ONLINE CAR SALE MANAGEMENT SYSTEM

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ONLINE CAR SALE MANAGEMENT SYSTEM

ALAND ASO ABDULLAH

A thesis submitted in fulfilment of the
requirements for the award of the degree of
Bachelor of Computer Science (Software Engineer)

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DEDICATION

This thesis is dedicated to my city (Slemany), to make transactions easier for our citizen.

ACKNOWLEDGEMENT

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ABSTRACT

Many websites are still without using a nice show for all Car shops This is due to the fact that they still rely on manual methods and have not been introduced to the latest technology and the main objective of our project is to make transaction easier for customers who are dealing with car in our city and beyond. Some customers search for days even months to find a proper car that will not has defect and with a suitable price, sometime he/she will face problem when they after spending those days, beside that he/she spend more many in order to fix those problem. We in our Online Car Sell Management System try to overcome those difficulties for both of dealers and customers in one central platform which is a website controlled by an Admin who let customers to register themselves and also our car dealers who are car owners can expose their car on our website and dealer can send the car to our system to Admin and Admin can post to the website, through that customers will find different car from different Car shops of comparative price which be very helpful for both of them by Shopping Cart . Car dealers can sell their car easier and make more money, also the customers will have much time to decide which car to select. Our system contains a shopping cart which contain all car that the customer will select and can have a hard copy by have the print option in his/her shopping cart, and will be able to compare all those cars for their price, model, type. Our system can be extended to other city or our country and we could offer other dealers to benefit it. The system will be built for two type user which are Customer and the Admin can add the cars which is send by the car shop owner and Admin can post the car in the website and write the detail information of cars. The selected architecture design used to support the system development process is Model-View-View Model (MVVM) architecture. Furthermore, User Acceptance Testing (UAT) will be conducted to test the acceptance of user towards the functionality of the system.

ABSTRAK

Banyak laman web masih tanpa menggunakan pertunjukan yang bagus untuk semua kedai Kereta Ini disebabkan oleh fakta bahawa mereka masih bergantung pada kaedah manual dan belum diperkenalkan dengan teknologi terkini dan objektif utama projek kami adalah untuk memudahkan transaksi bagi pelanggan yang sedang berurusan dengan kereta di bandar kami dan seterusnya. Sesetengah pelanggan mencari berhari-hari bahkan berbulan-bulan untuk mencari kereta yang sesuai yang tidak akan mengalami kecacatan dan dengan harga yang sesuai, kadang-kadang dia akan menghadapi masalah apabila selepas menghabiskan hari-hari tersebut, selain itu dia membelanjakan lebih banyak wang untuk memperbaikinya. masalah. Kami dalam Sistem Pengurusan Jualan Kereta Dalam Talian kami cuba untuk mengatasi kesulitan tersebut untuk kedua-dua peniaga dan pelanggan dalam satu platform pusat iaitu laman web yang dikawal oleh Admin yang membenarkan pelanggan mendaftarkan diri mereka dan juga pengedar kereta kami yang merupakan pemilik kereta boleh mendedahkan kereta mereka pada kami laman web dan peniaga boleh menghantar kereta ke sistem kami kepada Admin dan Admin boleh menghantar ke laman web, melalui itu pelanggan akan menemui kereta yang berbeza dari kedai Kereta yang berbeza dengan harga perbandingan yang sangat membantu mereka berdua melalui Troli Beli-belah. Pengedar kereta boleh menjual kereta mereka dengan lebih mudah dan membuat lebih banyak wang, juga pelanggan akan mempunyai banyak masa untuk memutuskan kereta yang hendak dipilih. Sistem kami mengandungi troli beli-belah yang mengandungi semua kereta yang akan dipilih oleh pelanggan dan boleh mempunyai salinan cetak dengan mempunyai pilihan cetakan dalam troli beli-belahnya dan akan dapat membandingkan semua kereta tersebut untuk harga, model dan jenisnya. Sistem kami boleh diperluaskan ke bandar lain atau negara kami dan kami boleh menawarkan peniaga lain untuk mendapat manfaat daripadanya. Sistem ini akan dibina untuk dua jenis pengguna iaitu Pelanggan dan Admin boleh menambah kereta yang dihantar oleh pemilik kedai kereta dan Admin boleh menyiarkan kereta di laman web dan menulis maklumat terperinci tentang kereta. Reka bentuk seni bina terpilih yang digunakan untuk menyokong proses pembangunan sistem ialah seni bina Model-View-View Model (MVVM). Tambahan pula, Ujian Penerimaan Pengguna (UAT) akan dijalankan untuk menguji penerimaan pengguna terhadap kefungsian sistem.

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LIST OF ABBREVIATIONS

CSMS	-	Car Sale Management System
ERD	-	Entity Relational Diagram
GUI	-	Graphic User Interface
SQL	-	Structured Query Language
PSM1	-	Project Sarjana Muda 1
FYP1	-	Final Year Project 1
SDLC	-	Software Development Life-cycle
SRS	-	Software Requirement Specification
SDD	-	Software Design Document
STD	-	Software Testing Document

LIST OF APPENDICES

Chapter 1

Introduction

1.1. Introduction

In the time of mass production, everything is available and at the hand of customers. In the age of information, we can reach any product around the world but the problem is when we want to handle product that is in our local market which is easier in our region to handle it and possess it without further waiting until shipped, we need a local website that handle all that information at once for our local customer. Having a good car or vehicle in these days is one of the modern dilemmas. people have to walk miles just to see cars that they want and even they may walk for days around different region and spend more time just to find a proper car.

We can handle and provide customer by introducing a website that give a comparative car price which can be chosen by the customer. If we have a web site which collect all local car shows under the name of (Sully Car Show), which contain all car shows around a typical region, makes transactions easier for both of dealers and customers. Customer can decide on their computer or mobile phone which car to buy before going to car owner, and have all information about it, like price, model, mileage and even have a big picture about what it will be like, because he sees all real image of the car from different corner.

1.2. Problem background

One of the problems of our individuals is that he lacks information about the stuffs he wanted. Today individual must know about everything when he decides to buy a house, he has to visit many local offices who are dealing with estates, and he will be mostly over paid for the estate.

Everyone is looking after good profit with less time, car dealer is one who want to sale their car as soon as possible and also the customers are looking for a comparative price, with spending less time in finding a proper car. This is the main problem for both of car dealer and customer. If we collect all car in one focal point, beside the needed information the customer will not be tired with walking (some time exhausted) searching for a car.

He/She will be provided with all needed information both (quality and quantity) that make it possible to easily decide which car to pick and select which car show dealer to deal with.

Price and quality of car can support customers insight about the car business in his region, we can further provide him/her with a diagram which show how the price of cars is going (the price trend).

1.3. Project aim

The aim of our project is to facilitate the transactions occur between the customers and dealers. By that the dealer will have an easier profit and customers will have a proper car in less time.

1.4. Project Objectives

In objective we have to use:

i. To analyze the requirements of a customer web application and make a central platform for exposing cars from different dealers and making prices comparative with a high quality to our customers.
ii. To design a web application that provides account management, and evaluation of customer with a variety of cars of different model, type, millage, colors.

iii. To implement a transaction between dealers and customers easier and trustful.
iv. To evaluate and validate the car sale management system by applying software black box testing.

1.5. Project Scope

Car Sale Management System is a system that provide its own users with multi-car of a variety in model, type, mileages and color to all customers with a comparative price that will help them to find their dream car as soon as possible and make transactions between customers and dealer faster through this system. This system can be used for three car shows in Suleimany city.

The scopes of the project are:

- The website will help user see the cars information like (Model, Brand, Type, Millage, Price and Defects or flows)
- Both customers and dealers can benefit from our system by using search bar for the car they wanted by that they save time and money, on the other hand the dealers profit will increase.

1.6. Importance of the Project

It is importance for both of customer and car dealer in that, it speeds up the transaction process for the customers to find better car and for dealers who can gain profit faster than before, with comparative prices, which give a better trust between both of them.

Customers will treat with real dealers of cars, instead of dealing with anonymous as it happens on social media.

1.7. Organization of the Report

At first, we introduce the problem occurs daily in our city, which is car transactions between car dealers and customers.

Thereafter we make some justification about how we can contribute in solving this problem and be a positive part in the solution of this daily process which is car transaction.

We also give a brief of this problem through project aim, objective and scope. We analysis this problem and identify the target groups that we are dealing with. our next step will be toward surveying a questioner that will back up our project through the feedback of target group (car dealers and customers).

In chapter 2, will write about the literature review skills and referencing techniques. The following chapter which is chapter 3 are project methodology and data collection and User/system requirements analysis. After that we have chapter 4, which is about projects design.

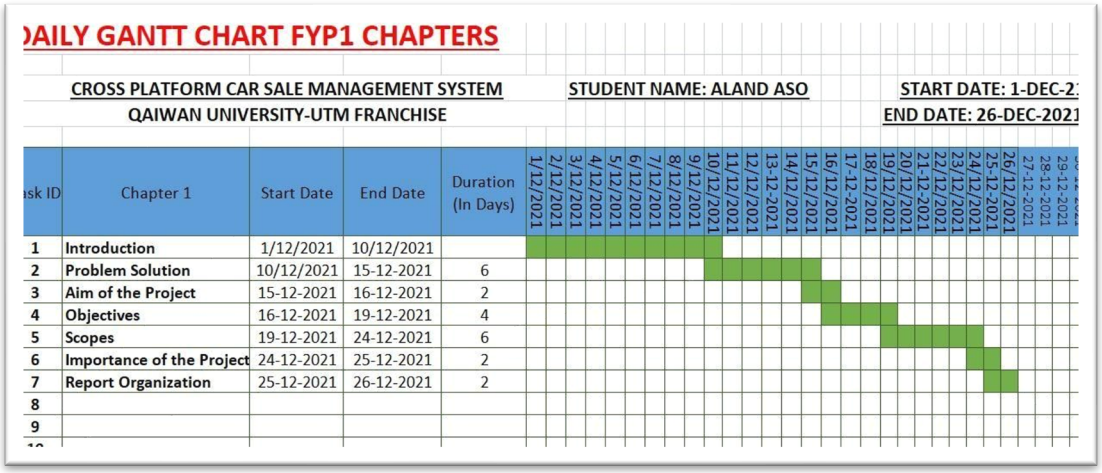

Figure 1 Gantt Chart

Chapter 2

Literature Review

2.1. Introduction

Our management system will be one of the systems that collect different (cars) from different dealers and exposed it to a mass through our system there would be one place for dealers and customer requirement which is a good opportunity for both of them and give them a big picture to all what is going on, on the market.

Customers can search for any type of car they wanted from different car show dealers, and can also make a list of those cars like a shopping cart, and compare those cars in the list and choose what he/she prefer. For a solo web site of one individual car show dealer the customer would not be able to do that (search and bring different cars from different dealer in a separate list) as we mentioned before.

2.2. Current System Analysis

Our system must have featured that no other systems have done before, therefore we here describe those new features that may be in the advance of our system.

Our system offers a detailed information about all cars in Suleimany city like car's type, model, brand, year, mileage and provide a good quality and warranty of our cars. Buying or selling cars is just like a tricky way because the dealers did not give a detail information and sometimes it gave a car without history of cars and sometimes the cars have a problem for example when you buying a car the dealers didn't tell about car's problem and that is one of the issues which make customer to pay extra money in order to fix that problem.

Time consumption is one of the other issues that cost money, from point view of customer he needs more time to find a suitable and proper car, as we know time is precious for both the dealer and customers, on the other hand dealer also would like to make more many in lesser time.

Customer requirements would be fulfilling in just one place (our management system website), he/she can find what his/her favored car features like color, model and also a comparative price. This can be done by our website which collect all car show dealers and let them to attract more customer as much as possible in order to buy their car and make from that sum money.

Both (customers and dealer) would like transaction to be done as soon as possible, and get their work done without delay and spending more time. We could provide customers with best price through a time-series curve that illustrate a price with time and car model.

2.3. Comparison Between Existing Systems

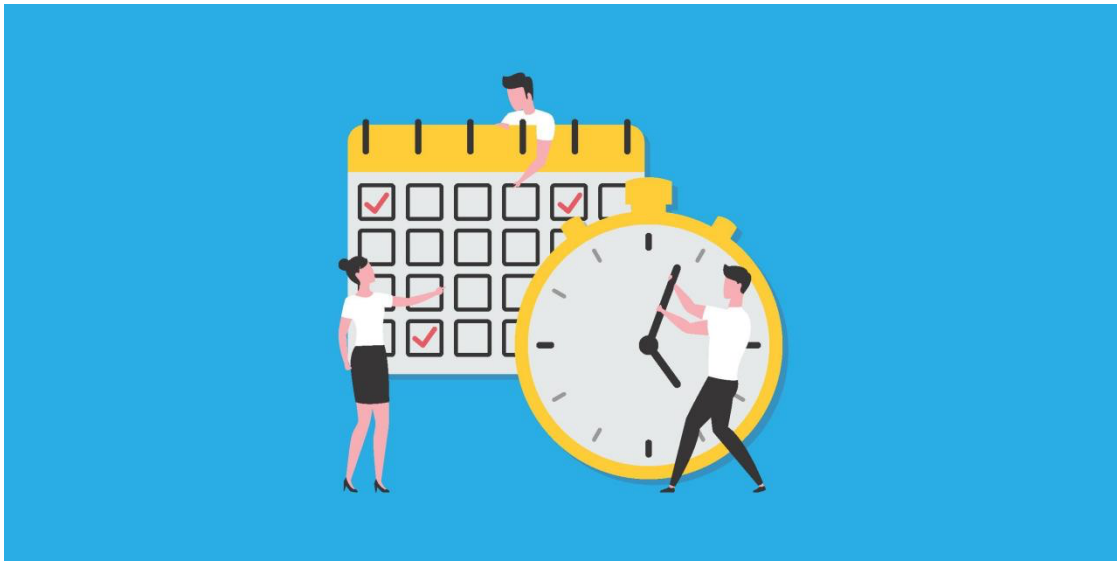

Figure 2 How much time we have to spend

2.3.1. Our system has a feature (Like)

Visitors or customers who are interested in seeing car shows may would like to mark or give a thumb (like) to any car they think is good according to model and price, and this can be treated as a candidate car that has got good rank among other car, by that we had make feedback from customers to our car dealers.

Figure 3 Shopping Cart

2.3.2. Second feature is shopping cart

customers can select different car from different dealers and make a list like a shopping cart and keep it or print it to make his decision on whether buy this car or that.

2.3.3. Compare between existing systems

Now a day people use social media not just to express their idea, they used to expose their properties like (land, house, car and more), we would like to cite some common pages just for comparison between our management system and other social media pages.

2.3.4. Let’s begin with Facebook

There are many solo pages in Facebook which contain second hand car shared by an anonymous whom may be a fake person or in a worst case may be a person with bad background and they are not a faithful or trusted person, and also may those anonymous ask for high prices for their cars and you may find its quality less than you expected.

Figure 4 Sample of Facebook car show

2.3.5. Advantages of Facebook

As a beginner a Facebook is a great way to grow your businesses when you have a page and sales your item. It’s an essay way to start a business. Customers can search for whatever thing they want.

2.3.6. Disadvantages of Facebook

Everyone can have a fake account and that is make a harassment and abuse. Some hacker can hack your account and get your personal information. The same thing is applied to other social media like: **Instagram**.

The transactions on those social media are very slowing going on, people also may not drop their goods after they bought it, it will remain and no one will know about their fate.

2.3.7. Local website

Also, there is car show pages which is only expose one dealer's car, and they are just as a page that would not give any clue to customers because it doesn't give us a comparative both in quality and quantity that we be able to collect all cars of the same type and model and its price in one location.

This is one of the local car dealers

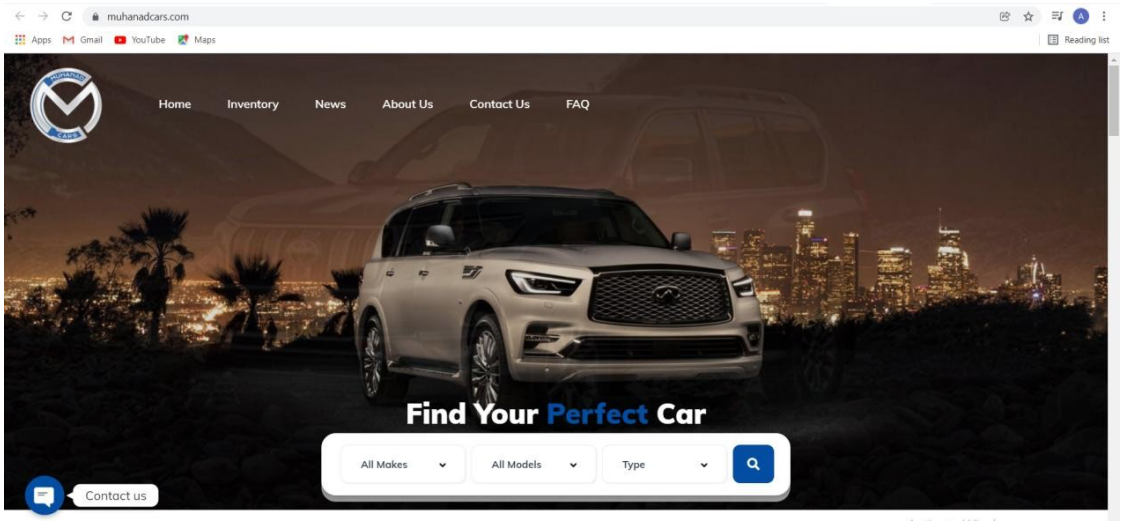

Figure 5 Sample from a local Car Show Home - Muhanad Cars - Cars Dealership in Iraq & Gulf Region_ Title: Muhanad Car

In our management system we can collect different type of car model in a shopping cart and make it available to our customer to see it any time he/she wanted and compare

its prices and defects if any in one list and choose what he/she like. Also, he/she can see the rate of like (big thumb as in Facebook) that has been liked by other people for those cars, which may give a better insight for the customer to choose.

2.3.8. Advantages of local website

Local website can have a benefit for the owner of the website to sales their items. Local website can be accessed by everyone. It can offer in a limited scale cars that the dealer has it, and make searching simple. **Muhanadcars.com** management website in this website all information about cars are exposed and has a nice User Interface.

2.3.9. Disadvantages of local website

Our customers could not be able to reach those dealers, and the prices are very high compared with ours. It exposes modern style cars, which is very rare for our local customers to buy. These local car show dealers have a limited space, they only contain cars of their own. They don't allow other dealers to announce for their car.

2.3.10. Foreign Websites

We can search for many cars shows in the world, but the good news is you can see many cars and model, but would be out your reach and you could not afford their expenditure. Every country has its own law for exporting and importing goods, which is a bigger than a simple person to account for, its transaction can be done by businessman only not a simple person.

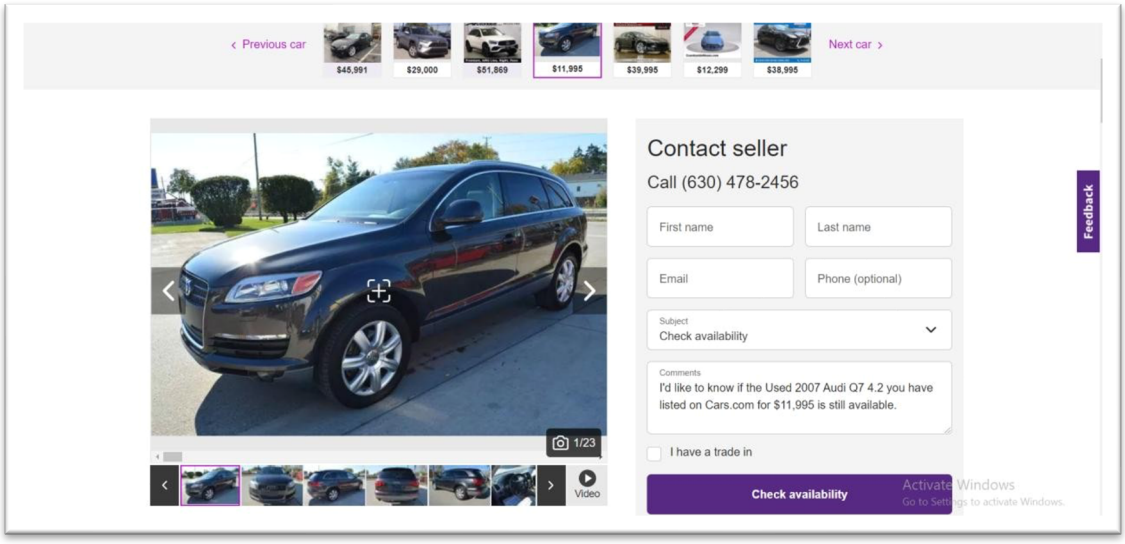

Figure 6 Foreign Website

2.4. Different System Compering

Table 2-1 Comparison of different System

	Website		
	Facebook	**Local website**	**Cars.com**
Links	*https://www.facebook.com/milanocarssulaimany/*	Muhanad Cars. (n.d.). *Muhanad Cars - Cars Dealership in Iraq & Gulf Region*. [online] Available at: https://www.muhanadcars.com/ [Accessed 27 Feb. 2022].	Cars.com. (2019). *Cars.com*. [online] Available at: https://www.cars.com/shopping/.

Information	• *Provides information about second hand cars and new car.* • *That information is edited by anonyms people, may be not accurate information.* • *There is no face contact between the customer and dealer because there is no specified space like what a show dealer has.* • *Only can be accessed if you have a Facebook account.* • *Transaction process may take time, and the dealer would not give a feedback whether the car bought or not.*	• *Just show new cars, because they want to attract more people to their website.* • *The prices are high and quality are low, because there are not rival dealers in the spot.* • *They don't allow rival dealers to announce for their car.* • *Both Facebook and local website will not give accurate information about the items.*	• *This website is good for people who are leaving in USA, our customers would not benefit from it, in today we can find more like this web, for example Alibaba.com or Ebay.com which provide items from anonymous persons.* • *Individual customers can buy car from them, it need a car businessman to do so. Because it's between two countries (Government).*

Car Sale Show

- Provide a shopping cart, which contain a list of different cars from differentdealers.
- Offer an opportunity to customers and dealers to express their opinion bygiving a thumb –**like**) as feedback to their favored car.
- Time consumption is shorter for both the customers and dealers.
- Car dealers are known persons to the customers by their address and telephone numbers and also provided by location.
- We give customers a pig picture of the cars from different corner, price,mileage and many useful information about car history.

Figure 7 Advantage of car sale show

2.5. Literature Review of Technology Used

From point of view of computer science, we have decided not to create a desktop application, because it's totally depending on hardware capability of user computers and desktop applications are not cross platform the rely on the user computer operation system, and we can distribute to other devices like mobile, tablet and so on.

For the reason mentioned above we decide to intense our efforts on web applications. First because they depend on server computation power not on user computers or devices, and secondly the web application is cross platform.

Modern websites must be split to two major parts, the client and server, by that we can make a dynamic website that can be updated with newer cars with prices and make our site refreshed with newer and updated information.

For our back-end (server side) we use PHP language and for our data we use MySQL which is a faster with many other features.

Our User Interface (UI) is HTML, CSS and JavaScript libraries like jQuery and Ajax Technology. We use website because it is a cross platform technology will help us in doing a better application and will help us from extra works must be done for other non-cross platform applications.

2.5.1. Database

MySQL is a relational database management system (RDBMS), which is differ than a spread sheet application like Excel of Microsoft. MySQL is a container of all our databases and can keep them from being malfunctioned by some unauthorized users, and it's like a repository for our databases which contain our tables holding records of data.

For its capability its worth to cite a quotation from this website: “www.jobsity.com. (n.d.). 5 Reasons Why MySQL Is Still the Go-to Database Management System. [online] Available at: https://www.jobsity.com/blog/5-reasons-why- MySQL-is-still-the-go-to-database-management-system.” for what they say about the MySQL database: [Today, MySQL is the second ranking RDBMS solution in the world, according to DB Engines. Its users include a wide range of websites and applications, including household brands like Spotify, Netflix, Facebook and Booking.com.].

Here under we break down most import points that make MySQL proper than other databases on the market: We use MySQL database because they are open source, that mean we don’t pay any money in return of using it. We can use it on our personal computer, through downloading XAMP which is providing a local web server and it’s a complete package for web developers, before hosting our website we test our web application on our personal computers.

MySQL is a simple database management system and easy to learn, for instance a database like Access from Microsoft learning curve would take more time compared with MySQL. Its main role is taking care about data and how to store it and keep it from unauthorized users, it’s not diffusion our concentration on different subjects like what Access do. With that simplicity it came a speed also.

2.5.2. Web Server

PHP (Hypertext Preprocessor) is known as a general- purpose scripting language that can be used to develop dynamic and interactive websites it’s a server-side language programming. It slipped down many programming languages and now 80% of web sites programmed using PHP according to this web site: https://w3techs.com/technologies/details/pl-php

- PHP learning curve is shorter than learning of other languages, and can be learned by anyone who is new to web technology, it's a friendly and easy language.
- PHP is open source and no need to pay money in return.
- PHP is cross platform language, can be used on Mac, Windows and Linux operation systems.
- PHP codes can be found in many web sites, which make programmer and developer task easier by that we can find a versatile learning resource.

2.6. Chapter Summary

Here we talk about our system features like shopping cart, give like, collecting all dealer and customer in one place, and we eradicate anonymous and their fake news.

Beside that we talk about other systems for instance, Facebook and its advantages and disadvantages not just that we compared our system with other systems on the market like local websites.

We have talked about programming tool we decide to use in building our system and justified there use in our favor. We mention MySQL as our back-end database and PHP as our server programming language. We also use markup language like HTML to create an attractive User Interface and enhance it with Cascade Style Sheet, JavaScript programming.

Chapter 3

SYSTEM DEVELOPMENT METHODOLOGY

3.1. Introduction

In order to obtain more structure to our system development workflow we will try to select the right software development methodology. Methodology is a body of methods, rules, and postulates employed by a discipline: a particular procedure or set of procedures.

https://www.merriam-webster.com/dictionary/methodology

Time is one of the critical factors to accomplish our system in tandem with customer and dealer feasible requirement. Choosing the proper methodology will guaranty the continuity of our system life-cycle. The building structure of our software is relying on our methodology efficiency.

3.2. Methodology Choice and Justification

There are many methodologies used by different software developer, which undertaken in accomplishing their different tasks.

DevOps methodology is one of those methodology in the market undertaken by various developers, collaboration is one of the prompted features and advantages of this kind of methodology.

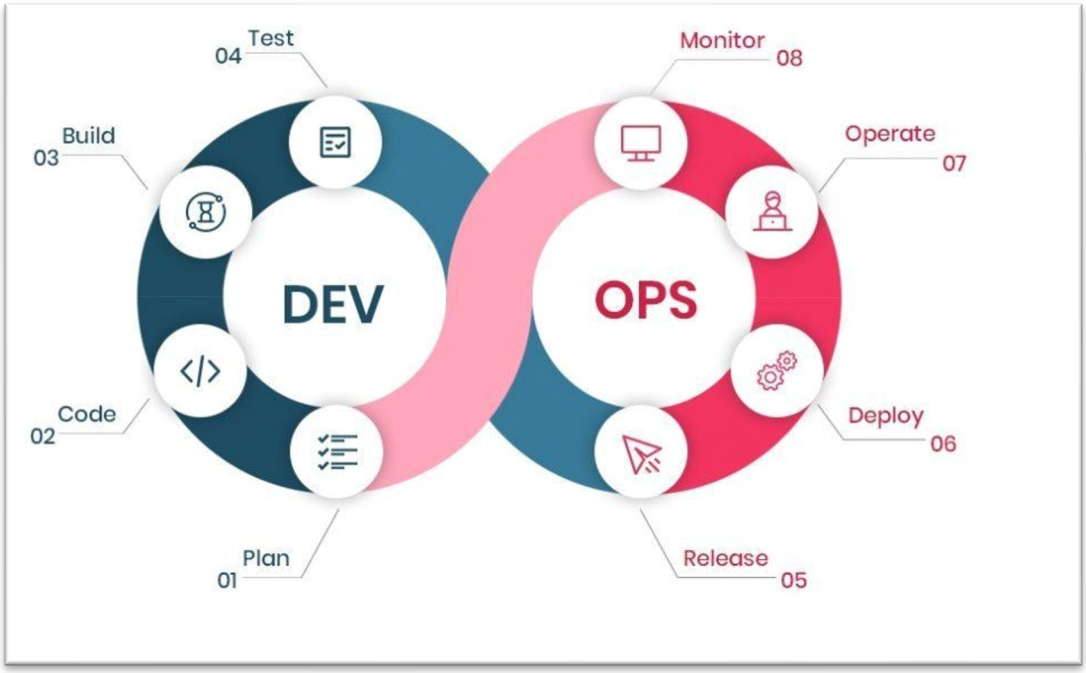

Figure 8 DevOps methodology diagram

Agile is DevOps parent methodology that split the barriers separating development and operations teams thus increasing collaboration between them. Our methodology consists of two major team of (developer and operators) as its illustrated in the figure.

Figure 9 DevOps methodology diagram

In this methodology there is a quite cooperation between the two main part of our methodology in tandem with each other.

Cooperation is the vital issue; developers can take its feedback from operators and make alternative changes and see what is the results through operators' feedback.

Responsibility: Many software developer main job is developing a required software without concentrating on deployment, monitoring and some other issue, with our methodology developer focus on operators' feedback thus this will be a contentious collaboration between these two main teams and will share responsibility among them.

collaboration: for better results, these two teams will work together in order to fulfil and match the requirement of customers and dealers.

3.3. Phases of the Chosen Methodology

DevOps is a combination of two word: Development and Operations. It relies on collaboration between developers and IT operation teams. These two-team work together in order to enhance and stabilize the software development.

We for our system, use Xampp solution which is working as a local server, we can implement our plan directly through writing code and testing and monitoring all in just one place which is our laptop computer. That is why we prefer this methodology than the other.

And also, the development will continue this way looping between new idea and testing, which make it faster in finding bugs in our software development.

Our methodology consists of these steps: plan, code, build, test, release, deploy, operate, monitor and send feedback to make newer plan and make new idea also.

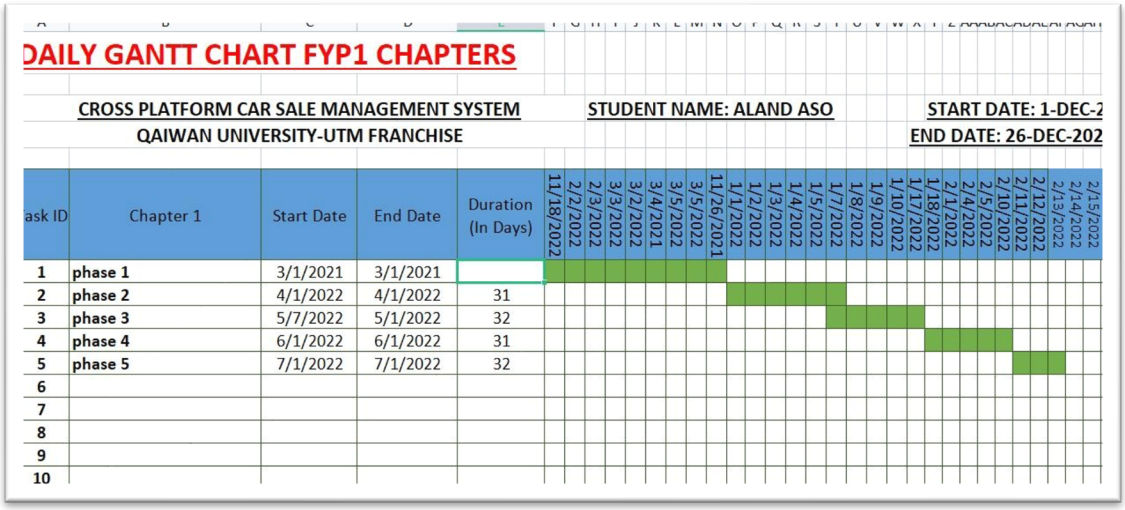

Figure 10 Gantt Chart

3.3.1. Phase 1: Developer Plan

Developers and stakeholders communicate about the project and their requirements to accomplish. Developers makes plan according to customers need and list these needs to steps to be cared on.

Figure 11 Plan

3.3.1.1. Code

To translate plane of our first phase, developer need a tool. We for our system use a text editor: visual studio coder which is a very handy and soft developer tool.

3.3.1.2. Build

Xampp is our local server, we can execute our code on this software solution and see our code's result.

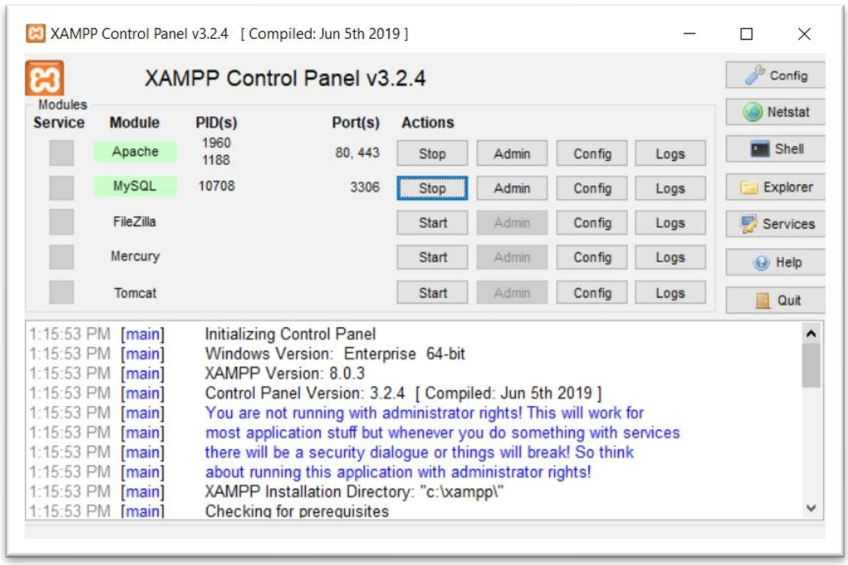

Figure 12 XAMP Control Panel

3.3.1.3. Test

We could see the result of our website on our local server

3.3.2. Phase 2: IT Operator Release

When IT operator start with release, they are doing the testing phase if was successful, and the application could go to live and both developers and IT operations working together until they end the process. The IT operation is very professionals involved in the entire delivery lifecycle.

3.3.2.1. Deploy

The code is deployed to a cloud environment for additional usage

3.3.2.2. Operate

Conduct the operations on the code.

3.3.2.3. Monitor

Keep an eye on how well the app is performing and make any changes necessary to satisfy the client.

3.4. Technologies Used Description

3.4.1. XAMPP

XAMPP (/ˈzæmp/ or /ˈɛks.æmp/) is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible. [https://en.wikipedia.org/wiki/XAMPP]

We have worked on this software since last year for developing website during that we programmed in PHP as our server interpreter and we used [Html, CSS, JavaScript] for our web development interface. Our back-end is MySQL server which is also its a free open source, and very stable and reliable for work.

3.4.2. Hosting

Last step in our work is finding a hosting website and a domain name thatfulfil and match our requirements. Must be cheap in price, reliable, stable and fast in response to our users. First, we look for a free server, after we test our system, for the last release wewould look for a better hosting web server. Even we make a test, you can see it from the link bellow:https://polycarshow.w3spaces.com

Figure 13 Our Test website

3.5. System Requirement

For our system we can use a desktop or a laptop computer that can be able to run our software we used for developing our system. The software that we use is called Xampp which is an open source.

3.5.1. Hardware Requirements

Laptop or desktop computer: Core-due i7 or above.

3.5.2. Software Requirements

- **Windows 10** operation system.
- **XAMPP** it is a cross platform solution, which is very helpful in building an off- line website on your computer it works as a local server on your personal computer. We can benefit from this software to programming our website using PHP and also use MySQL as our back-end database.
- **Code editor**: Visual Studio Code from Microsoft which is also a free software to write our code (using HTML, CSS, JavaScript and PHP)

We can investigate and examine our website on our personal computer in a complete developing cycle and operation by using this solution software.

3.5.3. System Requirement Analysis

Video provides a powerful way to help you prove your point. When you click Online Video, you can paste in the embed code for the video you want to add. You can also type a keyword to search online for the video that best fits your document. To make your document look professionally produced, Word provides header, footer, cover page, and text box designs that complement each other. For example, you can add a matching cover page, header, and sidebar.

3.6. Chapter Summary

In this chapter we choose the most appropriate methodology that backed our system development in different stages, which is DevOps methodology, also there is a plenty methodology in the market, but we find our DevOps is fulfil our developing life-cycle.

We need a contentious development to meet the requirement of stakeholders and beneficiaries.

Chapter 4

REQUIREMENTS ANALYSIS AND DESIGN

4.1. Introduction

In this chapter we are designing OOP (use case, sequence and activity diagrams) for our project. In this chapter Use Case, Sequence and Activity diagrams has been designed. This will include drawing of diagrams that will visualize the requirements and what we want to expose to our dealers and customers, and by that we can have a bigger picture of what our project is would like to be.

Moreover, Entity Relationship Diagram has been used to determine the entities and relationships among them in the back-end. Furthermore, Poly Car Show prototyping has been included in this chapter. Database design is also used to determine the relationship in the system. The interface design for the Poly Car Show will be also included in this chapter.

4.2. Requirements Analysis

This is a process of determining user expectations for a new or modified product. Requirement analysis is important phase for the development project to prevent error in the system. One of the requirement analyses is user requirement that makes the user can understand the system activity and process.

Customer:

- Customer can register and login the account to access the website. Customer can Search Car whatever in his mind in the website.
- Customer can view car by the picture of the car and reading performance of car.
- Customer can get do the reservation of the car. Customer can logout from the Website.

Admin:

Playing an importance role in the system application to makes sure all the function in the system work well. In addition, the system application admin same as user function but more powerful than user.

Below is the function for the admin:

- Admin can approve dealer's request to open new shopEven Admin can discontinue a specific shop.
- Admin can login the application with unique ID.Admin can view list of the car.
- Admin can manage the system website. Admin can logout from the system website.

Dealer:

Dealer can register and login the account to access the website. Dealer can view car and change the price of the car and can upload more picture of car.

- Dealer can look the reservation of him car.Dealer can logout from the Website.
- Dealer can send discontinue request.
- Dealer can send request to admin for opening new shop.

4.3. OOP (Use Case Diagram)

The use case diagrams is an illustration form that contain actor which act as a user in the system playing their own roles and function in the system.

Figure 4.1 shown that the use case diagram for the Poly Car Show.

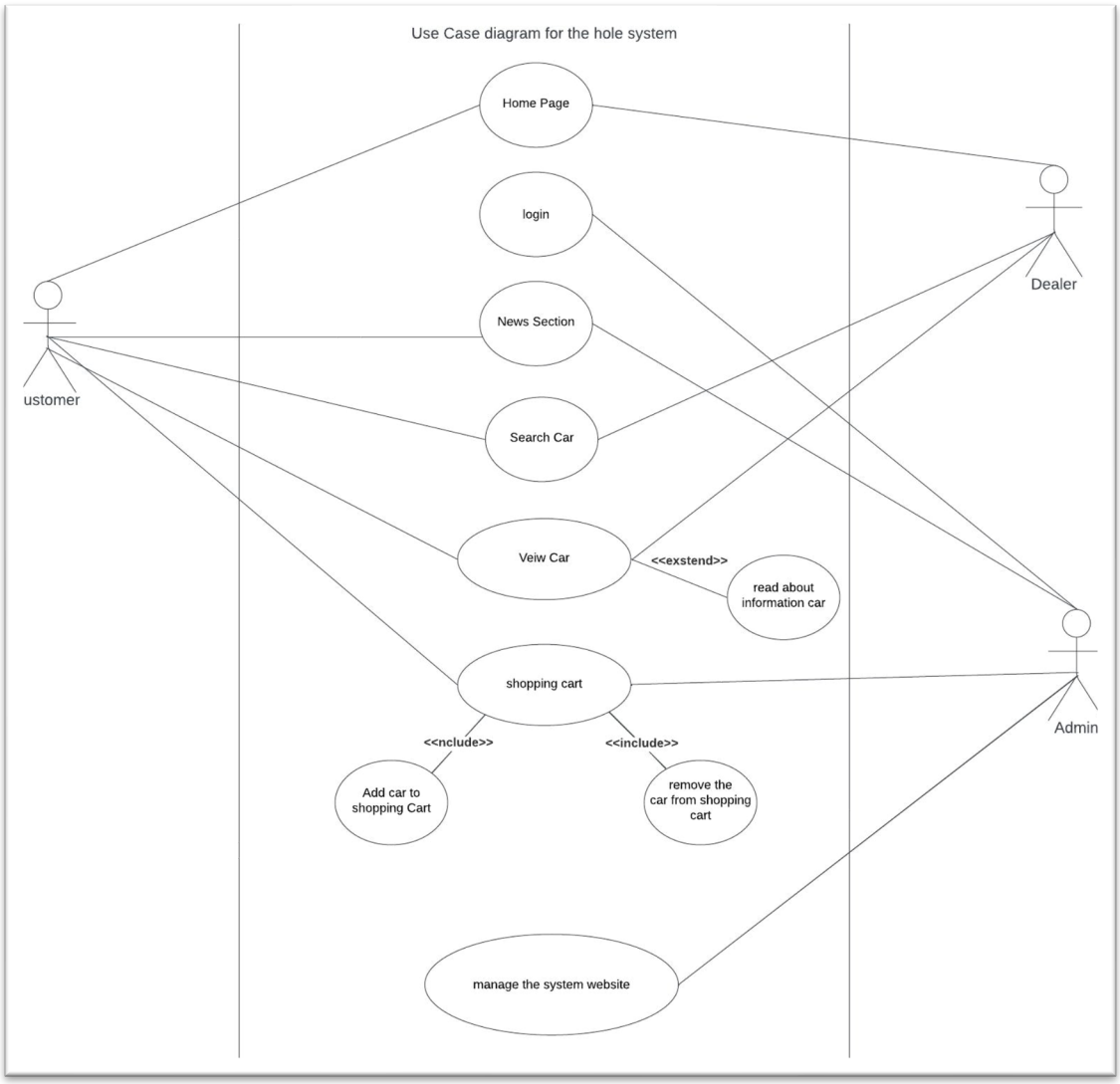

Figure 14 Use Case diagram for Poly Car Show

4.3.1. Show hole system use case diagram

As you can see in figure 4.1 there are three actor which is Customer and Dealer also Admin for the system, there are six function in the diagram that each function plays their own roles which is register new account, login, search car, view cars, reservation and manage the system Website.

Table 4-1 Use Case Description for Admin

Use case	Description
login	This use case shows that admin canlogin to the system by using unique ID,and redirect to admin panel.
View Car	This use case shows that admin canview All Dealer Car show and add them to our Web Application.
reservation	Admin can view the reservation whencan customer prefers the car.
Manage the system website	This use case shows that admin can manage and modify the accounts, delete the Car can approve dealer's request to open new shop

Base on figure 4.1, Customer can access several functions such as register and login, Search, View Car, do the reservation.

Table 4-2 Use Case Description for Customer

Use case	Description
login	This use case shows that Customer canusing email and password, and redirectto home page.
Registration	This use case shows that Customer canregister for new account by adding User name, email, password, phone No.
Search Car	This use case show that customer cansearch for the proper car and need it.
View Car	This use case shows that Customer canview all car shop in our website and hecan do the add the car or cancel.
Reservation	This use case shows that Customer cando the reservation.

Base on figure 4.1, Dealer can access several functions such as register and login, View Car, do the reservation.

Table 4-3 Use Case Description for Dealer

Use case	Description
Login	This use case shows that admin canlogin to the system by using email and password, and redirect to home page.
Register new	This use case shows that Dealer can register for new account by

account	adding User name, email, password, phone No.
View Car	This use case shows that Dealer can view All car in our system also canview him car.
reservation	This use case shows that Dealer canView the reservation form him car

4.3.2. Sequence Diagram

Sequence diagram are interaction diagram that show how the system activities, process or task being carried out for each function. Sequence diagram are also show in detailed how each function work. There are several functions that user share which is, login, Search Car.

View Car, reservation, Manage website, and update user information. In Figure 4.2, Figure 4.3, Figure 4.4, Figure 4.5 and Figure 4.6 below shown the same function for Customer and Dealer, Admin.

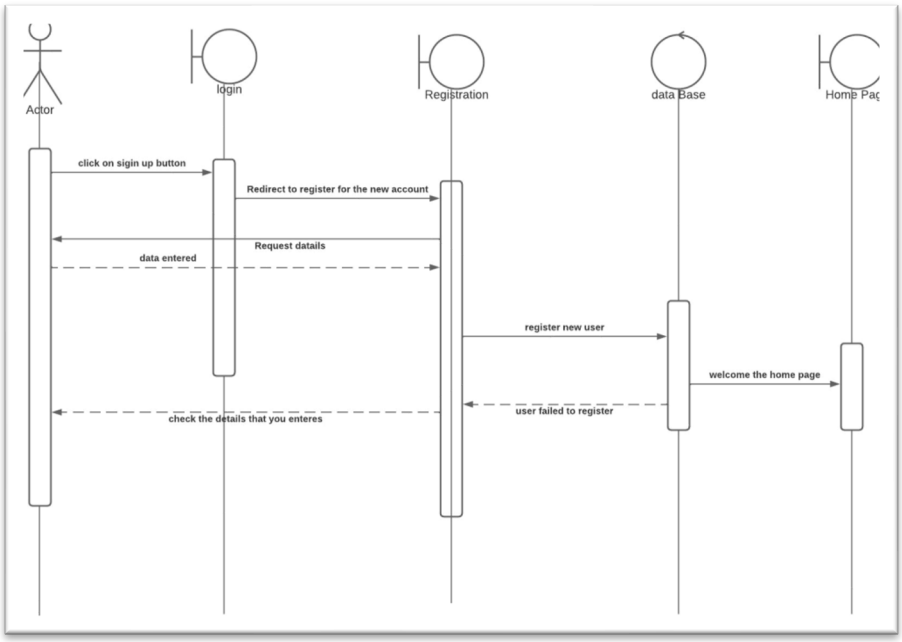

Figure 15 shown that the sequence diagram for the register

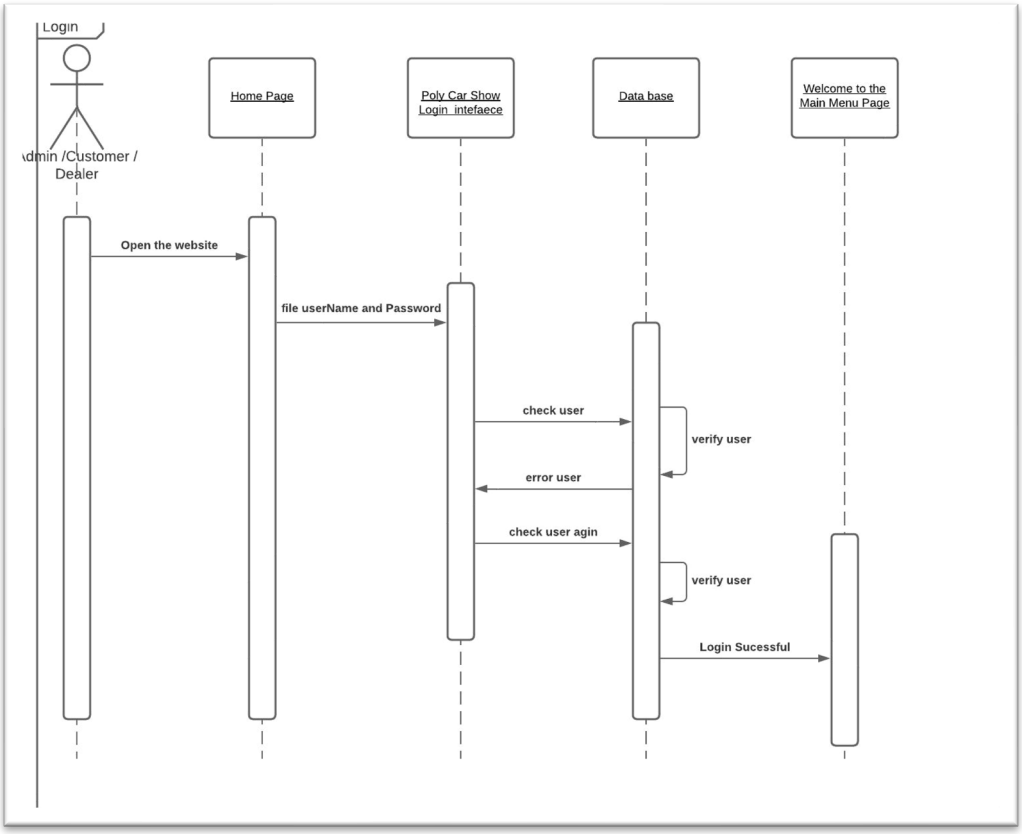

Figure 16 shown that the sequence diagram for the login

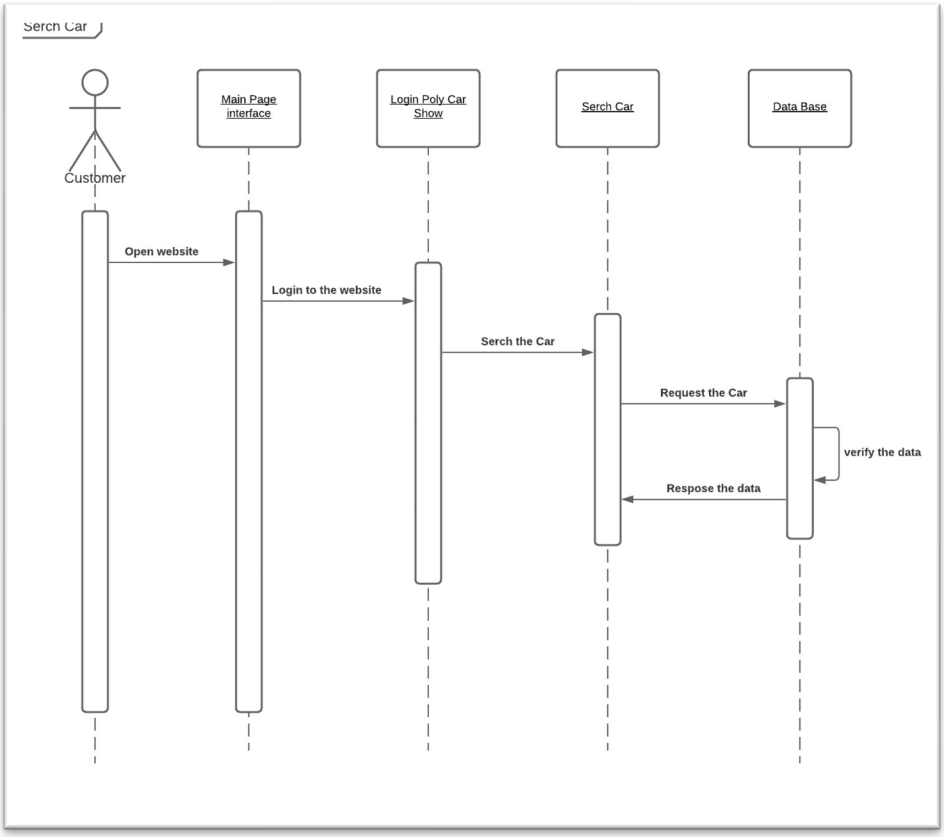

Figure 17 Search Car Sequence Diagram

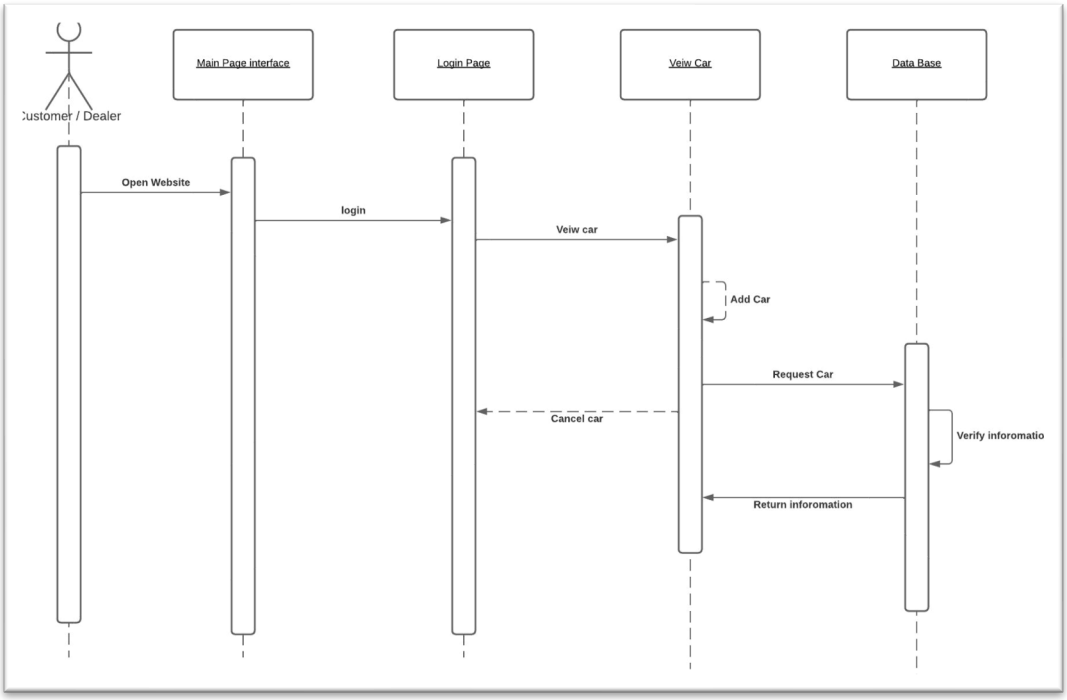

Figure 18 View car Sequence Diagram

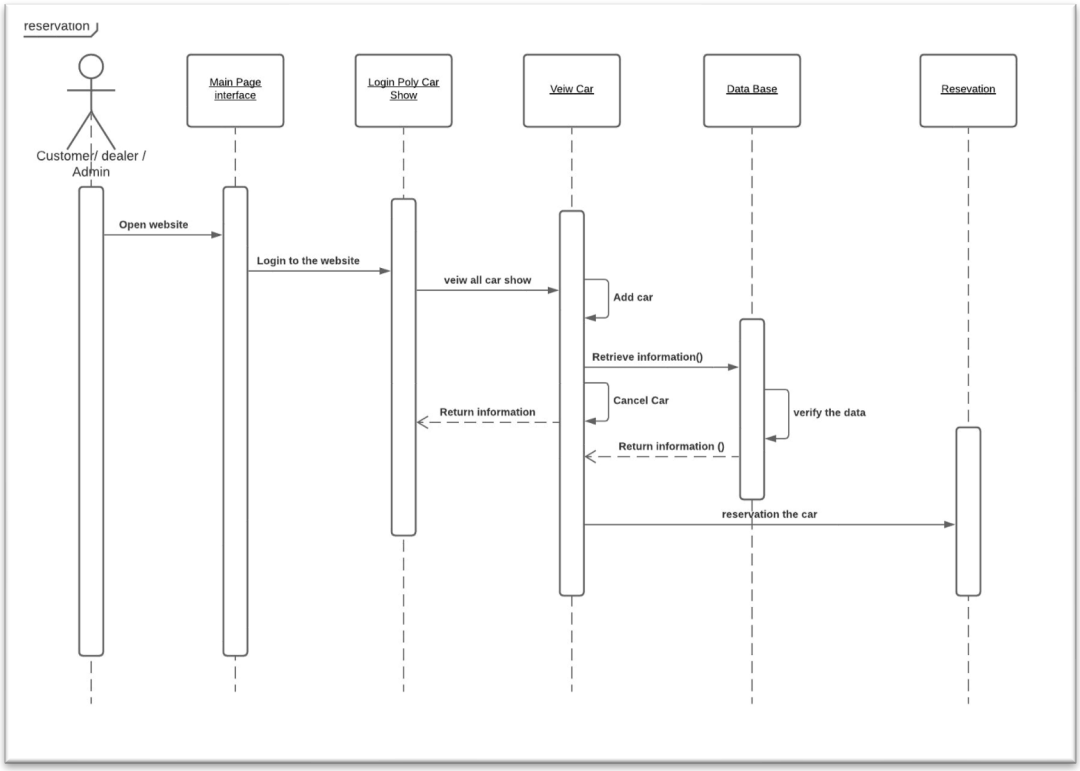

Figure 19 Reservation Sequence Diagram

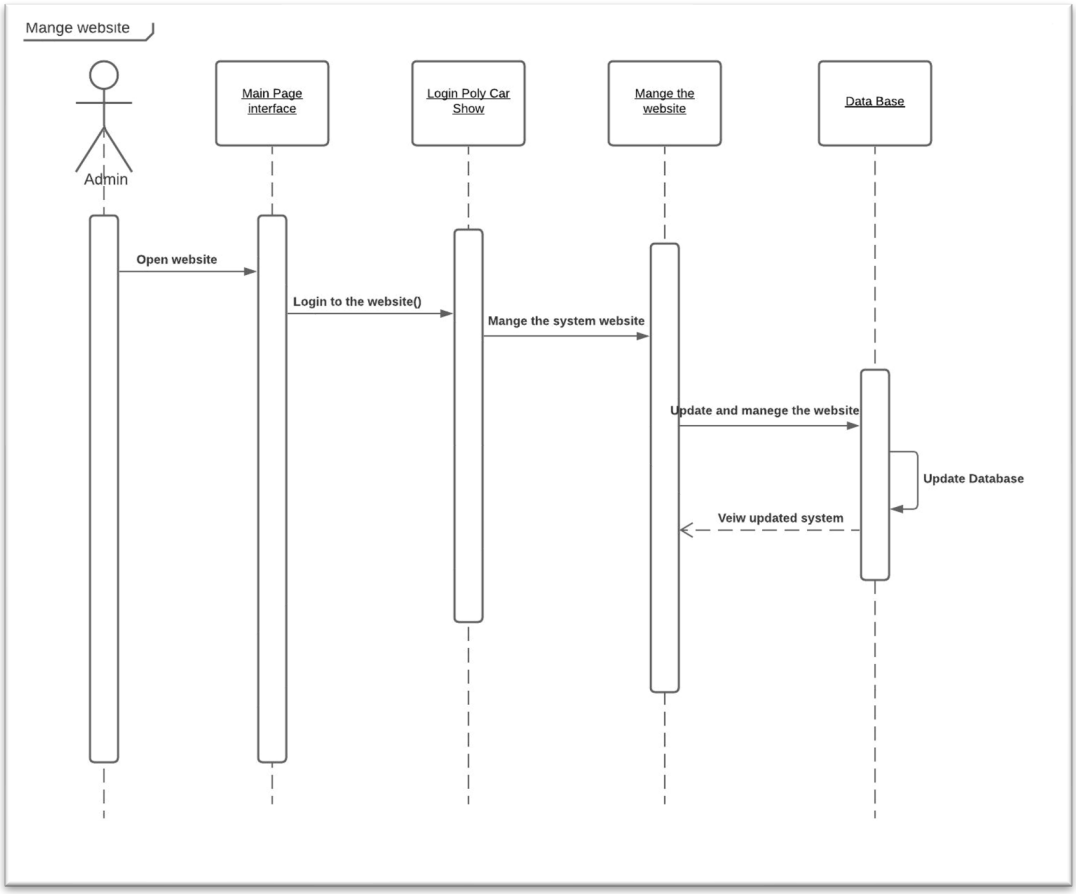

Figure 20 Manage Website Sequence Diagram

4.3.3. Activity Diagram

Another essential behavioral diagram in UML diagram is the activity diagram which describes dynamic aspects of the system. The activity diagram is basically an advanced version of the flow chart which models the flow from one activity to another. In addition, in this part will explain about the activity diagram for each user in the system application which is Customer, Dealer and Admin. In the Figure 4.7, Figure4.8, Figure 4.9 explain the activity diagrams

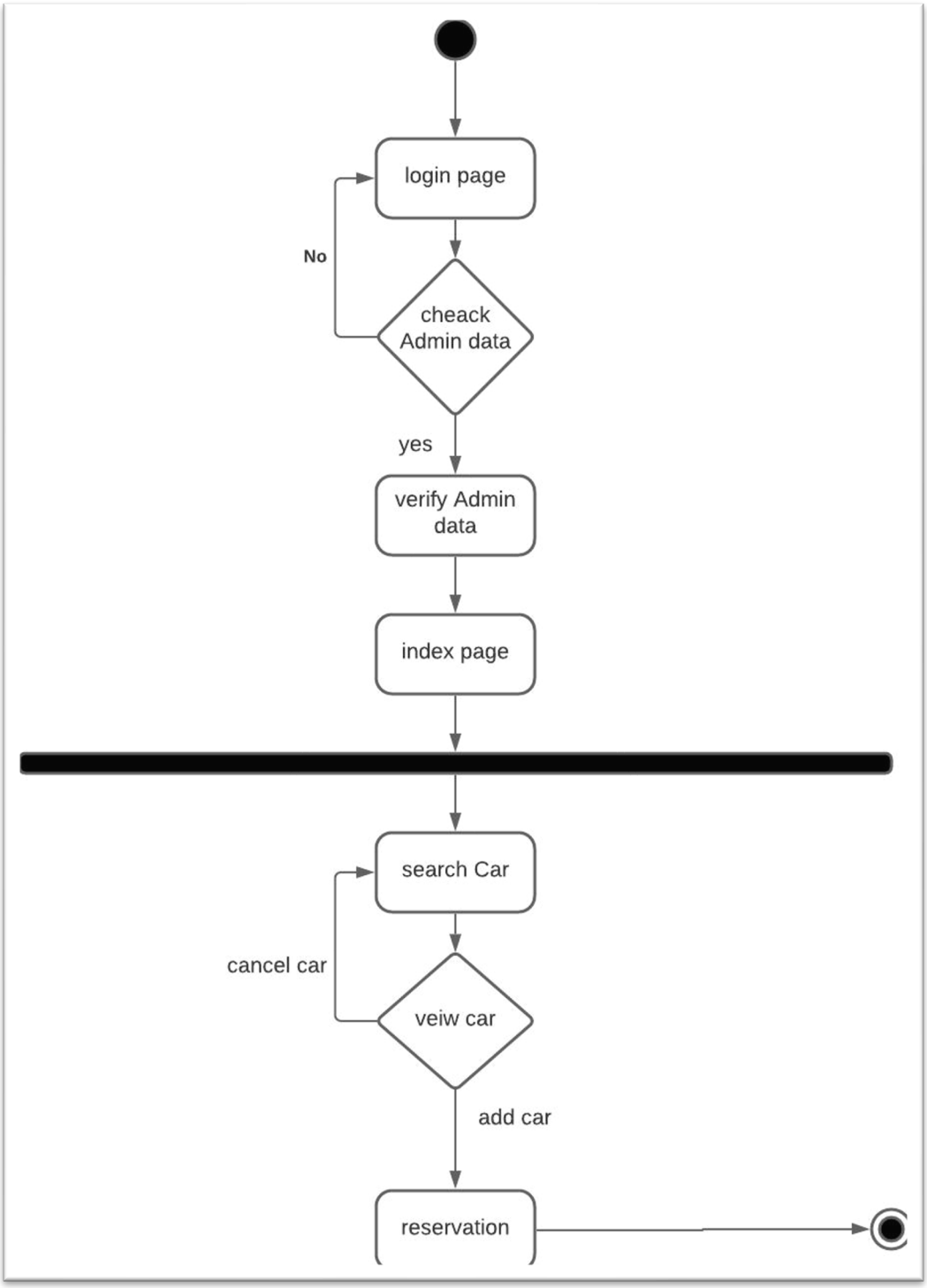

Figure 21 Activity diagram for Customer

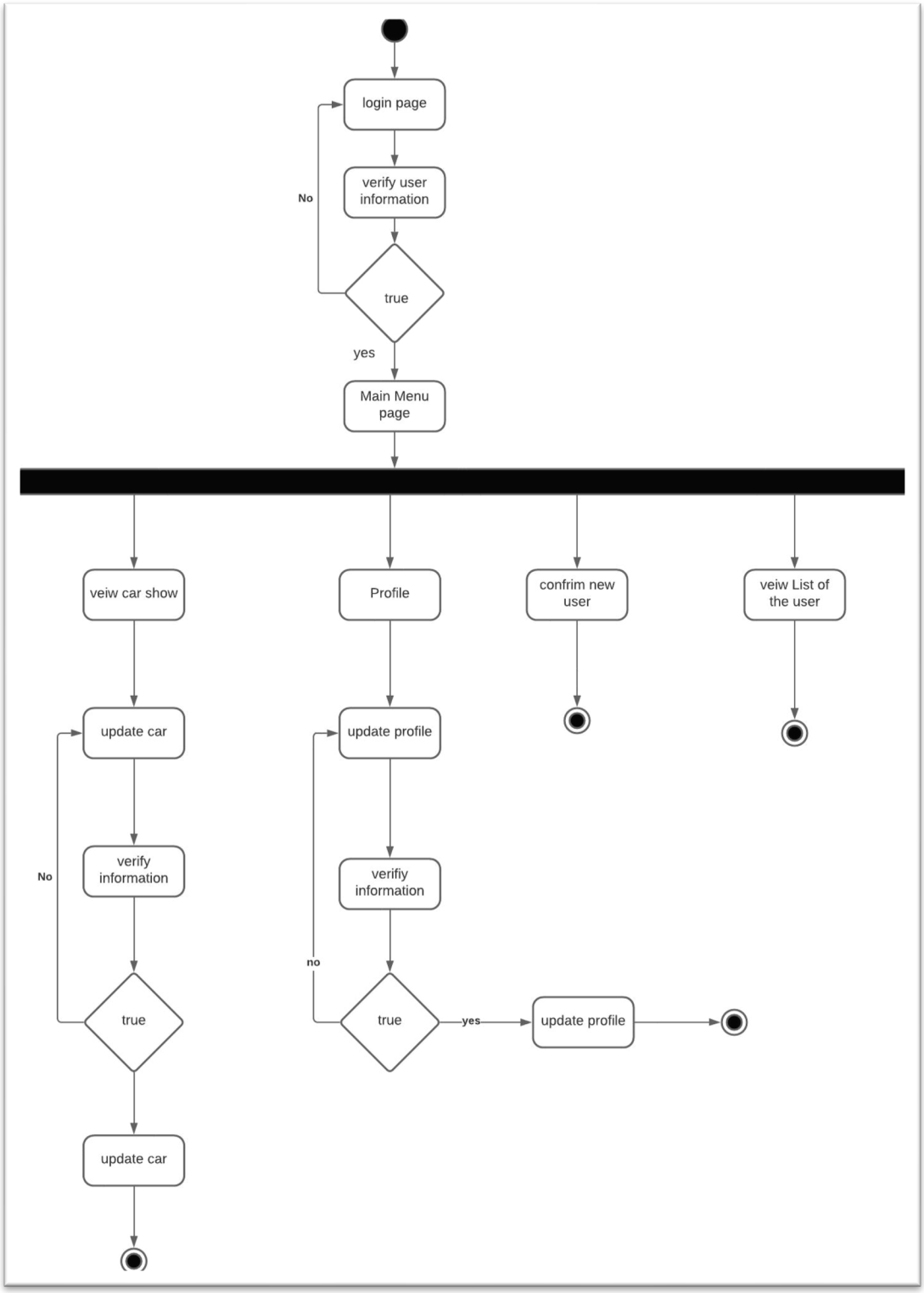

Figure 22 Activity diagram for Admin

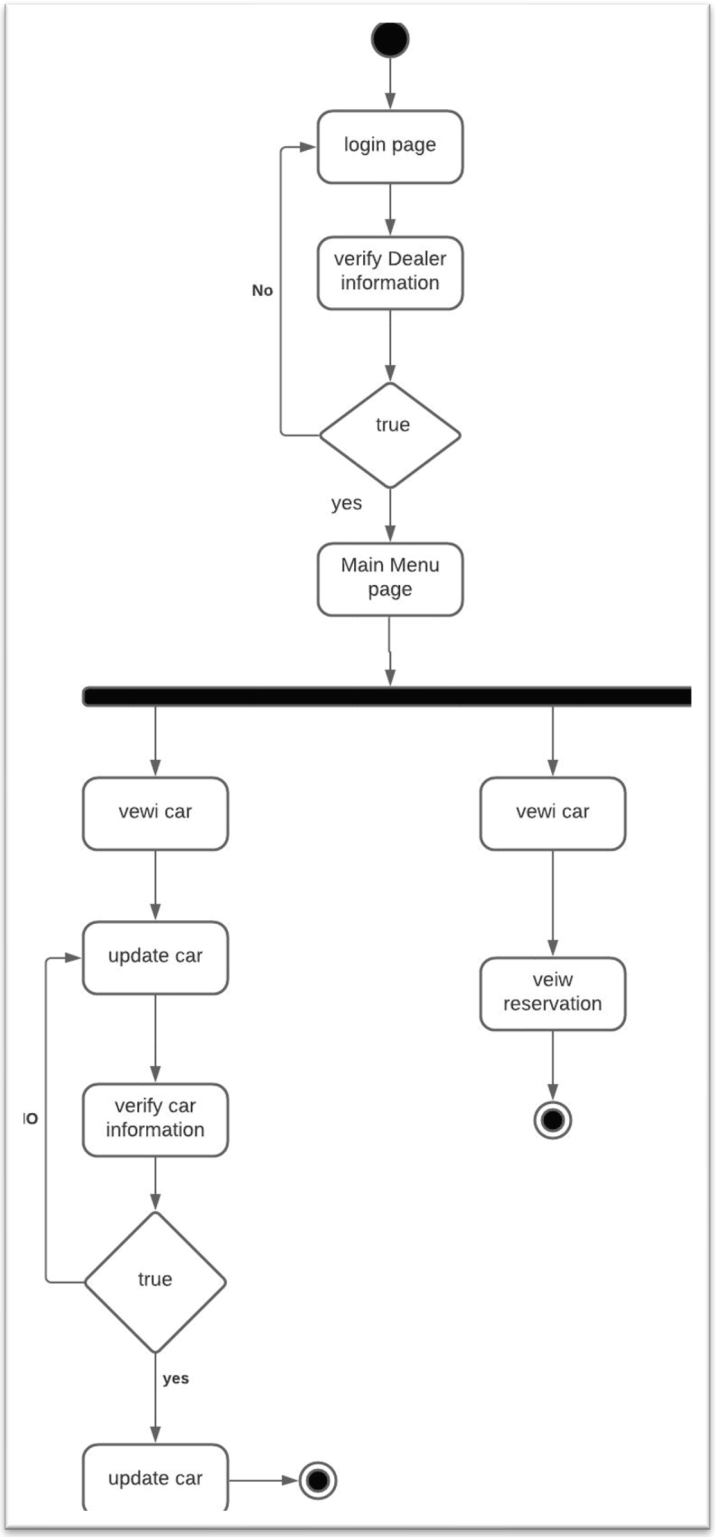

Figure 23 Activity diagram for Dealer

4.4. Project Design

The figure below is showing all different parts of our system, like: Customer, Dealers and Admin. Model–view–controller (MVC) is used for developing user interfaces that divide the related program logic into three interconnected elements. This is done to separate internal representations of information from the way's information is presented to and accepted from the user and you can see the in this figure.

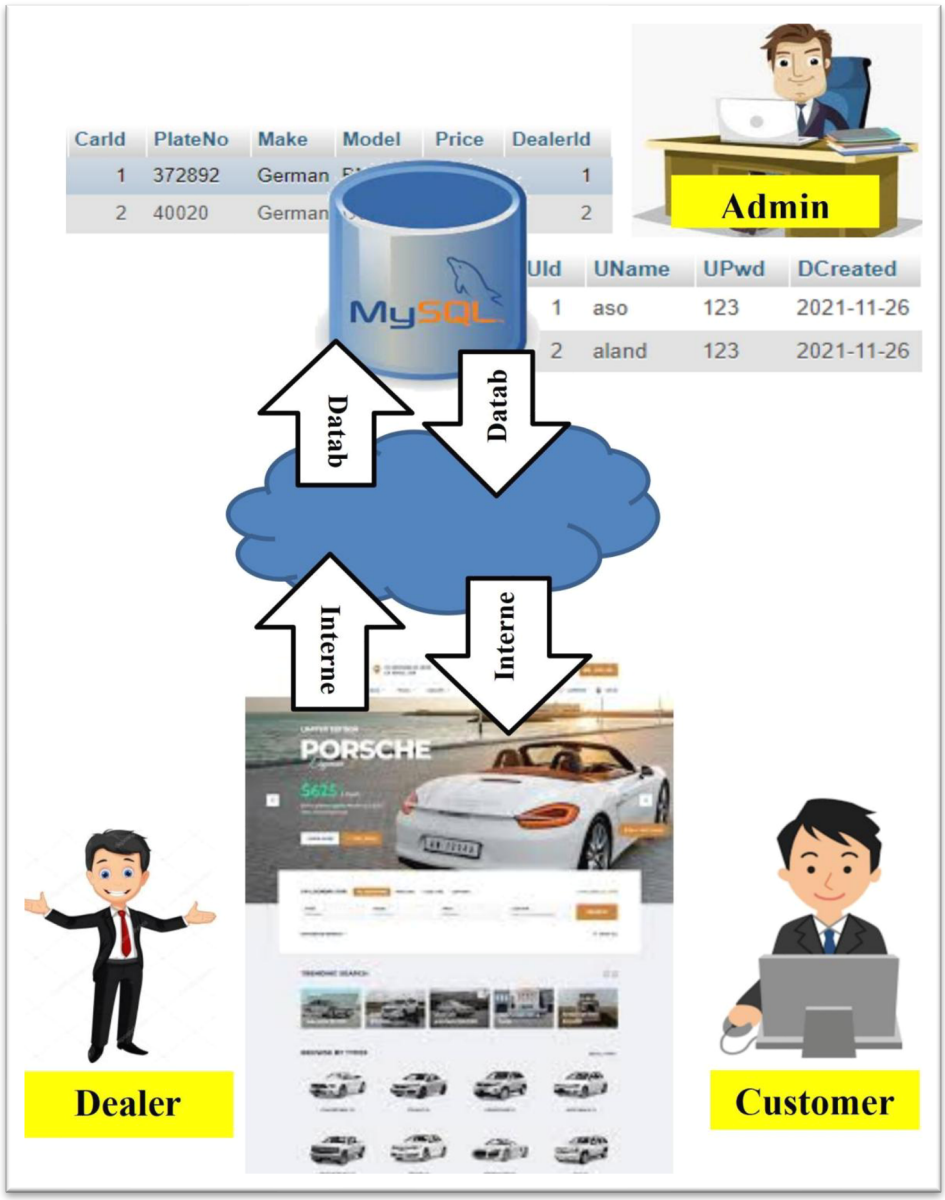

Figure 24 Architecture Design

These characters are playing the vital role in our system, with our user interface which is our web site connected through internet to our database. Admin controlling the transaction that take place between each customer and dealer. And he/she is make necessity facilitation for both of them.

4.5. OOP Class Diagram

4.5.1. UML Class Diagram

Figure 4.13 shown the system application class diagram. The class diagram shown the relationship between class and entity to each other that are related.

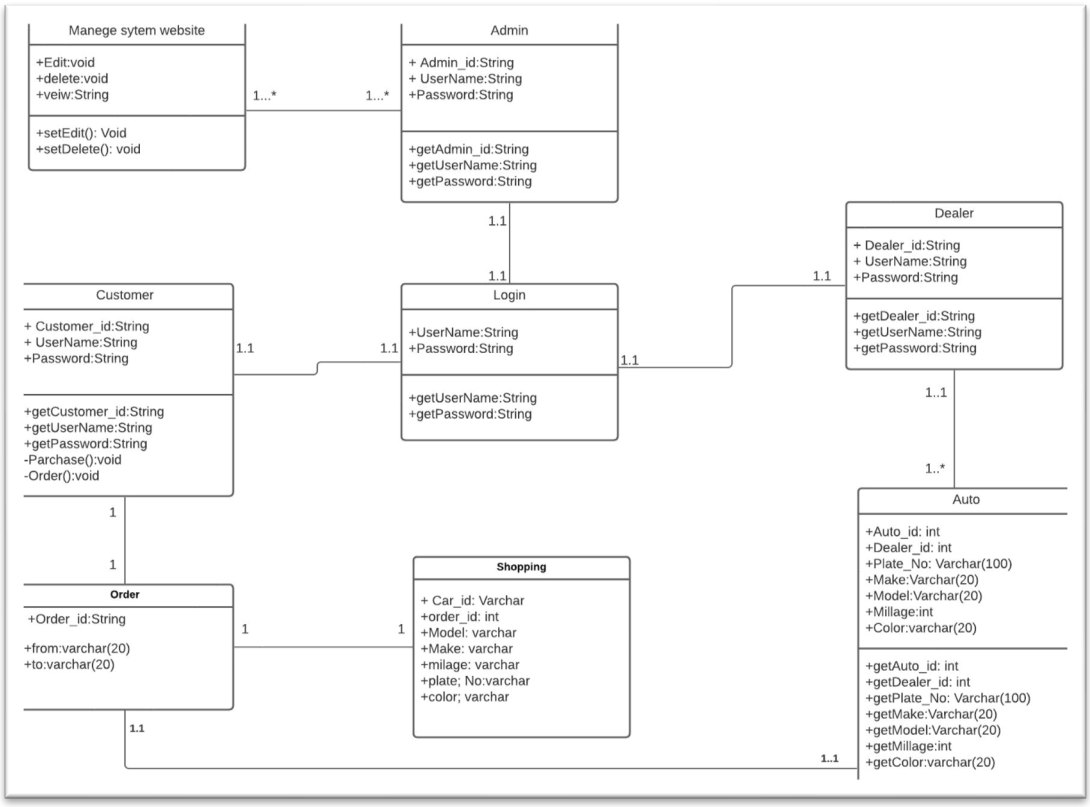

Figure 25 UML Class Diagram

4.6. Database Design

Our database will include customers, order, shopping, dealers and Auto Entity asshown in the figure bellow:

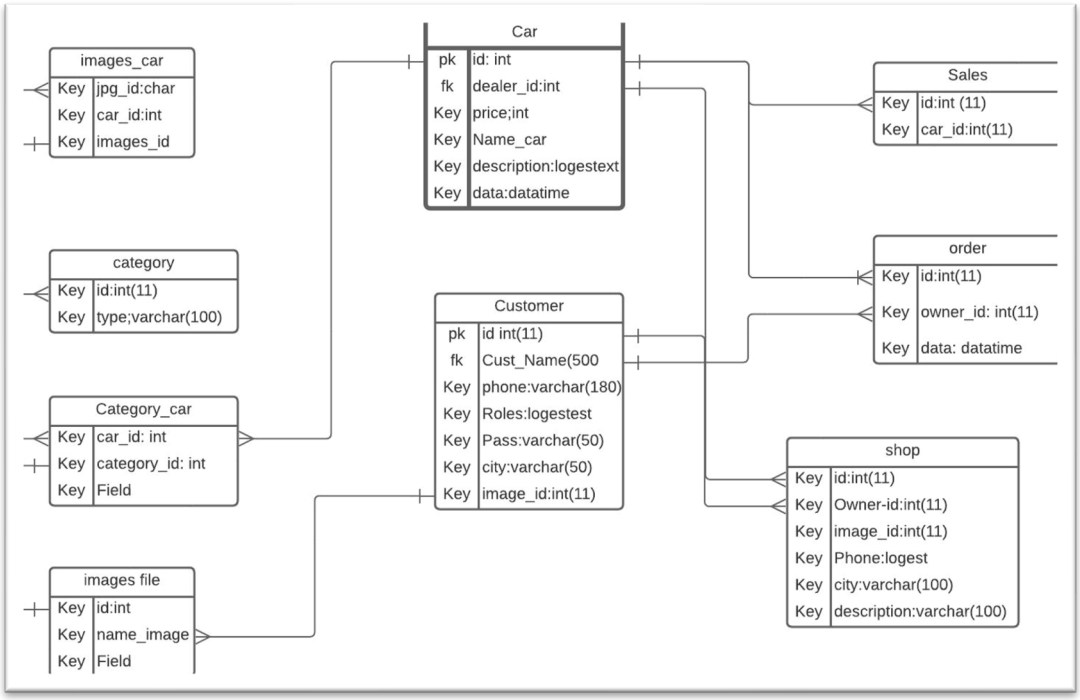

Figure 26 Database Design

Our Entities (Tables) normalized and have divided the customers and dealers requirements to tables which are related through primary and foreign key, with all data-types that required for our tables.

4.7. Interface Design

Interface design is a graphic user interface (GUI) where user can interact with the website. The interface design must be simple and user friendly to makes the user easy to understand to use the system. Below isthe user interface for each function in this system web application. In this interface it is not the final version of my web application it just only aprototype maybe I will change the interface

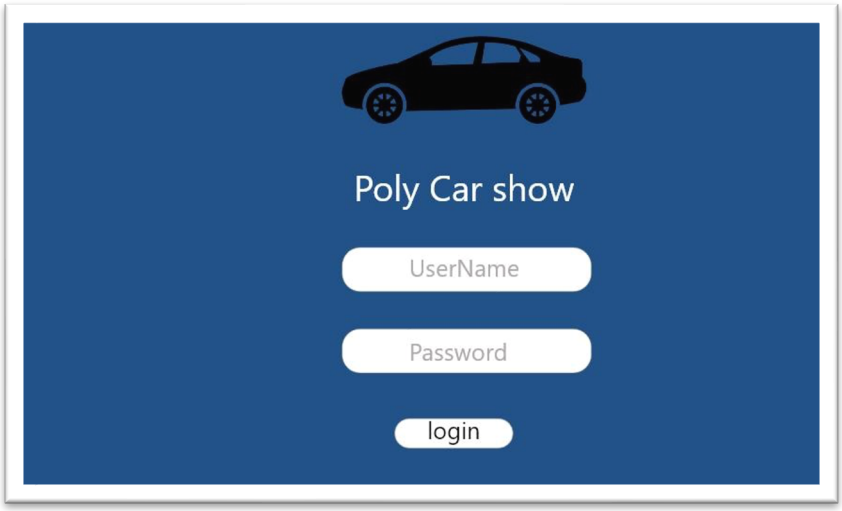

Figure 27 Logging In page

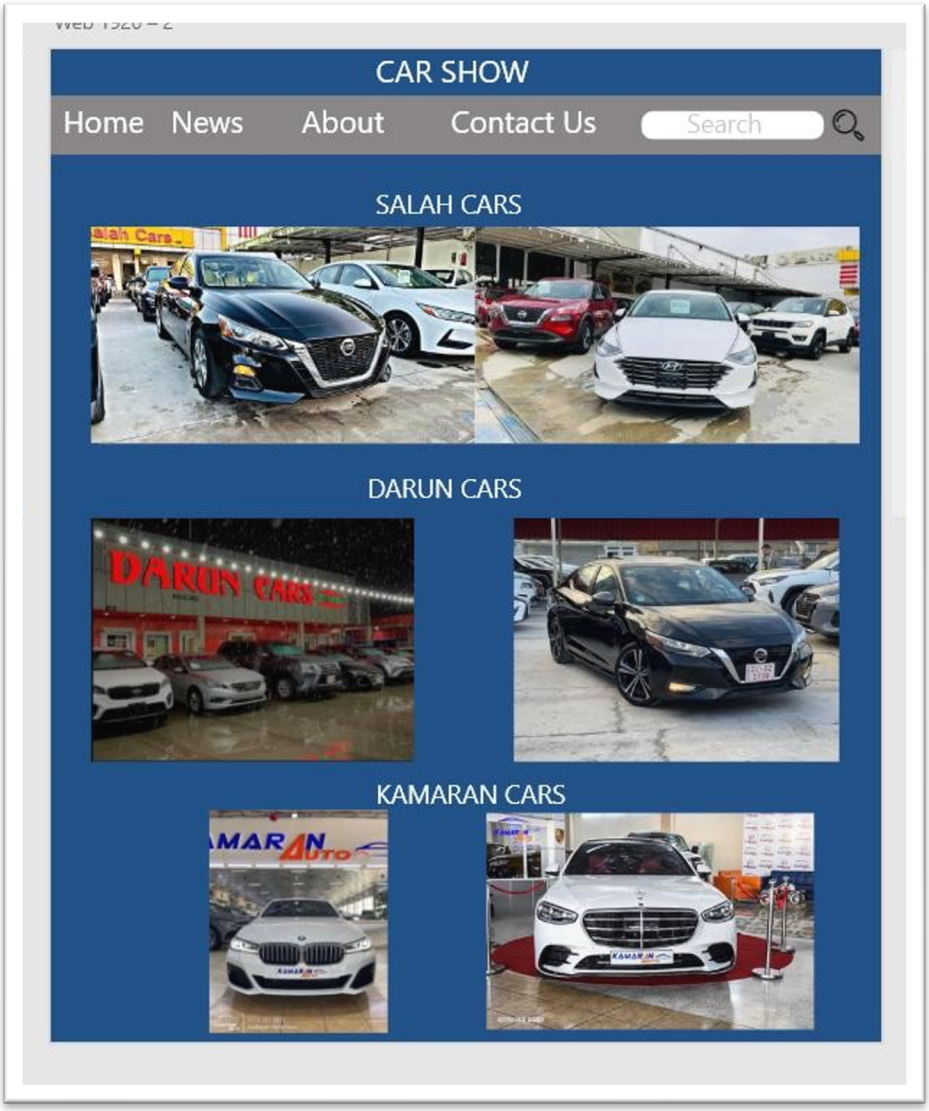

Figure 28 Home Page

Customer select one car show that display the cars of that car show dealer

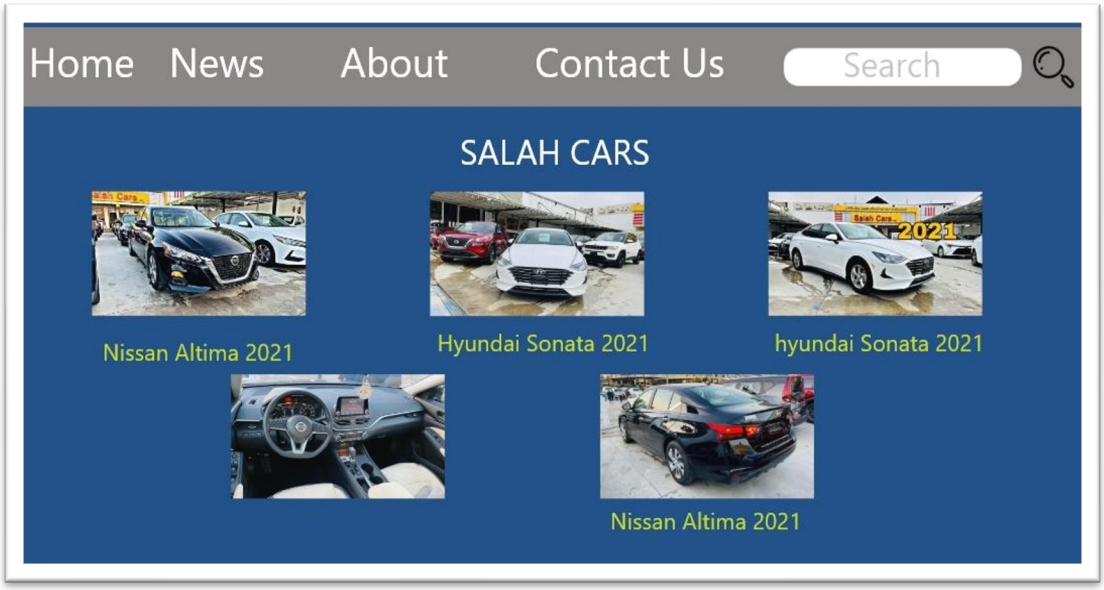

Figure 29 Single Car Show Reservation of one car by the customers

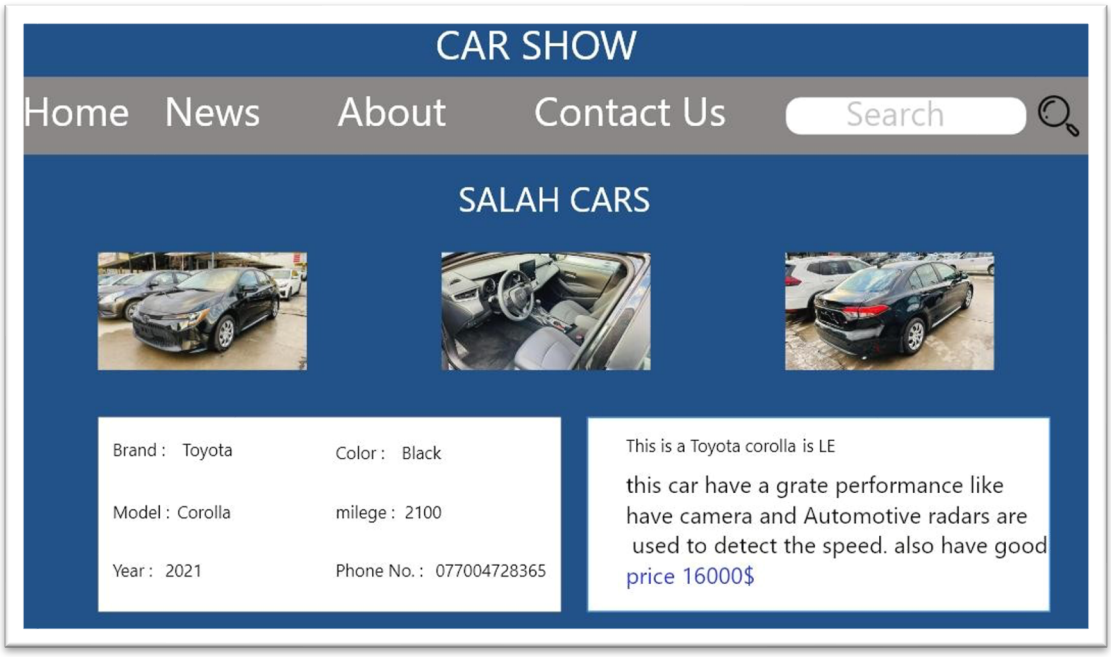

Figure 30 Car detail information

4.8. Chapter Summary

In this chapter we rely on one of the best websites that help online to create and design our diagrams and was very helpful in our work.

It helps us in design the following:

- Unified Modelling Language (UML).
- Use Case Diagram.
- Sequence Activity.
- ERD (Entity Relationship Diagram)
- User Graphical Interface GUI

Chapter 5

Implementation, Testing, Results, and Discussion

5.1. Introduction

According on the system development approach, requirements analysis, and design laid out in this paper's preceding chapters, this chapter discusses how to implement our system website and how we can test our system website.

In our project our aim was to fulfil the requirements of most of today’s customers who spend hours even days to find a proper car which make them satisfied and feel happy.

We have tried to be close as much as possible to the customer’s wish’s and desire at least to most of them, and through our system we also hope to make a place for all customers and dealers to find a trusted stage that collect both of them, and make a comparative price near to customers wish.

5.2. System Implementation:

In the early stages of a project's life cycle, the architectural design and system analysis results are used to determine how this project should be developed to meet the needs of the project's stakeholders.

5.3. System Architecture Implementation:

For the website Application, the MVC system architecture was chosen in FYP1 and implemented in the car sales management system according to given specifications. However, when the system was near to developed, it was discovered that MVC was not an effective implementation in this website system.

We can describe the MVC pattern in software design into three parts of the MVC:

- **Model**: define the data and Manages data.
- **View**: define display and Handles layout.
- **Controller**: define control the application logical and can acts as the coordinator for both the View and the Model.

as shown on Figure 5.1 above, the view component of customer_car_view

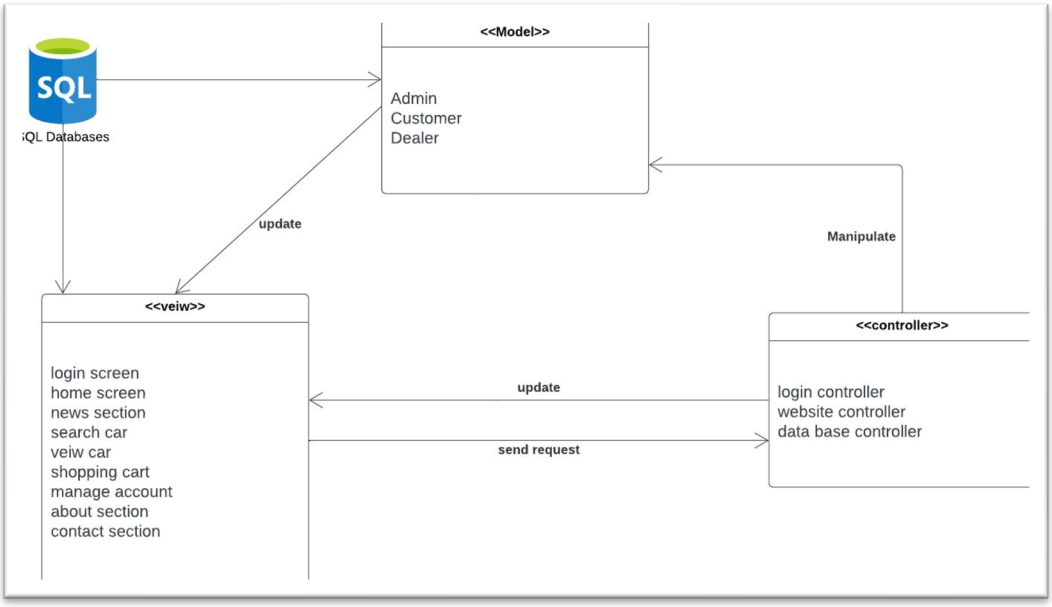

Figure 31 show the MVC

interacts with Model View Controller to retrieve a data that have been manipulated by the View Models and the database Storage is used for data mapping, but View Model

interacts with it via the Model layer to generate objects. In order to communicate with sql database.

```php
<?php
session_start();
include("conn.php");
?>
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
    <link rel="stylesheet" type="text/css" href="css/style.css" />
</head>
<body>
    <header class="header" id="header">
        <div class="headerDivUp" id="headerDivUp">
            <h1>GRAND CAR SHOW</h1>
        <div class="searchDiv">
        <form action="Search.php" method="POST">
            <input type="search" value="Search" name="carModel">
            <input type="submit" value=" Search " name="search">
        </form>
        </div>
        <a href="Admin.php"><input type="button" value=" Login "></a>
        </div>
        <hr>
        <div class="headerDivDown" id="headerDivDown">
            <nav>
                <a href="#Home" id="active">Home</a>
                <a href="#News">News</a>
                <a href="#About">About</a>
                <a href="#Contact">Contact</a>
            </nav>
            <nav>
```

Figure 32 Code Segment

Figure 5.2 below displays the code segment of all web Application system that are written with Dart programming language on top of HTML, CSS, PHP and JavaScript Framework.

```
            <a href="#Contact">Contact</a>
        </nav>
        <nav>
            <a href="#CarShow1">Carshow1</a>
            <a href="#CarShow2">Carshow2</a>
            <a href="#CarShow3">Carshow3</a>
            <a href="ShoppingCart.php">Shopping Cart</a>
        </nav>
    </div>
    <hr>
</header>
        <!--Home-->
        <section class="Home" id="Home">
        <div class="HomeDiv" id="HomeDiv">
            <div><h1>Welcome to our Website</h1></div>
            <div><img src="imgs/logo.png"></div>
        </div>
    </section>
    <!--End Home-->
    <!--News-->
    <section class="News" id="News">
        <div class="NewsDiv" id="NewsDiv">
            <hr>
        <?php
     $sql="select * from news_tbl where disp=1";
     $Result=mysqli_query($con,$sql);

    if(mysqli_num_rows($Result)>0){
        while($row=mysqli_fetch_assoc($Result)){
            echo "<b><span>".$row['title']."</span></b><br>";
            echo "<span>".$row['detail']."</span>";
    echo "<hr>";
    }
}
```


Figure 33 Home Page

In this figure show the home page which is developed with HTML and CSS languages.

```
        <!--About Section-->
<section id="About" class="About">
    <div id="aboutContainer" class="aboutContainer">
        <div id="aboutDivL" class="aboutDivL">
            <p><h1 style="color: black;"><b> FULL STACK DEVELOPER</b></h1>
            <h2 style="color:white;">(front and back end) developer</h2><br>
            <h3>Beside that I also know programming</h3>
            <h3>in micro-controller like:</h3>
            <h4 style="color:white;">| Arduino uno</h4>
            <h4 style="color:white;">| Also I am graphic designer.</h4></p>
        </div>
        <div id="aboutDivR" class="aboutDivR">
            <img src="imgs/Aland1.jpg" height="400px" style="margin-left: 40px;">
        </div>
    </div>
</section>
<!--End About Section-->
```

Figure 34 About Section

In this figure show the about section which is developed with HTML and CSS languages.

```
88      <section id="Contact" class="Contact">
89          <div id="contactContainer" class="contactContainer">
90              <div id="contactDivL" class="contactDivL">
91                  <h1>Online Car Management System</h1>
92                  <h2 style="color:white;">New idea, newer Vision</h2><br><br>
93          <h3>Email:<a href="mailto:aaqu180035@uniq.edu.iq">Send Email</a></h3>
94                  <h3>Tel: 07709157246</h3>
95              </div>
96              <div id="aboutDivR" class="aboutDivR">
97              <img src="imgs/Aland1.jpg" height="400px" style="margin-left: 40px;">
98          </div>
99              </div>
100     </section>
101     <!--End Contact-->
102     <!--Carshow1-->
103     <section id="CarShow1" class="CarShow1">
104         <div><a href="Carshow1.html" style="text-decoration: underline; font-weight:bold;
105     <?php
106         $sql="select * from car_tbl where carshow=1";
107          $Result=mysqli_query($con,$sql);
108
109     if(mysqli_num_rows($Result)>0){
110         while($row=mysqli_fetch_assoc($Result)){
111             ?>
112             <div id="carshowContainer" class="carshowContainer">
113
114             <form method="POST" action='' >
115                 <div class='cardisplayer'>
116                 <div class='imgDiv'>
117                 <a href="<?php echo "<script>alert('hi');</script>"; ?>"><img src=imgs/<?
118                 </div>
119                 <div class='infoDiv'>
```


Figure 35 About Section 2

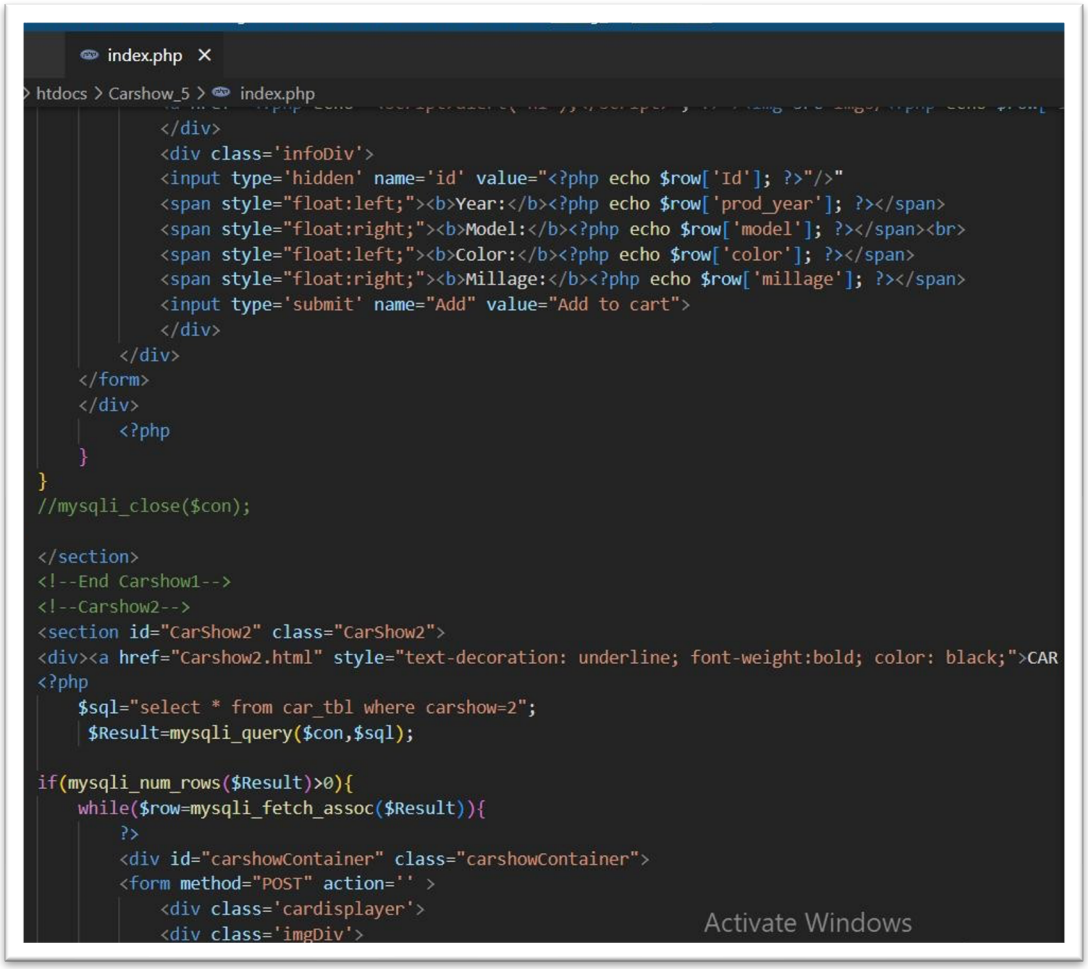

Figure 36 Code Segment 2

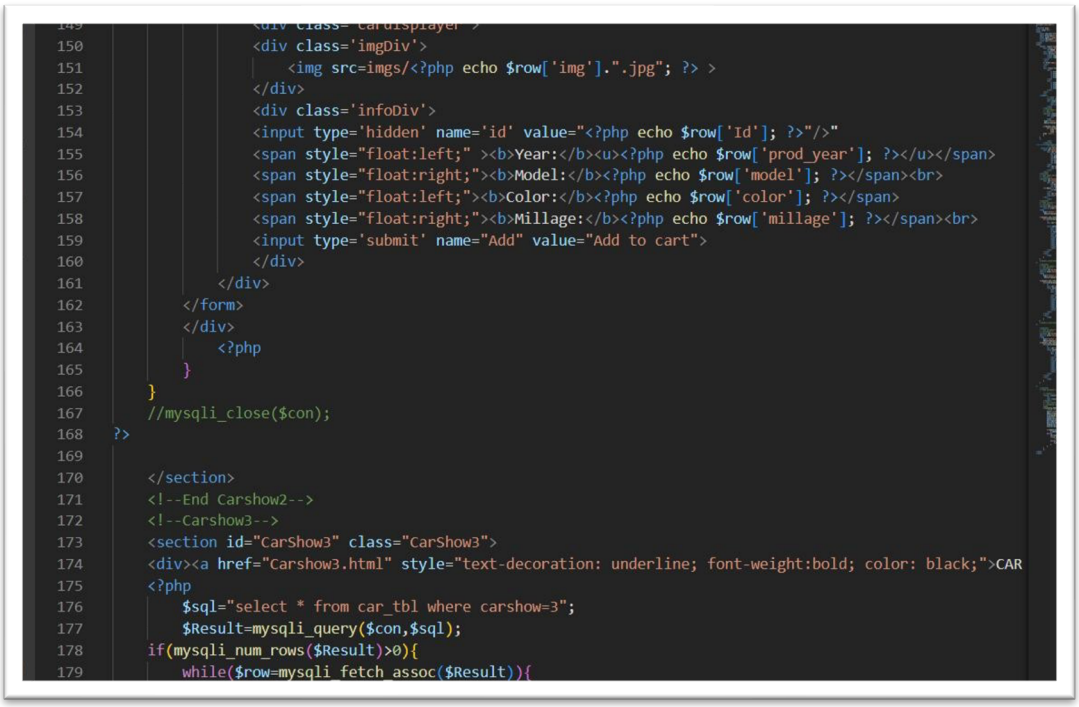

Figure 37 Code Segment 3

index.php

htdocs > Carshow_5 > index.php

```
<!--Carshow3-->
<section id="CarShow3" class="CarShow3">
<div><a href="Carshow3.html" style="text-decoration: underline; font-weight:bold; color: black;">
<?php
    $sql="select * from car_tbl where carshow=3";
    $Result=mysqli_query($con,$sql);
if(mysqli_num_rows($Result)>0){
    while($row=mysqli_fetch_assoc($Result)){
        ?>
        <div id="carshowContainer" class="carshowContainer">
        <form method="POST" action='' >
            <div class='cardisplayer'>
            <div class='imgDiv'>
                <img src=imgs/<?php echo $row['img'].".jpg"; ?> >
            </div>
            <div class='infoDiv'>
            <input type='hidden' name='id' value="<?php echo $row['Id']; ?>"/>"
            <span style="float:left;"><b>Year:</b><u><?php echo $row['prod_year']; ?></u></span>
            <span style="float:right;"><b>Model:</b><?php echo $row['model']; ?></span><br>
            <span style="float:left;"><b>Color:</b><?php echo $row['color']; ?></span>
            <span style="float:right;"><b>Millage:</b><?php echo $row['millage']; ?></span><br>
            <input type='submit' name="Add" value="Add to cart">
            </div>
        </div>
    </form>
    </div>
        <?php
```

Figure 38 Code Segment 4

```
section>
--End Carshow3-->

 <!--Footer-->
 <footer class="footer" id="footer">
     <hr>
     <div class="footerDiv" id="footerDiv"><h2>Welcome to our website</h2></div>
 </footer>
 <!--End Footer-->
 <!--Shopping Cart Logic--->
 <?php
 if(isset($_POST['Add'])){
     //echo "<script>alert(".$_POST['id'].");</script>";
     $sql="select * from car_tbl where Id=".$_POST['id'];
     $Result=mysqli_query($con,$sql);
     $row=mysqli_fetch_assoc($Result);
     $id=$row['Id'];
     $model=$row['model'];
     $millage=$row['millage'];
     $price=$row['price'];
     $img=$row['img'];
     $cartArray=array($id=>array('id'=>$id,'model'=>$model,'millage'=>$millage,'price'=>$price,'img'=>$img));

     if(empty($_SESSION['shoppingCart'])){
         $_SESSION['shoppingCart']=$cartArray;
     }else{
         $arraykeys=array_keys($_SESSION['shoppingCart']);
         if(in_array($id,$arraykeys)){
             //do some thing .....
         }else{
             $_SESSION['shoppingCart']=array_merge($_SESSION['shoppingCart'],$cartArray);
         }
```


Figure 39 Code Segment 5

```
<!--End Footer-->
<!--Shopping Cart Logic--->
<?php
if(isset($_POST['Add'])){
    //echo "<script>alert(".$_POST['id'].");</script>";
    $sql="select * from car_tbl where Id=".$_POST['id'];
    $Result=mysqli_query($con,$sql);
    $row=mysqli_fetch_assoc($Result);
    $id=$row['Id'];
    $model=$row['model'];
    $millage=$row['millage'];
    $price=$row['price'];
    $img=$row['img'];
    $cartArray=array($id=>array('id'=>$id,'model'=>$model,'millage'=>$millage,'price'=>$

    if(empty($_SESSION['shoppingCart'])){
        $_SESSION['shoppingCart']=$cartArray;
    }else{
        $arraykeys=array_keys($_SESSION['shoppingCart']);
        if(in_array($id,$arraykeys)){
            //do some thing .....
        }else{
            $_SESSION['shoppingCart']=array_merge($_SESSION['shoppingCart'],$cartArray);
        }
    }
}
?>
```

Figure 40 Code Segment 6

5.4. Database Management System (DBMS) Implementation

Database Management System (DBMS) is a system that stored and handled collection of data that for a certain system. MySQL is one of the databases which is very useful for the web Application. That DBMS implemented in Xampp. shown in Figure 5.3 below the connection of the data base.

Figure 41 DBMS

5.5. System Testing

System testing is a technique that validates the system to verify the end-to-end system specifications. After the system implementation process have been completed according to the specifications described in previous chapters. The preferred testing approaches that have been utilized to validate CSMS Application are Black Box Testing and User Acceptance Testing (UT).

5.5.1. Black-Box Testing

Black box testing is a kind of software testing method in which the functionalities of software web applications are tested without having knowledge of internal code structure, provides an input value to test its operation, and determines whether or not the function produces the desired results also the Black Box Testing generally focuses on input

and output of software application also we can called as Behavioral Testing and the black box testing of the Car sale Management system web application has been successful.

Table 5-1 Black Box Testing

T.C ID	**TC02-1**	**TC02-2**	**TC02-3**	**TC02-4**	**TC02-5**	**TC02-6**
User name	-	aaa	aland	ahmed	aaa	Aaaa2
Password	-	123	-	123	1234	123
User type	Admin	Admin	dealer	dealer	Admin	Admin
Expectedresult	**Actual result**					
Error message on invaliduser name	✓	✓				
Error message on emptypassword	✓		✓			
Error message				✓		
on wrongemail true password						
Redirect(dealer) to the home page					✓	
Redirect(Admin) to admin panel		✓				
Test Results	Pass	Pass	Pass	Pass	Pass	Pass

5.5.2. User Acceptance Testing

Before deploying the software program to a production environment, the end user or client does a sort of testing known as user acceptance testing, or UAT. After functional, integration, and system testing are complete, UAT is carried out as the last stage of testing. The UAT of KTG website involved four participants, the users tested the system functionalities and the result was successful. Results from User Acceptance Testing, Table 5.2 shows the results obtained from the User Acceptance Testing:

Table 5-2 User Acceptance Testing

No	***Action***	***Expected result***	***Pass /Fail***
1	Fill in user and passwordfor login.	Display user input in the data field.	Pass
2	Click on Login button.	Navigate to user page if the inputs are correct Navigate to admin page if the admin enters her unique email and passwords. Else Error message is displayed if user enters invalidinputs	Pass

3	Click on the news section	Display the news section	pass
4	Click on the contact us	Display the contact us	pass
5	Click on the about us	Display the about us section	Pass
5	Click on search car	Display the car which is your want.	Pass
6	Click on the car show	Display the car show	Pass
7	Click on shopping cart	Display the shopping cart which car you comparing two cars.	Pass

5.6. Chapter Summary

This entire implementation and testing procedure was carried out in accordance with the methodology, specifications, and design that were established. In this chapter, the procedure is described and recorded. The project's end will be covered in the next chapter.

Chapter 6

CONCLUSION

6.1. Introduction

In our project our aim was to fulfil the requirements of most of today's customers who spend hours even days to find a proper car which make them satisfied and feel happy.

We have tried to be close as much as possible to the customer's wish's and desire at least to most of them, and through our system we also hope to make a place for all customers and dealers to find a trusted stage that collect both of them, and make a comparative price near to customers wish.

6.2. Coding of System Main Function

Transaction over internet is one of the most procedures that today internet is concern about. We have try to accomplish part of it, which is providing our local customers with different type, model and other specifications of today's car and hand his/her request to dealers that want to sell their car sooner in order to make profit in lesser time. We want to fill the gap between the customers desire and dealers through our system as a trustful stage that accomplish transactions and make both of (customers and dealers) closer.

6.3. Achievement of Project Objective

We have indicated the main problem of most of today's customers suffering from have been scammed by dealers, like paying higher price to a car that doesn't worth that

sum of money, or some customers bought cars that has deficient or trouble shoots, that can be fixed, or cost them more money.

Those problem make as to think about that problem and find a serious solution, thateradicate what follow this problem like scamming the customers. And we think we have achieved that objective.

In chapter 2, we dive deep to the problem that customers are daily suffering of, we also make a comparative table of modern technologies like Facebook and other like,how they solve this issue partially and make the problem even bigger, as we know today fake news is like a fire in straw, how its spread out, and anonymous is one of the threads.

In chapter 3, we have discussed the best methodology that met our plan for solving the customers problem and we prefer to work according to DevOps is a set of steps that combines software development group of (Dev) and IT operations (Ops). It aimsto shorten the systems development life cycle and provide continuous delivery with high software quality Wikipedia Contributors (2019). *DevOps*. [online] Wikipedia. Available at:https://en.wikipedia.org/wiki/DevOps.

In chapter 4, we have integrated the pictures from those different parts that it contains, like user interface of our project (system) the database (entity relationship diagram) which is working as the backbone of our system, beside the software we use, and alldiagrams an Scenario may we faced in our system.

Last not the least, we try to make a close look about our system, and find better way to accomplish our system with less time and efforts.

6.4. Suggestions Plan for future Project

We hope we could be able to convince most of the car show dealers to agree to our plan to share their car and contribute in our web site in order to be able to benefit from our system.

We could extend our system to future extend by calling other dealers from other city to contribute and we hope we could be able to make a center point for all customers and dealer to benefit from our system.

This is our final target, if we would able to collect all car show dealers, we could make a very big market for car show.

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Appendix A

Requirement Gathering (Survey and questionnaires)

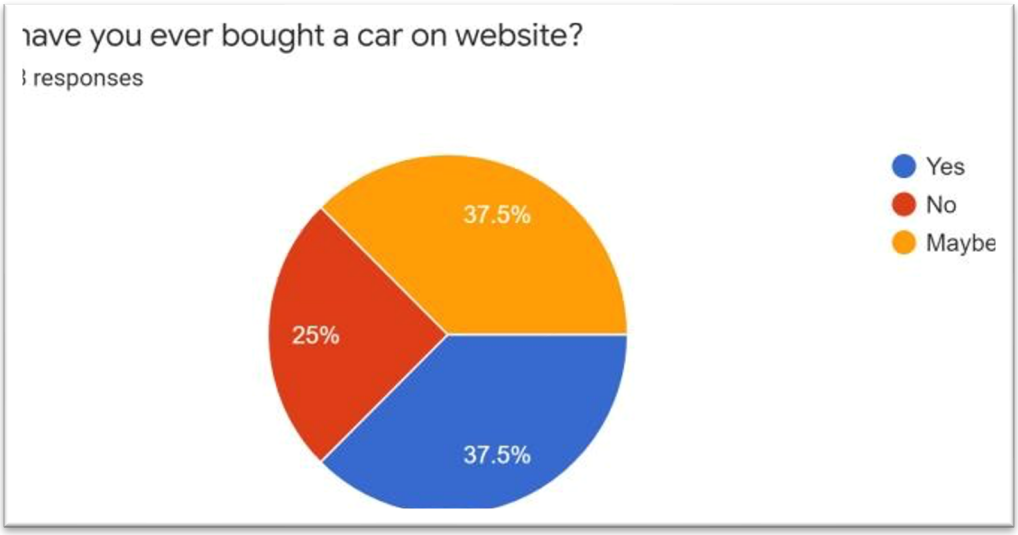


Figure 42 Question 1

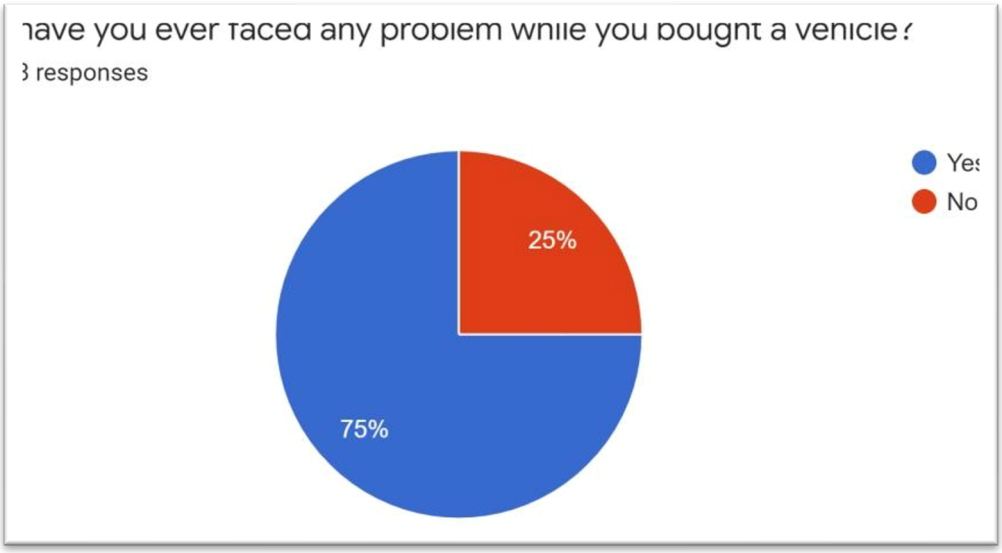


Figure 43 Question 2

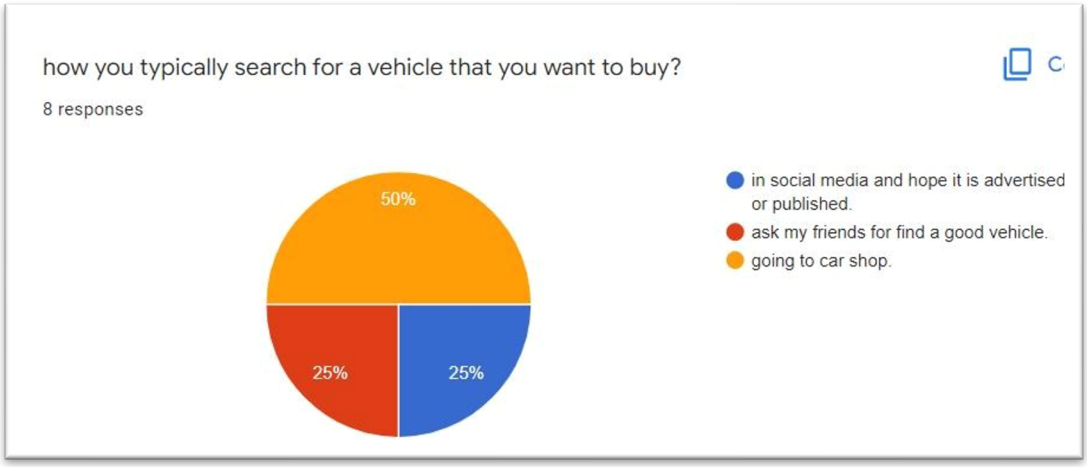


Figure 44 Question 3

Figure 45 Question 4

Figure 46 Question 5

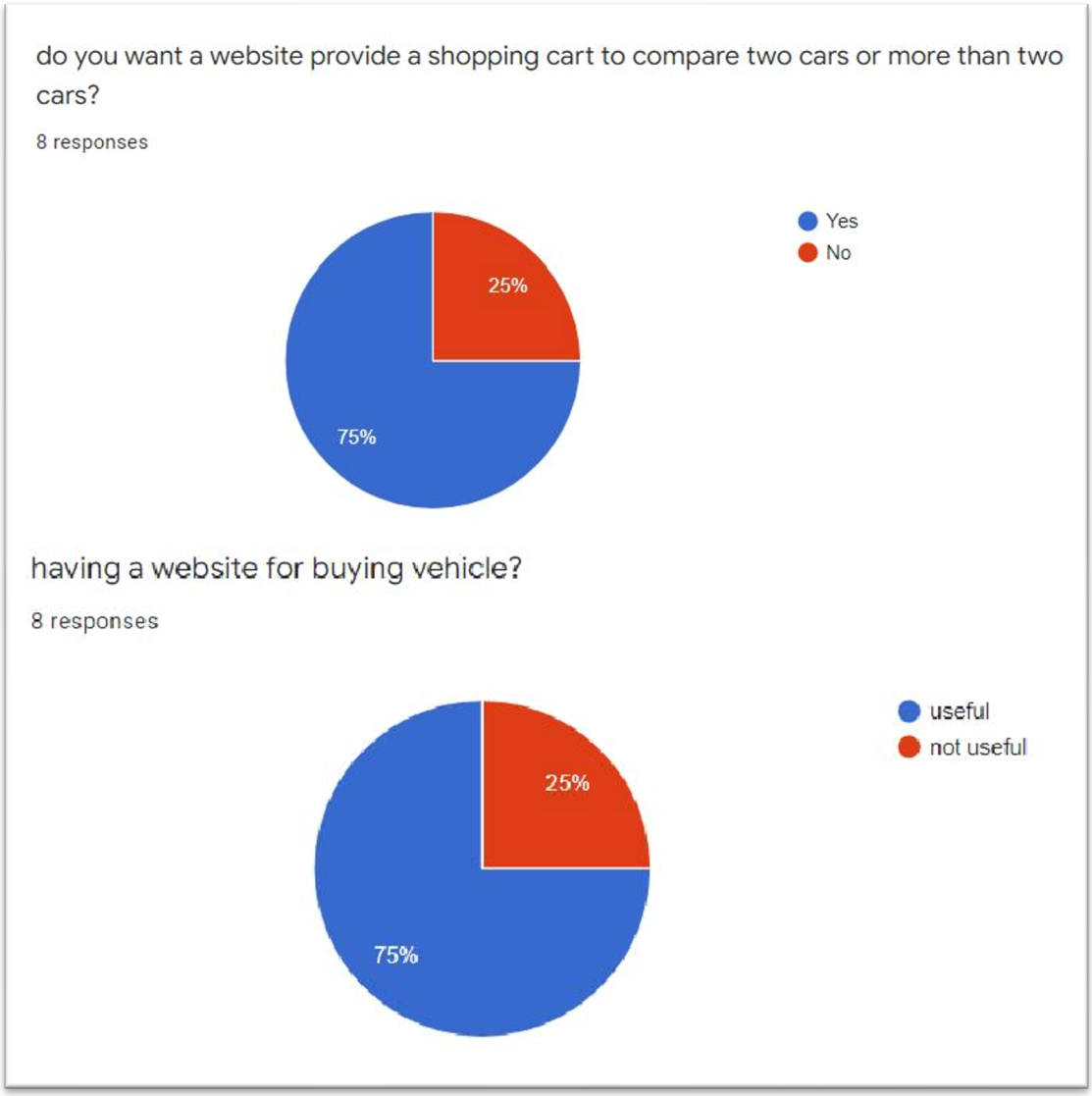


Figure 47 Question 6 & 7

Appendix B

Software Requirements Document (SRS)

UTM

UNIVERSITI TEKNOLOGI MALAYSIA

Software Requirements Specification

Online Car Sale Management system

Version 1.0

June 22, 2022

School of Computing,Faculty of Engineering

Revision Page

1. Overview

This is the first draft of SRS for Car Sale Management system.

2. Target Audience

The users (customer).

3. Project Team Members

Aland Aso Abdualla

4. Version Control History

Version	Primary Author(s)	Description of Version	Date Completed
Version 1.0	Nza Bahaalddin Mohammed	First Draft	**June 26, 2022**

Table of Contents

1. introduction:

In the time of mass production, every thing is available and at the hand of customers. In the age of information we can reach any product around the world but the problem is when we want to handle product that is in our local market which is easier in our region to handle it and possess it with out further waiting until shipped,

we need a local website that handle all those information at once for our local customer.Having a good car or vehicle in these days is one of the modern dilemma. people have to walk miles just to see cars that they want and even they may walk for days around different region and spend more time just to find a proper car.We can handle and provide customer by introducing a website that give a comparative car price which can be chosen by the customer.

If we have a web site which collect all local car shows under the name of (Suly Car Show), which contain all car shows around a typical region, makes transactions more easier for both of dealers and customers.Customer can decide on their computer or mobile phone which car to buy before going to car owner, and have all information about it, like price, model, mileage and even have a big picture about what it will be like, because he see all real image of thecar from different corner.

1.1 Purpose:

The purpose of this SRS is shown as below:

I. To identify and analyze both functional and non-functional requirements of thesystem
II. To describe the overall flow of the system.
III. To serve as an input to Software Design Document (SDD)iv.
IV. To act as the validation check for the software product.

1.2 Scope:

Car Sale Management System is a system that provide its own users with multi-carof a variety in model, type, mileages and color to all customers with a comparative price that will help them to find their dream car as soon as possible and make transactions between customers and dealer faster through this system.This systemcan be used for three car shows in Selemany city.

1- The website will help user see the cars information like (Model, Brand, Type,Millage, Price and Defects or flows)

2- Both customers and dealers can benefit from our system by using search bar for the car they wanted by that they save time and money, on the other hand the dealers profit will increase.

1.3 Definitions, Acronyms and Abbreviation

Table 1 Definitions, Acronyms and Abbreviations used in the system

Term	**Definition**
FR	Functional Requirement
NFR	Non-Functional Requirement
SDD	Software Design Document
SRS	Software Requirement Specification
ios	An operating system used on Apple'ssmartphones

1.5 Overview

This document is divided into three sections, each section contains several subsections and the main sections are shown below:

i. Introduction: This section describes an overview of the SRS.

ii. Overall Description: This section provides the factors that affect the software product. It acts as thebackground for the requirements of the system..

iii. Specific Requirements: This section provides the requirements of the system to bedeveloped in details with the interaction between user and the system.

2.0 Overall Description

The actors of the system are Admin, customer and Dealer. , Admin and Customer are inherited from User. The use case ofthe is divided into modules.

UCD00: Use Case Diagram for Online Car Sale Management system

2.1 Product Perspective

OCMS is a online website that anyone who want to buying a new cars in the websitealso the website is a software system that will be built to run on the Every devices , whether, Admin can manage account in the application while dealercan send the car to Admin and Admin can OCSMS application, and customer can view the car from their Admin who post in the website.

2.3 User Characteristics

This section describes all the actors of the system. The main actors of the systemare Admin, Dealer and customer.

2.3.1 Admin

Admin is a user who register as Admin. Admin can do profile management such as updating Teacher and Student account, manage subject, classroom andclasses info.

2.3.2 Dealer

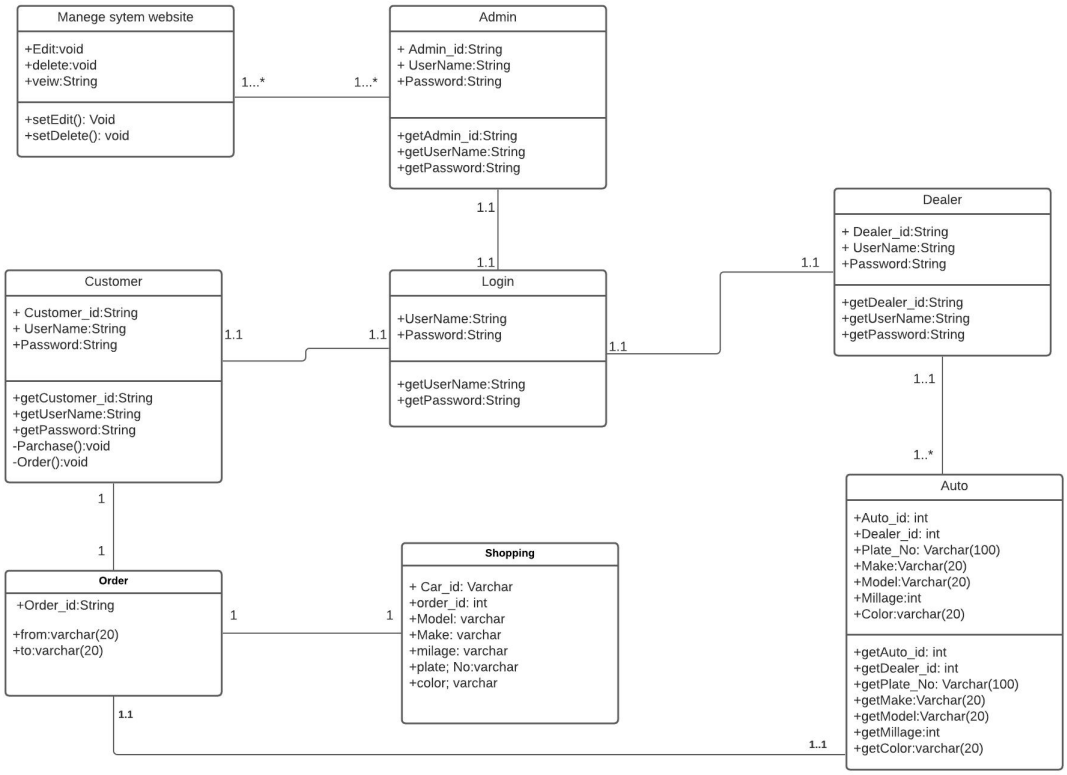
Teacher is a user who select their roles as Teacher. Teacher can upload, receive and evaluate assignment to Student. Moreover, Teacher are also able tosend message to people in OCSMS.

2.3.3 Customer

Student is a user who select their roles as Student. Student can download assignment, submit assignment and view assignment result. Moreover, Student arealso able to send message to people in OCSMS.

3. Specific Requirements

This section describes the functional and non-functional requirements of the system.Use case specification and respective sequence diagram and activity diagram for each use case are also presented in this section. Figure 2 shows the domain model ofthe system.



3.1 System Features

This subsection describes the function requirements of each module with respective use case specifications, sequence diagram and activity diagram.

3.1.1 Module Admin

Figure 3 shows the use case diagram of Module User in the system

FR001 – Login

The system shall allow Admin to login into the system to gain access of thesystem functionalities.

FR002 – Manage hole website

The system shall allow Admin to manage the hole website display new cars ornew

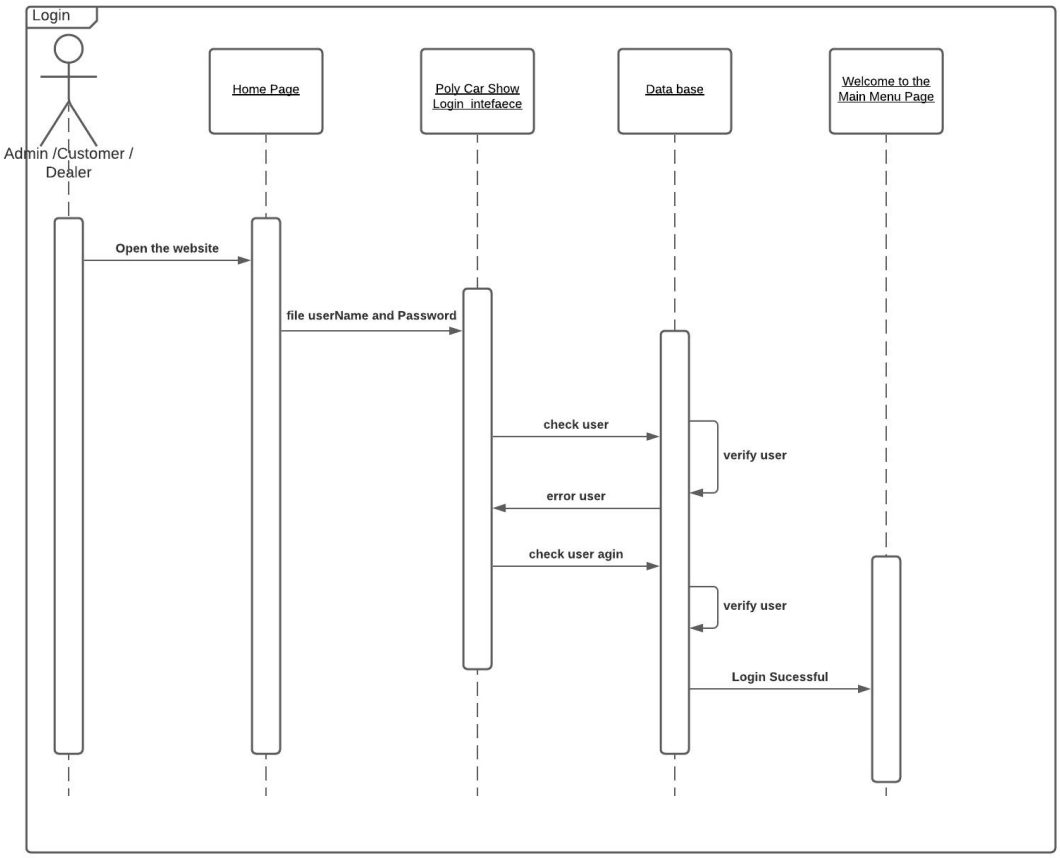
news to the system.

FR003 – view hole website

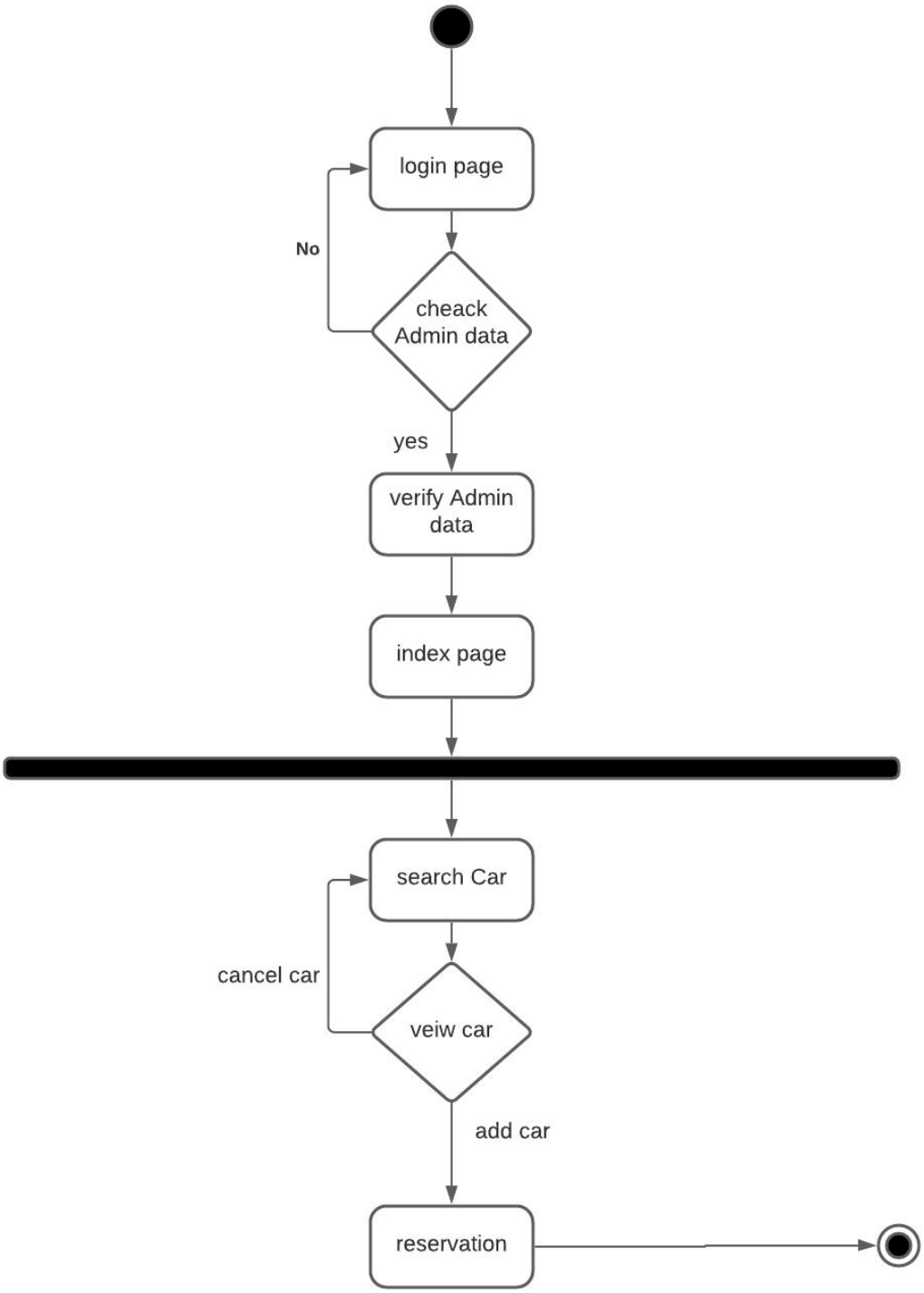
The system shall allow Admin to view the hole website display the website.

Use Case <Admin>
ID: Br 01
Actor: Admin
Preconditions: Admin should sign in
Flow of events: - admin must be a login

System displays login page containing login form. . System validates the Admin input. If the validation fails,Exception Flow 1 is performed. System saves Admin account into account database. System displays initial role selection. System validates Admin selection. If “Dealer ” option is selected, Alternate Flow 1 is performed. If “customer ” option is selected, Alternate Flow 2 is performed.If “Admin” option is selected, Alternate Flow 3 is performed.
Postconditions: Admin can make changes the whole website
Alternative Flow 1. customer is selected 1.1 System redirects to customer homepage. dealer is selected System redirects to dealer homepage Admin is selected System redirects to Admin’s homepage



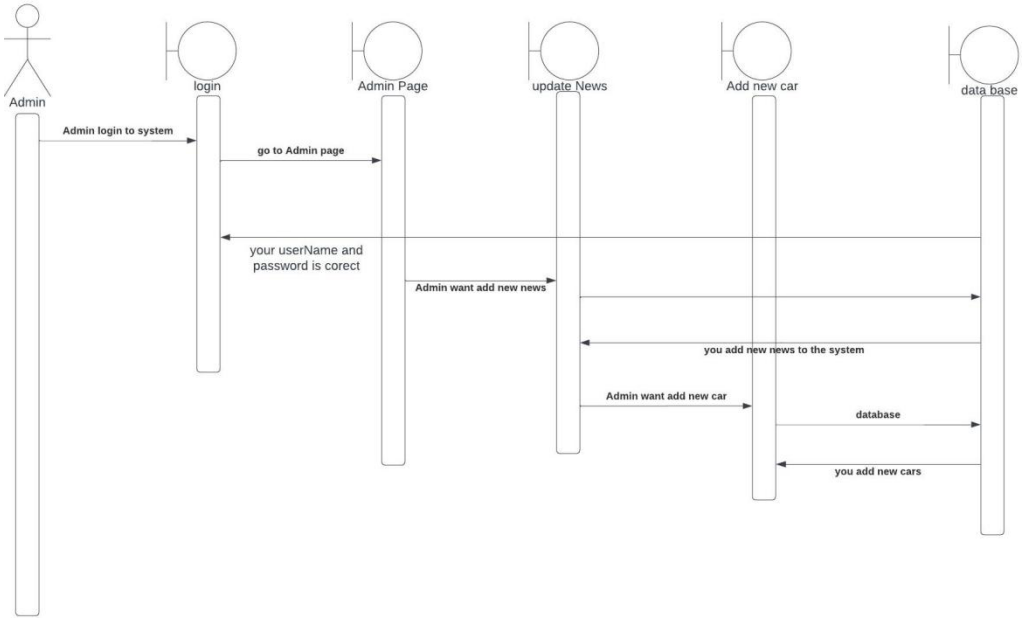
The sequence diagram for Admin



Activity Diagram for Admin

UC02: Manage Profile

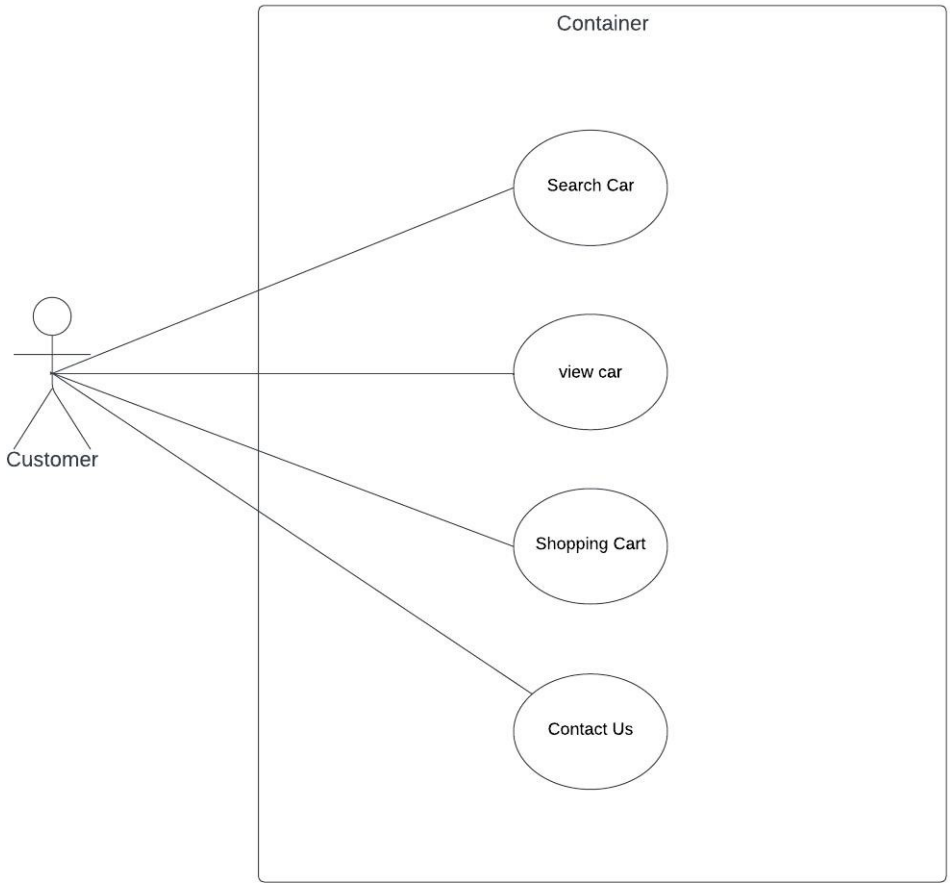
Use Case <Admin>
ID: Br 01
Actor: Admin
Preconditions: Admin should sign in
Flow of events: - admin must be a login System displays login page containing login form. . System validates the Admin input. If the validation fails,Exception Flow 1 is performed. System saves Admin account into account database.System displays initial role selection. Admin can manage the system website.
Postconditions: Admin can make changes the whole website



Sequence diagram for manege website

Module <Customer>

Figure 3 shows the use case diagram for Customer module.



Use Case <Customer>
ID: Br 01
Actor: Customer
Preconditions: Customer should access the website
System account into account database. System displays initial role selection. System validates customer selection. If "Dealer " option is selected, Alternate Flow 1 is performed. If "customer " option is selected, Alternate Flow 2 is performed.If "Admin" option is selected, Alternate Flow 3 is performed.
Postconditions: Admin can make changes the whole website
Alternative Flow 1. customer is selected 1.1 System redirects to customer homepage. dealer is selected System redirects to dealer homepage Admin is selected System redirects to Admin's homepage

3.2 Performance Requirementsi.

Usability:

Non-functional requirement 001 – Learnability:

Without any specific instruction, 95% of users should be able to utilize thesystem.

ii. Reliability: Non-functional requirement 002 – Data Synchronization: Using a centralized database, the system must be able to synchronize user databetween various devices Maintainability

. iii. Non-functional requirement 003 – Maintenance: At least twice every four months, the system must be upgraded and maintained.

iv.Security Non-functional requirement 004 – Data Protection:

By utilizing a robust authentication approach offered by MySQL Authentication service, the system shall secure user data.

3.3 Design Constraintsi.

Portability: The system shall be able to access by all operation systems browser

Appendix C
Software Design Document (SDD)

Software Design Document

Online Car Sale Management System

School of Computing, Faculty of Engineering

Table of Contents

1. Introduction

This Software Design Document (SDD) describes OCSMS Application's system architecture design, database design and user interface design. All of the requirements stated in the System Requirement Specification (SRS) of OASIS Application document will be the inputs of this SDD.

a. Purpose

The purpose of this SDD is shown as below:

To describe the system architectural design of OCSMS Application.

To describe the database design of OCSMS Application.

To document and illustrate the user interface design of OCSMS Application.

b. Scope:

Car Sale Management System is a system that provide its own users with multi-carof a variety in model, type, mileages and color to all customers with a comparative price that will help them to find their dream car as soon as possible and make transactions between customers and dealer faster through this system. This systemcan be used for three car shows in Slemany city.

The scopes of the project are:

The website will help user see the cars information like (Model, Brand,Type, Millage, Price and Defects or flows) Both customers and dealers can benefit from our system by using searchbar for the car they wanted by that they save time and money, on the other hand the dealers profit will increase.

c. Definitions, Acronyms and Abbreviation

Term	Definition
OCSMS	Online Car Sale Management System
DBMS	Database Management system
SDD	Software Design Document
SRS	Software Requirements specification
NFR	Non-Functional requirements
iOS	An operating system used on Apple'ssmartphones

d. Overview

This document is divided into five sections, each section contains several subsections and the main sections are shown below:

i. Introduction

This section describes an overview of the SDD.

ii. System Architectural Design

This section explains the chosen system architecture for OCSMS Application.

iii. Database Design

This section explains the design of the database for OCSMS Application. It contains data dictionary which explains all the data attributes that will be usedin the system.

iv. Interface Design

This section explains the chosen system architecture fzaor OCSMS Application

2. System Architectural Design

This section explains the selected system architectural design to be implemented in the OCSMS Application. Model-View-ViewModel (MVVM) architecture pattern hasbeen chosen as the system architecture design pattern, and the class diagram for thisarchitecture design pattern will be shown in this section.

System Architecture Implementation:

For the website Application, the MVC system architecture was chosen in FYP1 and implemented in the car sales management system according to given specifications. However, when the system was near to developed, it was discovered that MVC was not an effective implementation in this website system.

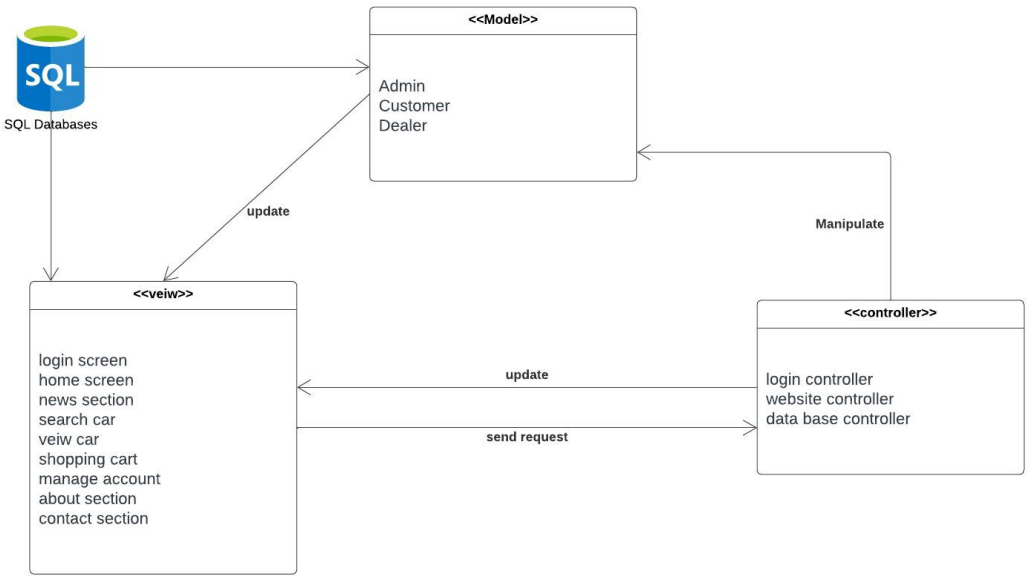
We can describe the MVC pattern in software design into three parts of the MVC:

i. Model: define the data and Manages data.

ii. View: define display and Handles layout.

iii. Controller: define control the application logical and can acts as the coordinator forboth the View and the Model.

Figure6.1 show the MVC

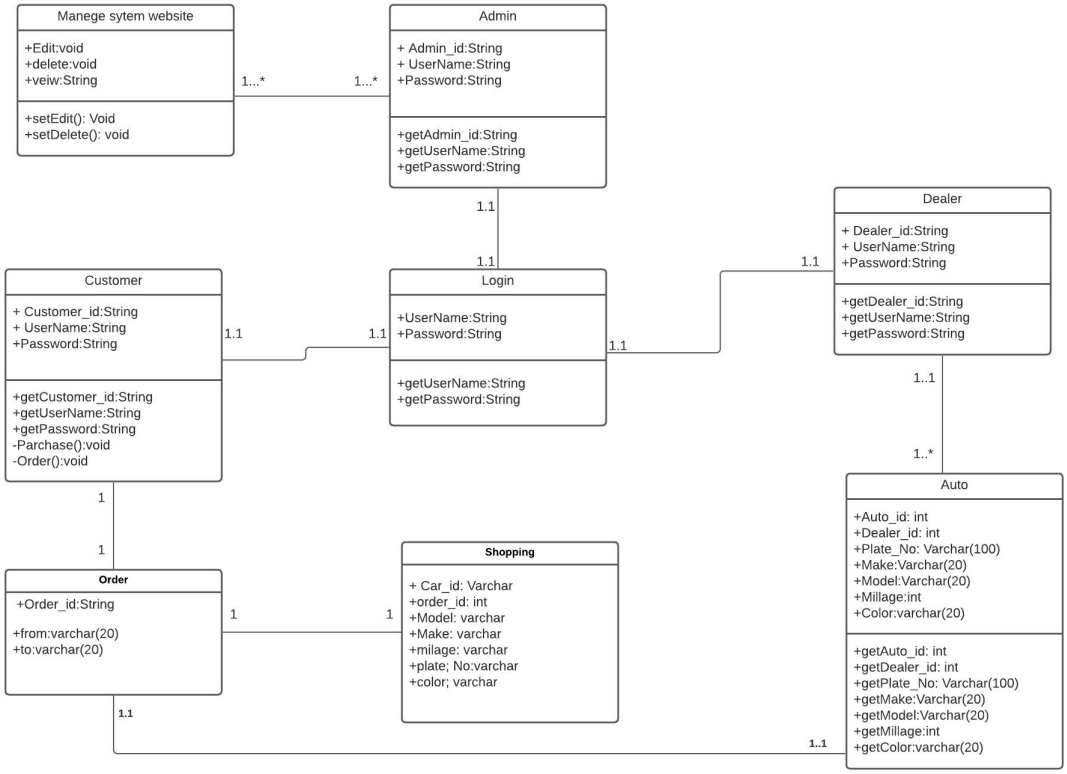


as shown on Figure 6.1 above, the view component of customer_car_view

interacts with Model_viewmodel to retrieve a data that have been manipulated by the ViewModels and the database Storage is used for data mapping, but ViewModel interacts with it via the Model layer to generate objects. In order to communicate with sql database.

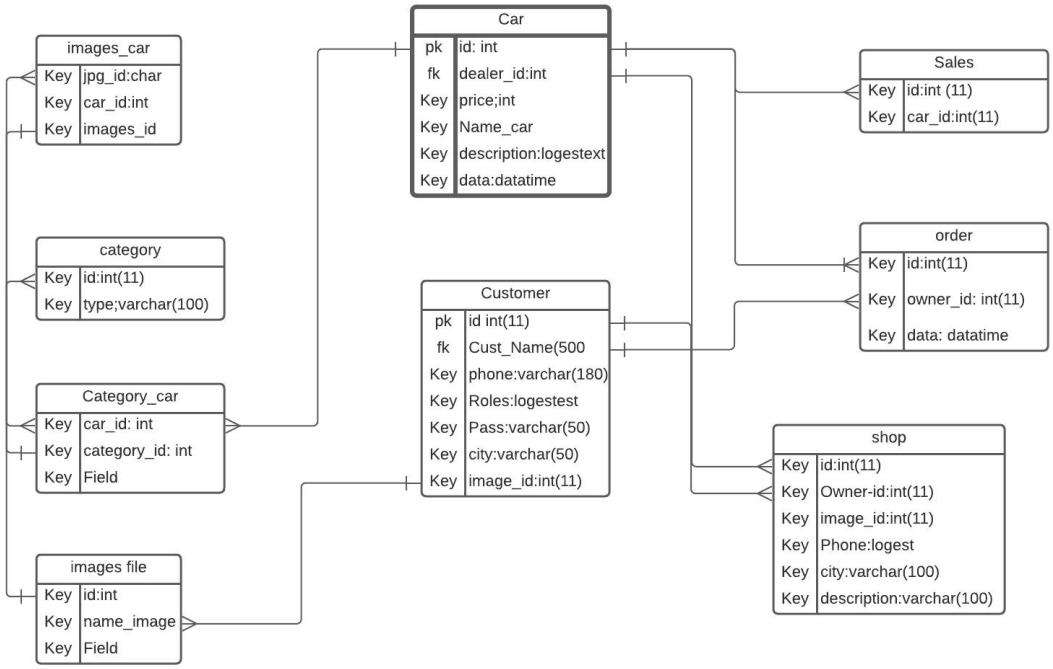
2.1.1 Model

Model Layer is a component that communicate with the database to manage operations on data information, business logic and rules. It is made up of classes that represents the domain of the system. Figure 2.3 shows the class diagram of Model components in online car sale management system Application.



3. Database Design

Database Design organize all the data involved in the system database which helpsthe design, development, implementation as well as maintenance of the overall system. Figure 3.1 shows the database design which are implemented in online car sale management system application.



3.1 Data Dictionary

This section explains all the data attributes that involved in online car sale management application which are stored in the database of the system.

Customer

Attribute	Data type	Description
id	int	A unique id that identifies each customer
Customer Name	var	Name of the admin
Customer password	var	Password of the admin
email	var	Email of the admin

Car

Attribute	Data type	Description
Car id	int	A unique id that identifies each car
Car Name	var	Name of the car
Car type	var	Type of the car
Car milige	var	Mileges of the car

Admin

Attribute	Data type	Description
id	int	A unique id that identifies each admin
Name	text	Name of the admin
password	text	Password of the admin
email	text	Email of the admin

4. User Interface Design

This section will explain the user interface design of Mobile Application. The system contains three category of interfaces which are the Initial User Interface,

4.1 Initial User Interface

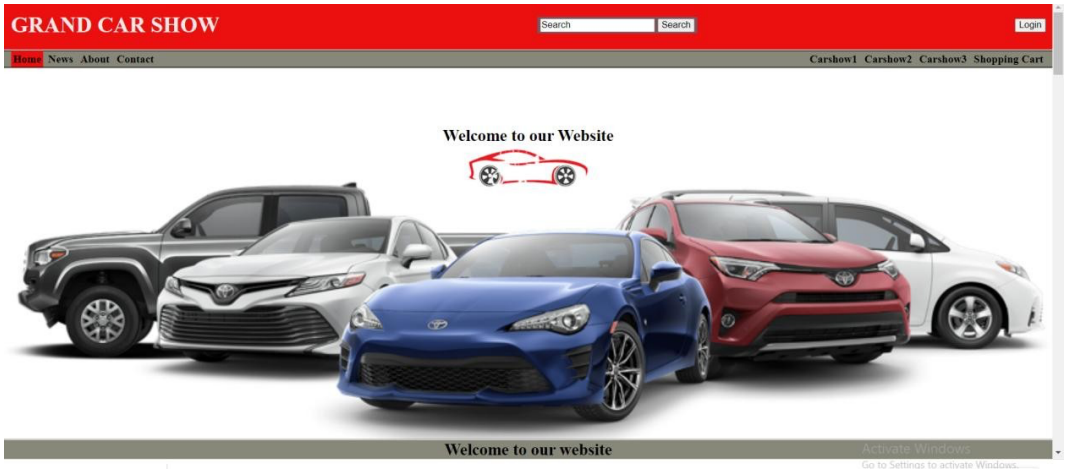
The initial user interface of the system is the interface where the user is not logged in into the system yet. It consists of Splash Screen, Sign In Page and Sign Up Page.Upon user sign in or sign up, the system will detect the user's role selection, if the role is Teacher, the system will redirect to Teacher Interface and it will redirect to Student if otherwise.

Login interface

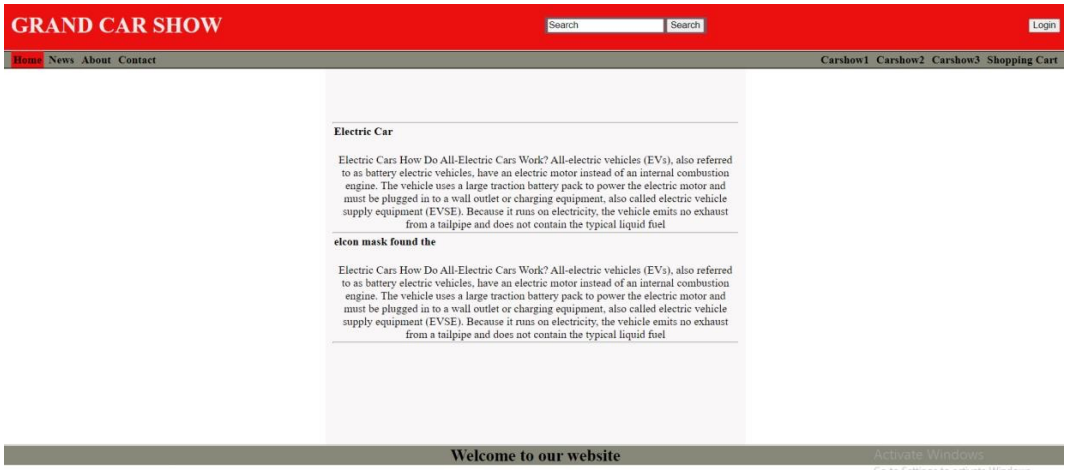
Interface for Admin panel which Admin can add new news also delete the news and he can choose one.

Admin can file the from and he have to file the product year and type,Model,color, Milage,Plate Number,Price,images, and which car show number want to add.

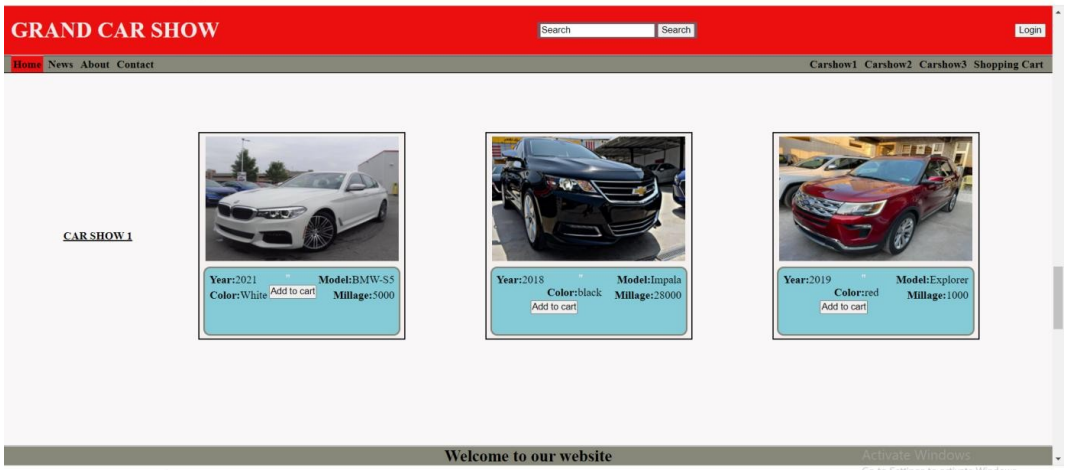
Customer view interface:



User can view the home page which have many functionalite can do to it for example can search car in the search section.



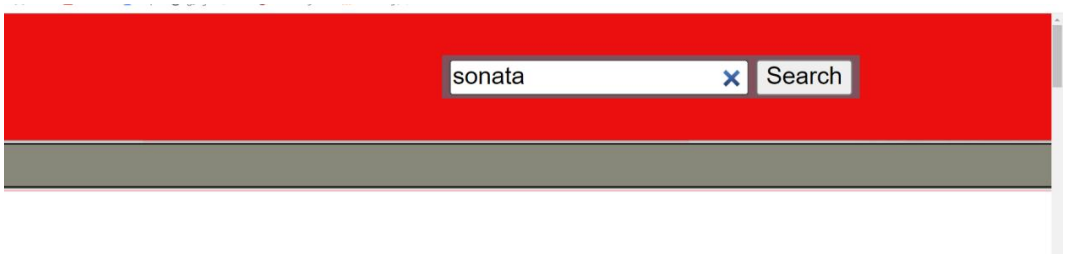
Customer view news and he can about the new news about new car.



Customer can view the car show and he can cars to shopping cart.

Show the shopping cart for compare both car.

Customer want to compare both car with the price each of them and Model.



in the search section customer want search for Hyundai sonata and after that customercan view it:

When customer search for the car in search section it gave customer request and gave detail information as you can see in this interface.

Appendix D
Software Testing Document (STD)

UTM

UNIVERSITI TEKNOLOGI MALAYSIA

Software Testing Document (STD)

Software Testing Document Online Car Sale Management system

School of Computing,Faculty of Engineering

Revision page

1. Overview

this is the first of STD for CSMS Car Sale Management System

2.Target AudienceThe user (customer)

3.Project team members:Aland Aso Abduallah

4.Version Control History

version	Primary Author(s)	Description of version	Date completed
Version 1.0	Aland Aso Abduallah	First draft	July 26,2022

Table of Contents

1. Introduction

This Software Testing Document describes all of the testing activities that have been carried out for the online car sale managment system Application. This document provides software testers with a comprehensive documentation structurefor recording their testing process. This allows for proper testing process management and provides a clear reference in the future. Black Box Testing and User Acceptance Testing are two testing techniques that have been used on this project.

2. Black Box Testing

Black Testing is a type of software testing technique that is used to test the system's functionality without referring to the system's code structure. It works by focusing on the system's output based on the input entered without having any internal knowledge of the system. As a result, Black Box Testing focuses solely onthe system's functionality from the user's point of view.

Login

Table 16 Black Box testing for Login functionality

T.C ID	**TC02-1**	**TC02-2**	**TC02-3**	**TC02-4**	**TC02-5**	**TC02-6**
User name	-	aaa	aland	ahmed	aaa	Aaaa2
Password	-	123	-	123	1234	123
User type	Admin	Admin	dealer	dealer	Admin	Admin
Expectedresult	**Actual result**					
Error message on invaliduser name	✓	✓				
Error message on emptypassword	✓		✓			
Error message on wrongemail true password				✓		
Redirect (Add car)to the home page					✓	
Redirect(Admin)to admin panel		✓				
Test Results	Pass	Pass	Pass	Pass	Pass	Pass

Shopping cart

Table 17 Black Box testing for shopping cart functionality

T.C ID	TC02-1	TC02-2	TC02-3	TC02-4	TC02-5	TC02-6
User name	-	aaa	aland	ahmed	aaa	Aaaa2
Password	-	123	-	123	1234	123
User type	Admin	Admin	dealer	dealer	Admin	Admin
Expectedresult	**Actual result**					
Error message on invaliduser name	✓					
Error message on emptypassword	✓		✓			
Error message on wrongemail true password				✓		
Redirect (Add car)to the home page					✓	
Redirect(Admin)to admin panel		✓				
Test Results	Pass	Pass	Pass	Pass	Pass	Pass

Add Car

Table 18 Black Box testing for Add Car functionality

T.C ID	TC02-1	TC02-2	TC02-3	TC02-4	TC02-5	TC02-6
User name	-	aaa	aland	ahmed	aaa	Aaaa2
Password	-	123	-	123	1234	123
User type	Admin	Admin	dealer	dealer	Admin	Admin
Expectedresult	**Actual result**					
Error message on invaliduser name	✓					
Error message on emptypassword	✓		✓			
Error message on wrongemail true password				✓		
Redirect (Add car)to the home page					✓	
Redirect(Admin)to admin panel		✓				
Test Results	Pass	Pass	Pass	Pass	Pass	Pass

Home Section

Table 18 Black Box testing for Home Section functionality

T.C ID	TC02-1	TC02-2	TC02-3	TC02-4	TC02-5	TC02-6
User name	-	aaa	aland	ahmed	aaa	Aaaa2
Password	-	123	-	123	1234	123
User type	Admin	Admin	dealer	dealer	Admin	Admin
Expectedresult	**Actual result**					
Error message on invaliduser name	✓	✓				

Error message on emptypassword	✓		✓			
Error message on wrongemail true password				✓		
Redirect (Shoppingcart) to the home page					✓	
Redirectto homepage		✓				
Test Results	Pass	Pass	Pass	Pass	Pass	Pass

3. User Acceptance Testing

User Acceptance Testing (UAT) is a type of software testing technique that are performed by the end user of the system. It is intended to test the system's real- world usability according to user's perspective based on its specified specifications.The UAT produced a user feedback that is used to improve or enhance the systemfuture released. Therefore, UAT plays a crucial role to validate if all of the specifieduser requirements are met before releasing the system into its intended market.

Acceptance testing for Admin

Table 19 Black Box testing for Home Section functionality

Acceptance testing for Customer

No	***Action***	***Expected result***	***Pass /Fail***
1	Fill in user and passwordfor login.	Display user input in the data field.	Pass
2	Click on Login button.	Navigate to user page if the inputs are correct Navigate to admin page if the admin enters his or her unique email and passwords. Error message is displayed if user enters invalidinputs	Pass
3	Click on the news section	Display the news section	pass
4	Click on the contact us	Display the contact us	pass
5	Click on the about us	Display the about us section	Pass
5	Click on search car	Display the car which is your want.	Pass
6	Click on the car show	Display the car show	Pass
7	Click on shopping cart	which car you comparing two cars.	Pass

Table 2.0 Black Box testing for Home Section functionality

No	***Action***	***Expected result***	***Pass***

			/Fail
1	Fill in user and passwordfor login.	Display user input in the data field.	Pass
2	Click on Login button.	Navigate to user page if the inputs are correct Navigate to admin page if the admin enters his or her unique email and passwords. Error message is displayed if user enters invalidinputs	Pass
3	Click on the news section	Display the news section	pass
4	Click on the contact us	Display the contact us	pass
5	Click on the about us	Display the about us section	Pass
5	Click on search car	Display the car which is your want.	Pass
6	Click on the car show	Display the car show	Pass
7	Click on shopping cart	which car you comparing two cars.	Pass