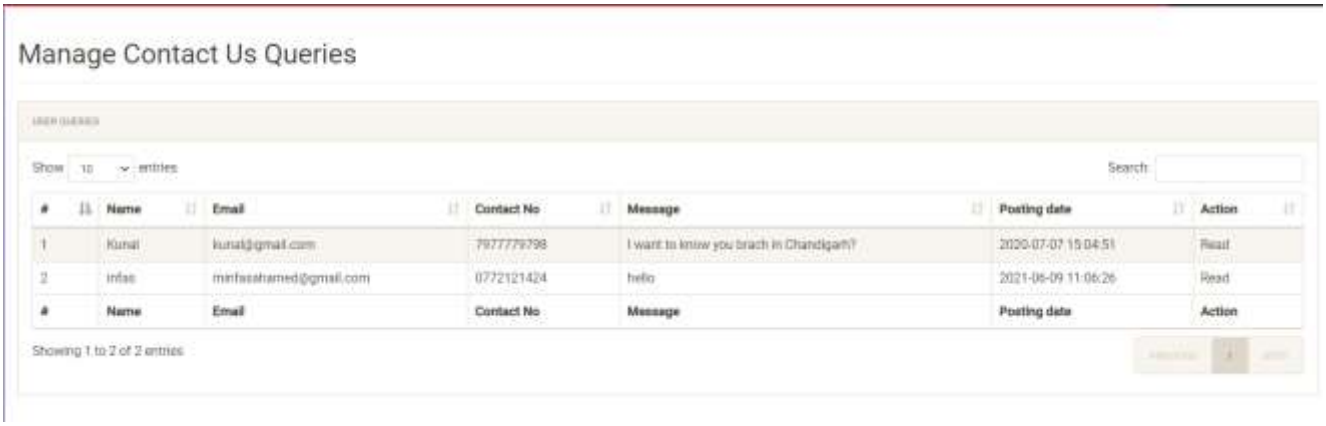

Figure 93 Manage Contact Us queries

X. Update Page

In this page Admin have the options to edit the page details of customer

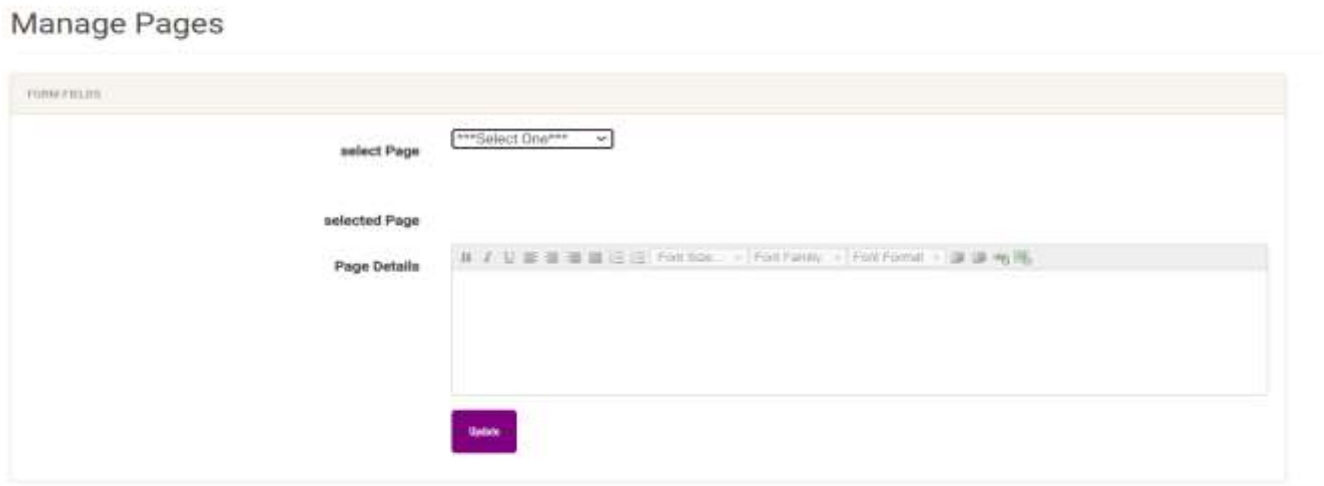

Figure 94 Manage Pages

XI. Update Contact Info

In this part Admin have the option of updating their contact Details

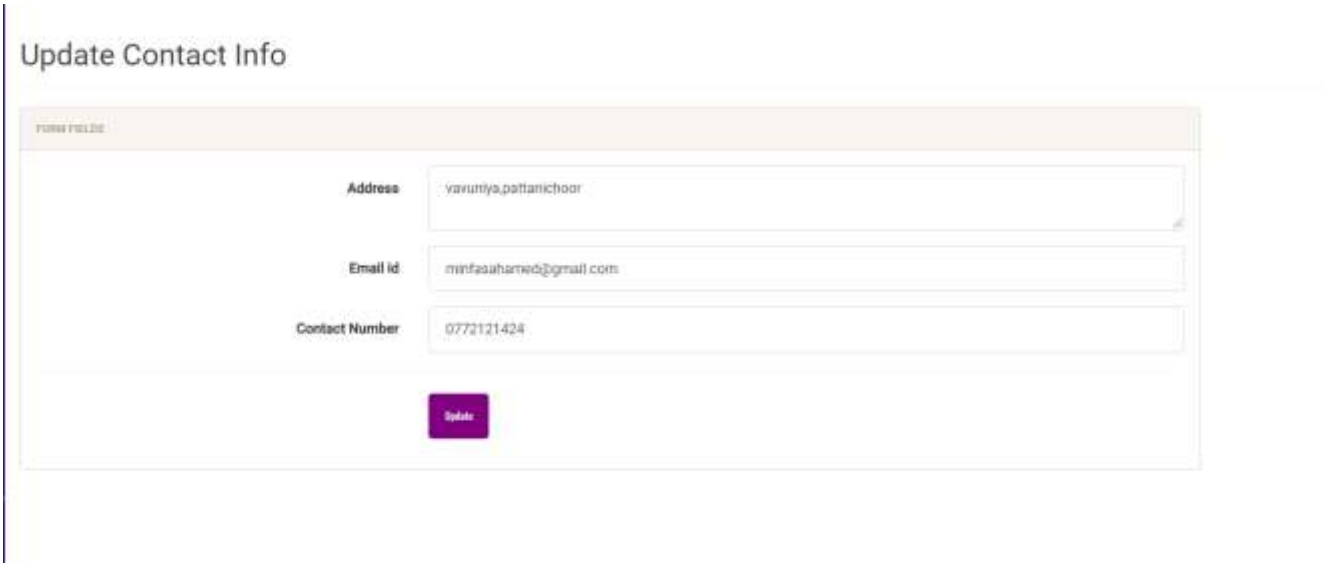

Figure 95 Update Contact Info

XII. Post Vehicles

Here Admin can be able to post the new vehicles for customers to view the new vehicle list.

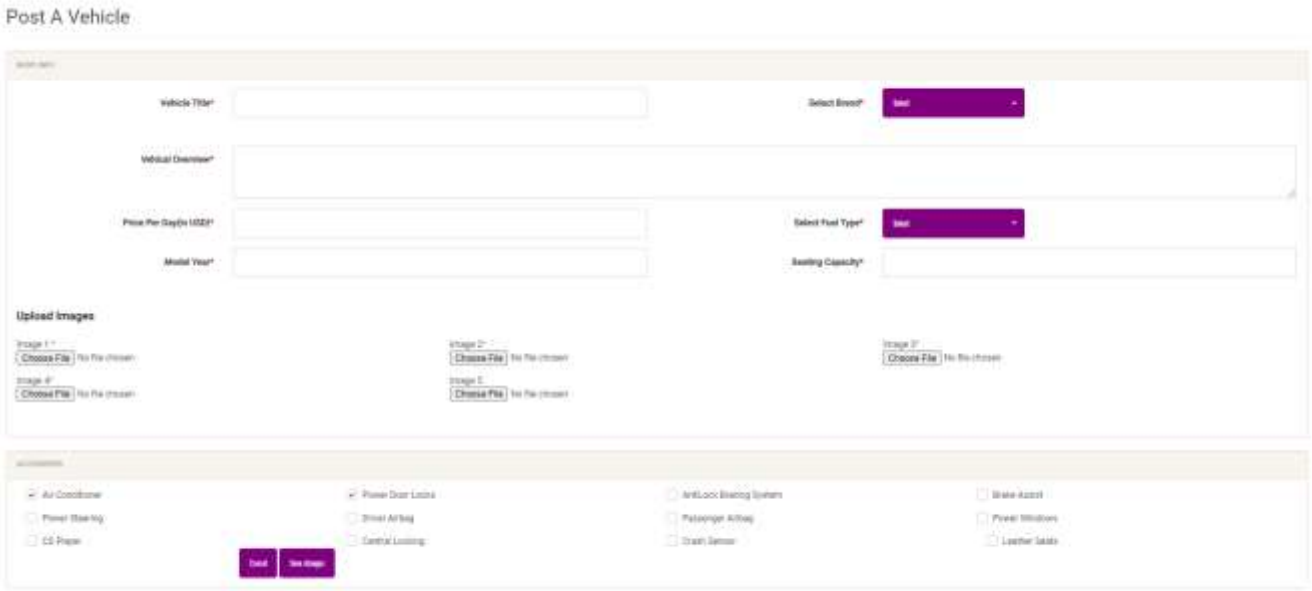

Figure 96 Post Vehicles

XIII. Mange Vehicles

Here Admin can manage the vehicle details owned by company

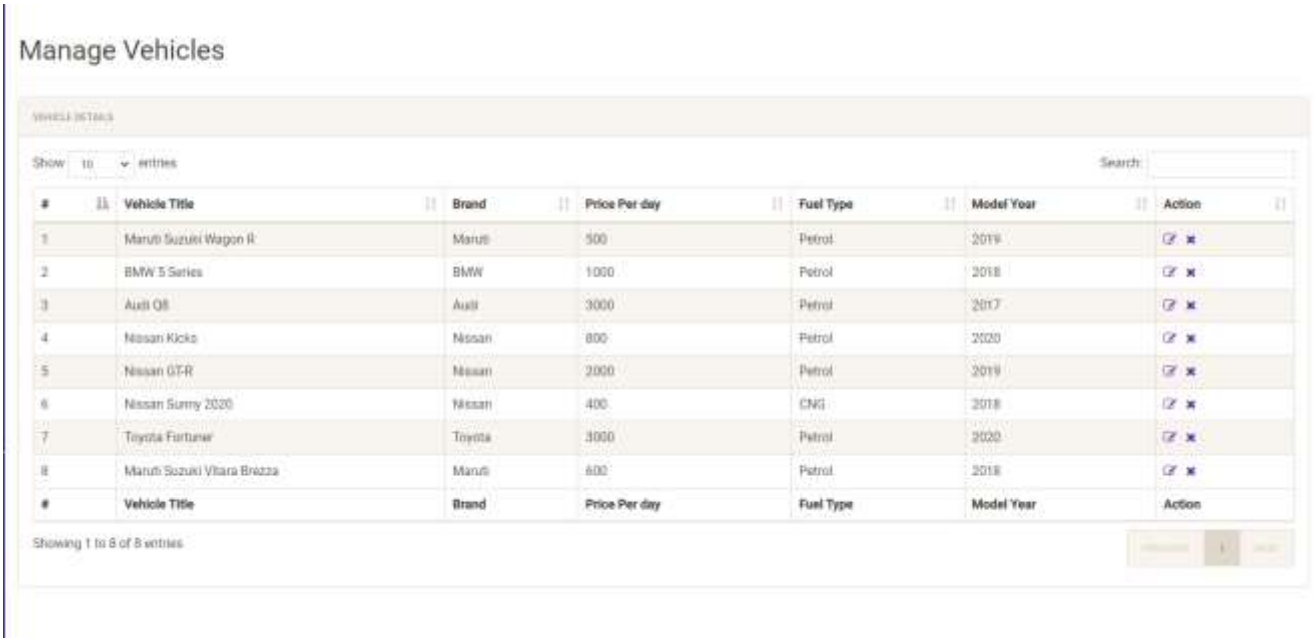

Figure 97 Manage Vehicles

XIV. New Booking

Here admin can view the new booking details

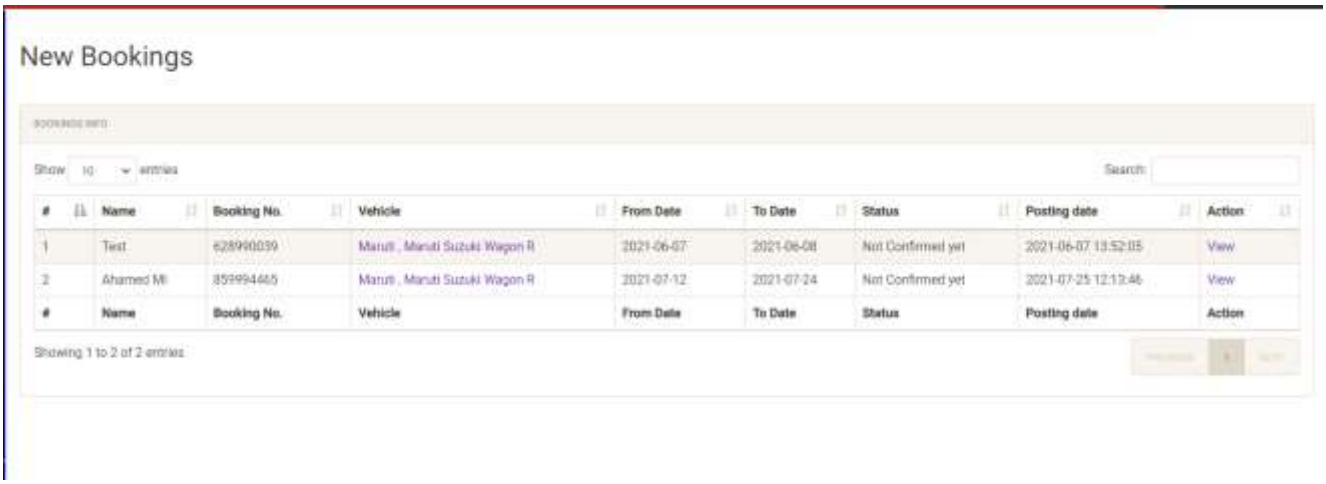

Figure 98 New Bookings

XV. Booking Confirmation

Here admin Can Confirm or Cancel the Booking

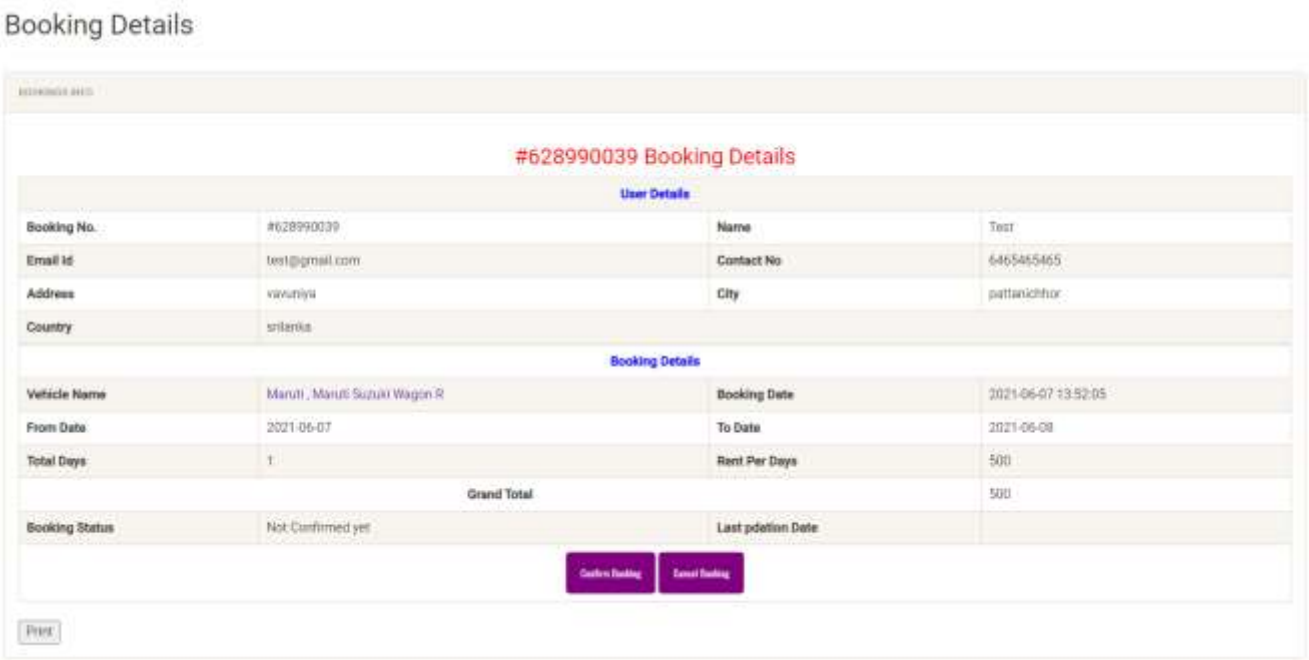

Figure 99 Booking Confirmation

XVI. Booking receipt

Admin Can Generate the booking bill for particular customer

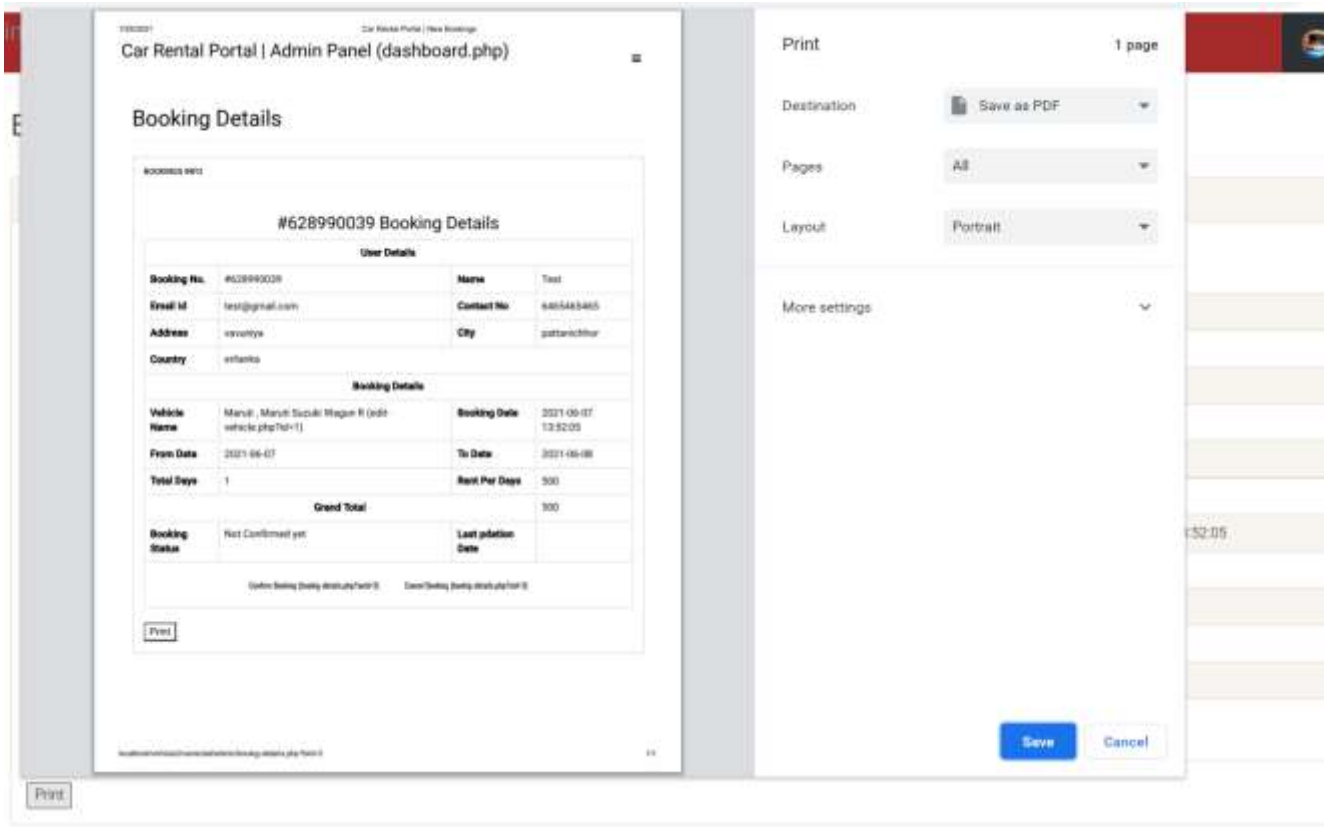

Figure 100 Booking Receipt

XVII. Confirmed Bookings

Here Admin can see the booking which was confirmed by admin

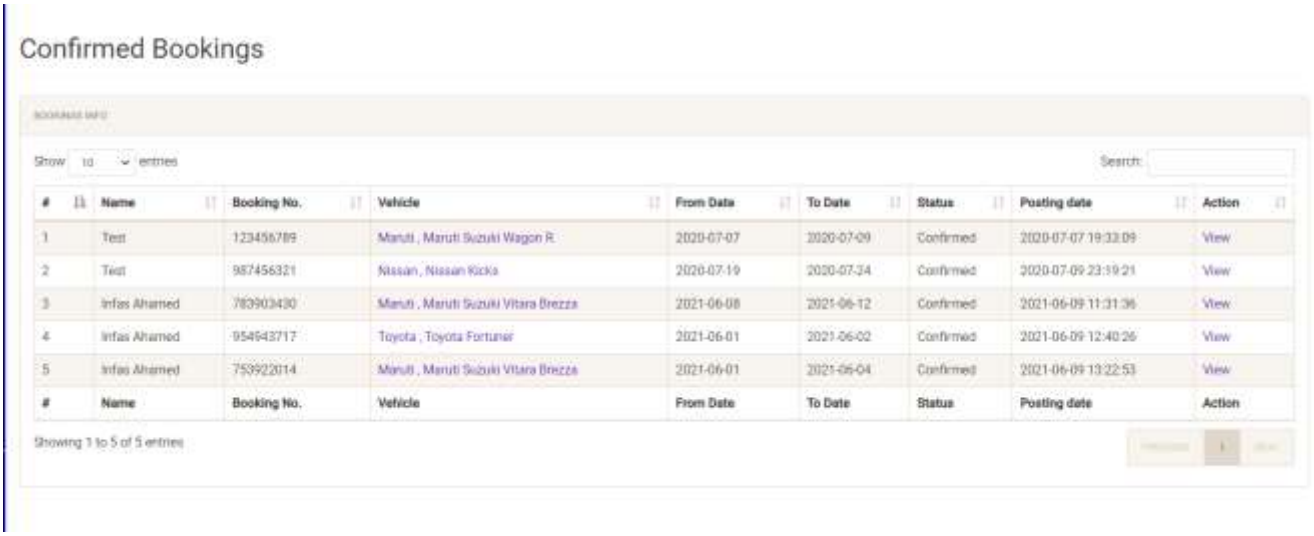

Figure 101 Confirmed Booking

XVIII. Canceled Booking

Here Admin Can See the cancelled bookings cancelled by admins

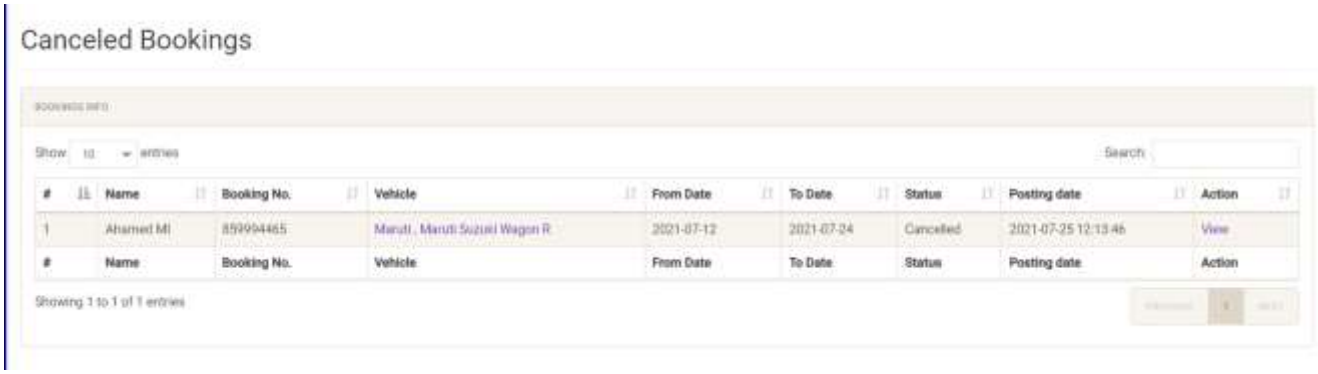

Figure 102 Cancelled Bookings

XIX. Booking Count Report

Here admin can see the bookings between whatever range of the date and can download it

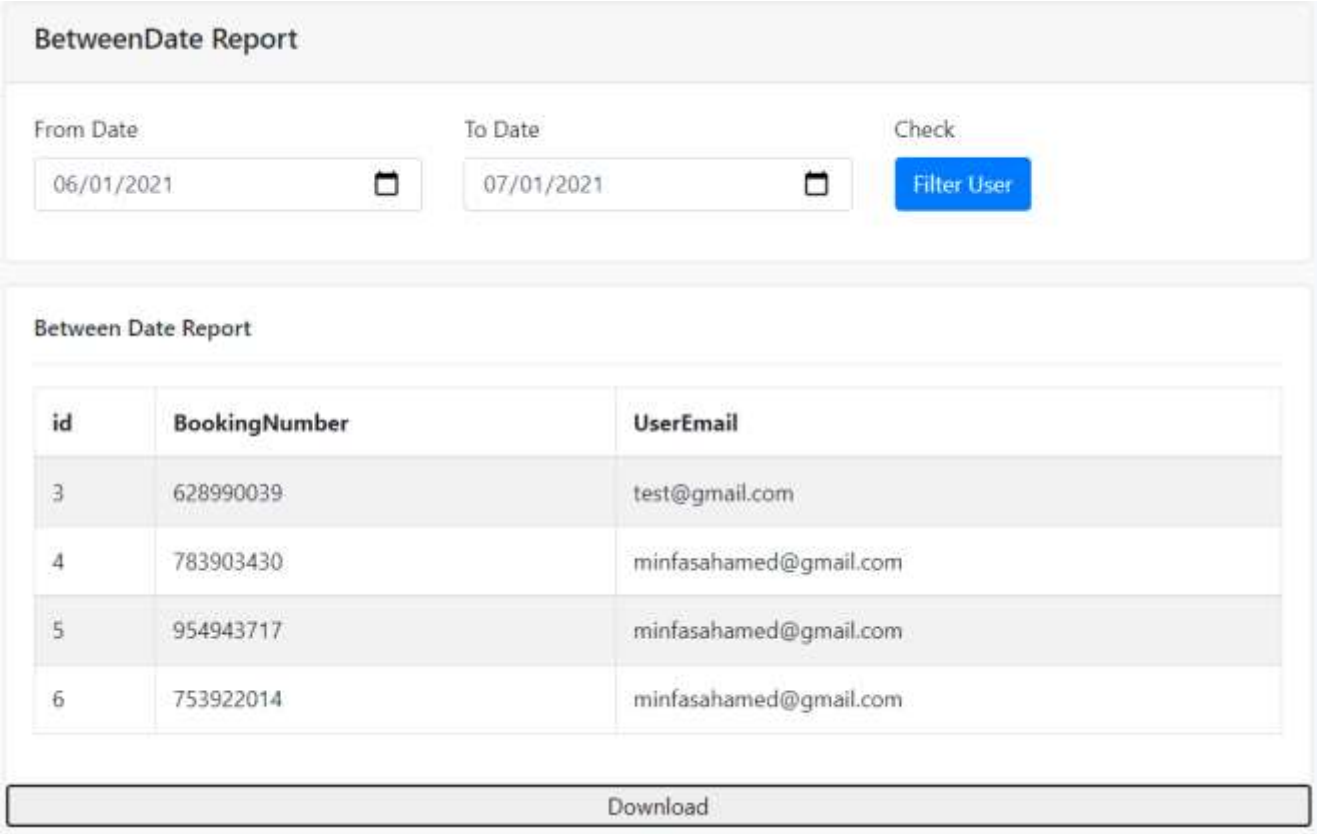

Figure 103 Booking Count Report

CHAPTER 7 – CONCLUSION

This Chapter Evaluates the attempt taken in the project and provide a conclusion of the project including the degree of objectives met, usability of the system, limitations and drawbacks, user response and future modifications/improvements

Outline of the Chapter

7.1 Degree of the objectives met
7.2 Usability, accessibility, reliability, and friendliness
7.3 User's response
7.4 Limitations and drawbacks
7.5 Future modifications, improvements and extensions possible
7.6 Reference

7.1 Degree of the objectives met

The main objectives of the online vehicle rental system were to minimize the usual problems of the manual process of the Thaj rent a car (pvt) Ltd through a web based online vehicle rental system. Actually, this improves the efficiency and productivity of the business process in the technology era. Software Development life Cycle (SDLC) was selected as the road map to provide an information technology solution to the organization. With the understanding of the practical applications of the techniques used through the journey I was presented with the opportunity to find the most suitable option for the solution. So, the learning of these software engineering practice has been the strength to design a satisfying solution so far. Also, different type of users has been taken into consideration while designing the system. Therefore, it is evident to state that the aims and the objectives defined in the project in relation to the problems identified are clearly addressed by the functional and nonfunctional requirements that I identified.

7.2 Usability, accessibility, reliability and friendliness

When considering usability, Graphical User Interfaces were designed considering the usability engineering concepts learned. So that Users are satisfied, and their resources are utilized in a satisfactory level at the design phase. When considering accessibility, necessary privileges are

designed to be provided for the relevant user types providing appropriate credentials for different access levels. When considering the reliability encryptions will be used for secured data such as passwords to protect them and only the person with the accurate user credentials will be allowed to access the system. Early understandable and simple user interfaces, functionalities and real time responsiveness are the main features which are to be provided to enhance the user friendliness of the system.

7.3 User's Response

Customers get the opportunity to place the vehicle reservation in anytime and wherever he lives through the web-based system. Management would be facilitated with the ease of work and ease in performance evaluation. It would enable to save the time for reservation process and billing process and easily manage the customer bookings and vehicles of the organization so that I attract the customers of the organization. Further management can generate analytical reports to take administrative decisions

7.4 Limitations and Drawbacks

The main problem is that all manual processes of the business process couldn't be coordinated within this single web-based system because of lack of resources and technical advancement in the organization and those web-based system are undergoing the internet connectivity so sometimes the connectivity error and speed will make problems this web base online rental reservation system, So there can be some clashes with manual process with the proposed system also security issues will be increased because of the online payment gateways

7.5 Future modifications, improvements and extensions possible

Facilitate the web system in two languages and system can be further developed by with tracking systems to identify the vehicles under rental services and to identify the customers who are picking up the vehicles and the payment methods also will be modified with the high secured way.

7.6 References

1. Lucid chart UML use case diagram [online] Available:

https://www.lucidchart.com/pages/uml-use-case-diagram [Accessed: Jan 02,2020]

2. User Stories in Visual paradigm [online] Available:

https://www.visual-paradigm.com/guide/agile-software-development/what-is-user-story/

[Accessed: Jan 02,2021]

3. Sequence Diagram in geeksforgeeks [online] Available:

https://www.google.com/amp/s/www.geeksforgeeks.org/unified-modeling-language-uml-sequence-diagrams/amp/

[Accessed: Jan 02,2021]