ONLINE CAR DEALERSHIPS

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ONLINE CAR DEALERSHIPS

KARDO FARUQ SALIH

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

School of Computing
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DEDICATION

This research paper is dedicated to my dear father, who has been nicely my supporter until my research was fully finished, and my beloved mother who, for months past, has encouraged me attentively with her fullest and truest attention to accomplish my work with truthful self-confidence.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to my advisor Mrs. Fariaa for the continuous support of my final year project, for her patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor. I am are over helmed in all humbleness and gratefulness to acknowledge my depth to all those who have helped me to put these ideas, well above the level of simplicity and into something concrete.

I would like to thank my friends who helped me a lot in gathering different information, collecting data and guiding me from time to time in making this project , despite of their busy schedules ,they gave me different ideas in making this project unique.

ABSTRACT

The project is about online car dealership, car dealership is a business of selling and buying new cars or used cars, in most of the countries these business still running in an old-fashioned way, while having a car is becoming one of the priorities of life, it is hard to find a suitable car for a suitable price which can be also a time consuming, and by going to dealerships you will face many dealerships and narrow cars to choose, even if you chose a car there are many dealerships which you might not find the car you want as well facing other issues that usually occur while searching, all these can be solved with creating a website which can make the process faster and more convenient, dealerships can have an admin to post the cars and include all the needed information about the car and many more feature which will be explained in the report.

ABSTRAK

Projek ini adalah mengenai pengedar kereta dalam talian, pengedar kereta ialah perniagaan menjual dan membeli kereta baru atau kereta terpakai, di kebanyakan negara perniagaan ini masih berjalan dengan cara lama, manakala memiliki kereta menjadi salah satu keutamaan kehidupan, sukar untuk mencari kereta yang sesuai dengan harga yang sesuai yang juga boleh memakan masa, dan dengan pergi ke pengedar anda akan menghadapi banyak pengedar dan kereta yang sempit untuk dipilih, walaupun anda memilih kereta terdapat banyak pengedar yang anda mungkin tidak menemui kereta yang anda inginkan serta menghadapi isu lain yang biasanya berlaku semasa mencari, semua ini boleh diselesaikan dengan mencipta tapak web yang boleh menjadikan proses lebih cepat dan lebih mudah, pengedar boleh meminta pentadbir untuk menghantar kereta dan memasukkan semua maklumat yang diperlukan tentang kereta dan banyak lagi ciri yang akan dijelaskan dalam laporan itu.

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Chapter 1

INTRODUCTION

1.1. Introduction

The Automotive Industry is one of the top leading industries in the world. The year 1886 which is considered as the birth year of the car when German inventor Karl Benz patented his Benz Patent-Motorwagen. Cars became available broadly in the early 20th century.

A car dealership is a business of selling new cars or used cars. Based on a contract between dealer and buyer. In most countries and especially this region, these businesses are still running in an old-fashioned approach that is far from the usage of modern technology.

1.2. Problem background

If an individual want to purchase a car, it can be a very problematic process to find the right car at a suitable price which can be also time-consuming. Another issue is while visiting a dealership there will be very narrow cars to choose from and anyone will probably not know about each one's specifications. Even if there is a car in mind, there might be many dealerships out there that do not know about which are most likely to offer a car that is much more suitable, including other issues that we need to consider. All of these mentioned issues can be solved by creating a website that would make the process of finding the right car much faster and in a more convenient way. Dealership owners can have an admin that creates an account with the name of the dealership and they can post their available vehicles with all the specifications

including price. Customers can visit the website and see all the dealerships and latest cars, the main feature would be searching for a specific car and seeing all the different dealerships that currently have that type of car and their different specifications. This would also be very useful for dealerships since their cars would be seen by even more people as they search for vehicles. It would be very helpful to be able to know about all the dealerships out there including what they have to offer anywhere, and user can also research about what car is most suitable anytime and anywhere before buying a car that a person is not so sure about.

1.3. Project aim

Having a car is about to be one of the priorities of life and is one of the needs of each of us, the aim of the project is how to get that needs in the best possible way, Customers can visit the website and see all the dealerships and latest cars, and any car the user chooses will have a location so that the user can get the address from the map.

1.4. Objectives

1. To identify the project requirements of the website and perform analysis and planning.
2. To Design and complete the requirements meaning.
3. To deploy the product/website.

1.5. Scopes

- The scope of this project is to make a website so that the dealerships can sell their car and the customers to find the car they want.

- The user can browse from the website and search for cars and see all the needed information, the admins of the website can manage the website such as adding cars, writing information, and adding pictures.

Target users:

- Dealerships
- Customers

1.6. Project Importance

As we know buying a car is not an easy thing to do because there are many options in mind and for some people a limited budget so deciding the suitable car in the local dealerships is not an easy job, even sometimes it will lead to not find the car because of all the dealerships that cannot be covered all but instead searching for preferred car online from a website will lead to the best decision so that user can see all the available cars and all needed information about it. This website will be specifically for The Kurdistan Region since most countries have systems that are close to this idea. After looking at the existing Systems that are available for the Kurdistan region, the best one that we have found had many issues such as;

They did not have used cars that are in the agents, they only offered new cars. Also, they offered so few agents and dealerships which does not solve most problems that we have mentioned previously about giving the customers a wide variety of options when they are looking for buying a car. This system will fix that by giving each dealership a specific admin that will post the available vehicles that they offer to sell, and the website will be adding some other features that would be very beneficial which is missing from the existing systems.

1.7. Report Organization

Day by day world improves and marketing improve as well people want to get their needs most easily and the best way and online marketing nowadays continue in improving, so by creating this website user will have their needs in less time and will choose the greatest selection.

Chapter 2

LITERATURE REVIEW

2.1. Introduction

In this chapter literature review will be demonstrated and going to talk about some sections the first one is a case study which will be about the user need and requirements to know people opinion what they want and what they need and another section is current system analysis which will be demonstrated about current existing system their characteristics and the features, and after that, we will talk about comparison between existing system their good and bad features, and then literature review of technology used to explain about the used programming language for the project and other needed requirements, lastly a summary of the chapter.

2.2. Inter-organization Case study:

One of the reasons that an idea or a work to get success is to get people or users opinions about it, what a user think and need will lead to a better understanding of what you are about to do, we surveyed to know the user's requirement and to understand flow and source of the problem and these were the results below which shows the importance of our website and its effect on users selection it gives them a variety of selection, as it is clear in the result most of the users do not see the process as an easy process and could not find their preferable cars as they put it in mind, and can see that most of them faced problem in the process either with the price or other reason that we mentioned, and it is clear in the result that they will use the website and will have benefits and give them a greater selection.

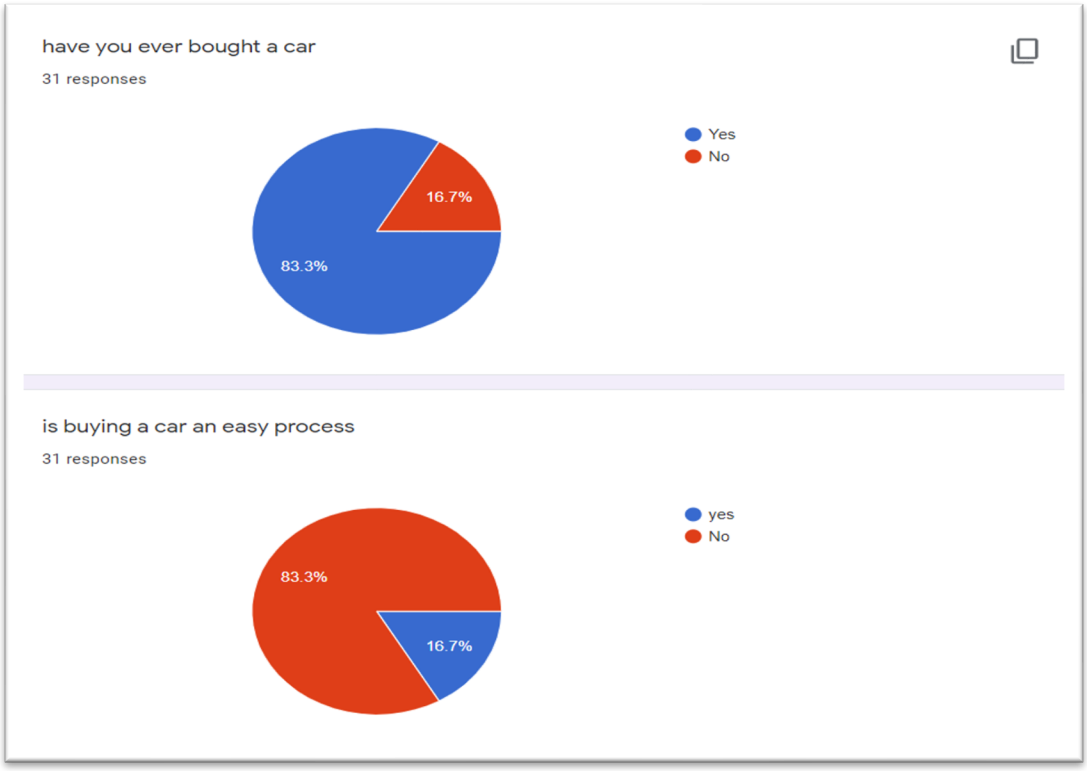

Figure 2-1 Survey Result

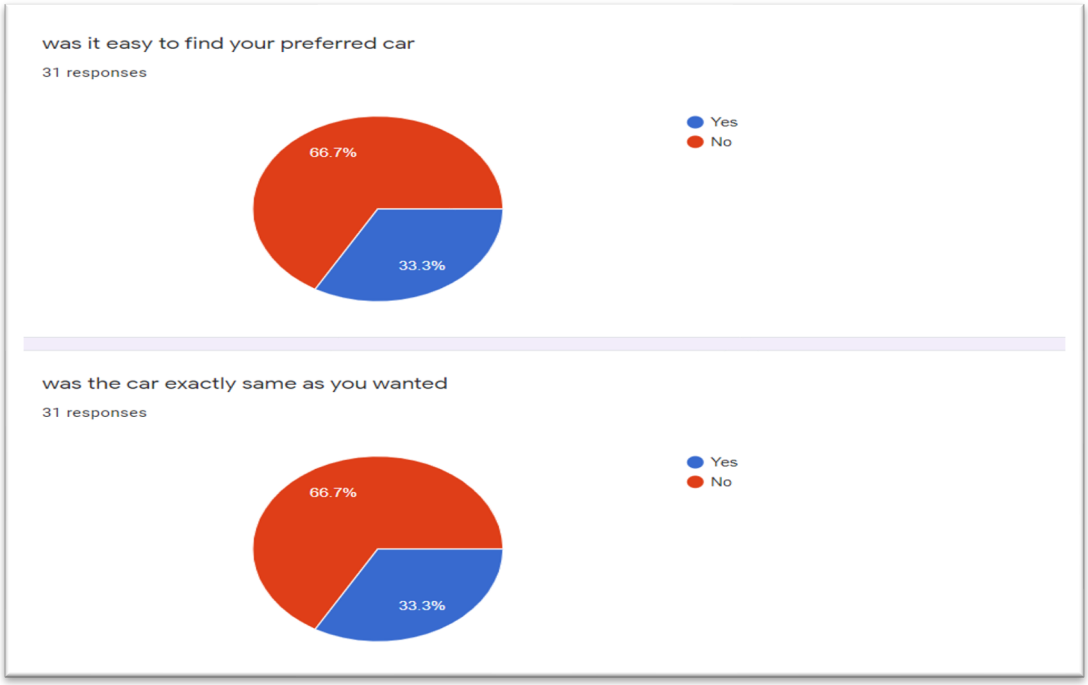

Figure 2-2 Survey Result

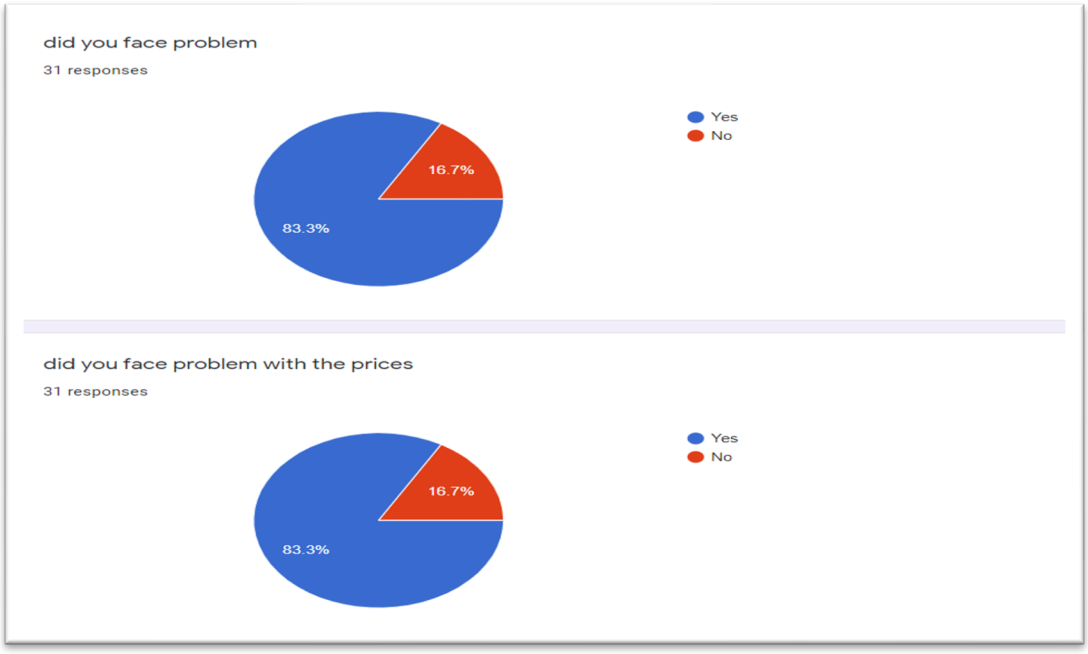

Figure 2-3 Survey Result

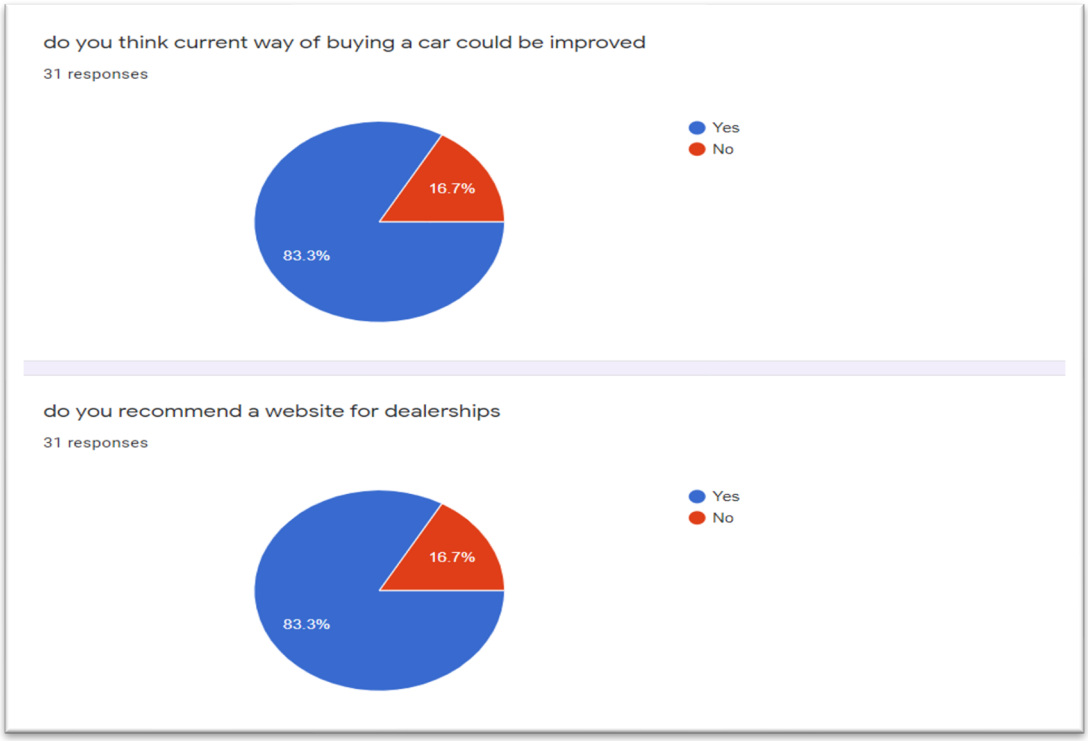

Figure 2-4 Survey Result

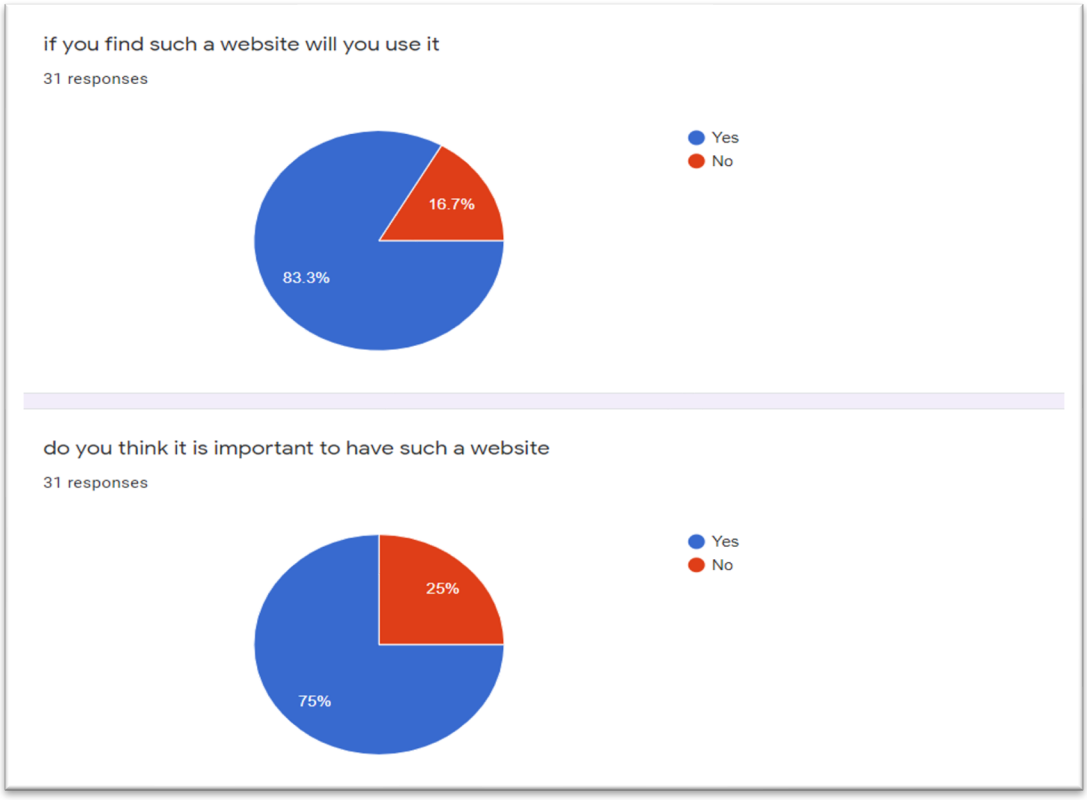

Figure 2-5 Survey Result

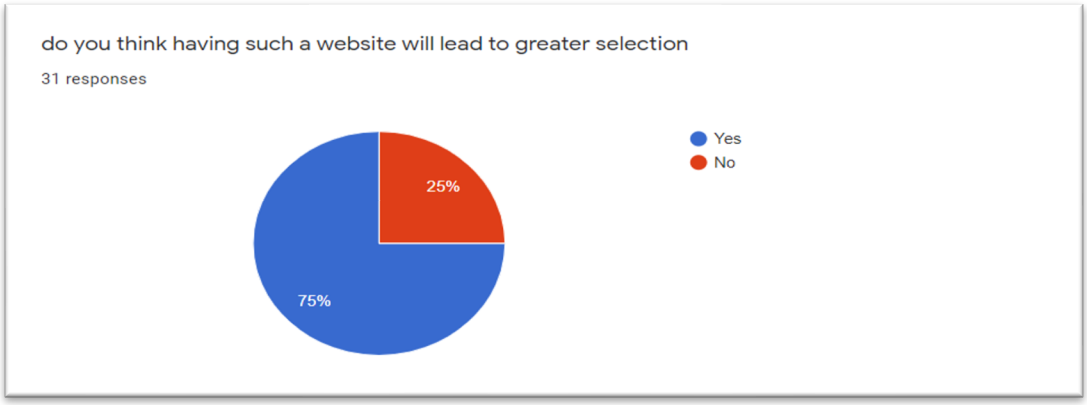

Figure 2-6 Survey Result

2.3. Current System Analysis

Having a website for dealerships is a new idea and we cannot find many existing system that we use in our region, system analysis will be conducted on kurdsale, kurdsale is a website that allows to look for cars that are on sale it has many

features such as searching for car and choosing car galleries which show galleries and user can see the cars that are listed for sale, another part in the website is cars agent which is about the brands and have only one specific brand cars, and they have a part for car rental company for those cars that the company put it on rent and more parts, when a user searches for a car he can directly select the brand and after that he will be able to choose the class after choosing class type he will be able to choose the model and after that the type and finally the operation type either it is for sale or for renting, these process should be done in order and user must fill all of it, although user can sort the search by price or newest to oldest and vice versa, after doing these steps the listed cars will be shown with photos and full information about the car.

Every system has positive and negative characteristics and this system that is taken as an example has its positive and negative characteristics, starting from the positive side it is a very good website that can help to find the car a person want easily by having many options when a user search for a car he can see all the needed information such as general information about the car and history and condition of the car if the car has a warranty or any painting pieces because these effect on the price, and user can see the performance, interior, and exterior information as well.

Just by looking at the website, user can find the website interesting but that does not mean it is a perfect website, they have a part of rental Car Company which is a useless part and it is empty, they although have another part for a special number which there is a number that is unique and special these plate numbers are expensive and there are people that search for it but unfortunately this part is not working as well, it is not a new website so that we can say it is new and have not been done yet it has been years and still like this empty, they have not focused on the used cars and the local dealerships they did not have used cars that are in the agents. Also, they offered so few agents and dealerships which does not solve most problems that we have mentioned previously about giving the customers a wide variety of options when they are looking for buying a car, most of their cars were zero km or no warranty cars or painted cars, their focus is mostly on the luxury cars which it means the expensive cars which not every person can handle the price.

2.4. Comparison Between Existing Systems

The key of getting success in anything it needs to be different and better from other competitors and that is what we will try to focus on, as it is mentioned kurdsale is an easy website to use that there is not complicated things for users to face so main focus will be website in an easy way so that users face no difficulty in using it, for kurdsale there were some empty parts which effect on the efficiency of the website so we will try to make our website properly without any problem, main focus will be on used cars dealerships and give access to most of the dealerships to give user variety of options and give them better selection which in kurdsale they offered so few agents and dealerships which do not give the customers a wide variety of options when they are looking for buying a car, we will try to put every type of cars on the website not only cheap cars or expensive we will try to make the website useful for all the users while in kurdsale most of the cars were luxury and expensive cars, last point is especially focusing on the warranty cars while on kurdsale this was not focused on and they had many damaged and painted pieces, and for the proposed website will be adding some other features that would be very beneficial which is missing from the existing systems.

2.5. Literature Review of Technologies Used

This part will be talking about the technology used for creating the website, Xampp will be used to create and use our program on a local webserver. Front-end refers to the part that the user interacts with directly, all elements that users interact with directly, such as text colors and styles, images, graphs and tables, buttons and colors are included, the sublime text is the program that is used, so we will use HTML which is It is a language for creating web pages, CSS "Cascading Style Sheet" is the abbreviation for CSS. They can be used to define text styles, table sizes, and other aspects of Web pages that were previously only defined in the HTML of the page, JavaScript and frameworks like bootstrap and jQuery will be also used. Back-end services the backend of a website refers to the server-side of the website. It organizes

and stores data, as well as ensuring that everything on the website's client-side works properly, for the back-end we will use PHP programming language, PHP is a scripting language for the web that is built into HTML. This means that PHP code can be inserted into a Web page's HTML, and for the database, MySQL is used, and for the hardware, and a computer is needed.

2.6. Chapter Summary

As mentioned in order to know when an idea is going to succeed it needs to show it to users and get their opinion and requirements so a survey is done and collected people opinions about their problems and difficulty they have faced while buying a car, after that we've analyzed on the current system that people use ,talked about positive and negative characteristics of the system, later on ,a comparison is made between our system and the available system we made some explanation about both to have a clear idea about what are doing what is available and what are the flows what need to be fixed and what will benefits users, and finally talk about the technology used for the website what will be use and need for making the website.

Chapter 3

METHODOLOGY

3.1. Introduction

For this chapter there are some sections to explain and discuss, starting from methodology choice and a justification in here a choose out a methodology for proposed project and explain it, after that, explaining and choosing methodology type will be explained the phases and tell how does it happen in the project and to use UML, design tool and a Gantt chart to show the process of the work and show when a task has been done, after that, describing technology or the tools used for the system, then system requirement analysis which is hardware and software requirement and describing what has been used for running and developing the system.

3.2. Methodology Choice and Justification

The Agile technique was created in reaction to rising dissatisfaction with Waterfall and alternative rigid. The method is planned to provide change and the necessity to finish software earlier. Agile prioritizes people, their interactions, and their relationships over equipment, It emphasizes client collaboration all across the project development. It reacts to change as a replacement, It also emphasizes the performance of operational software rather than documentation. Groups that use the agile technique work in shorter races, or phases. Most have a set time limit and a set of objectives, although they are not in any specific sequence. Through sprint, groups collaborate with the purpose of delivering usable products. Agile emphasizes collaboration and teamwork, with a focus on teamwork and efficiency. Alongside internal feedback from numerous departments and clients.

3.3.Phases Within the Chosen Methodology

3.3.1. Ideation

The ideation stage is where successful agile software development projects begin. Working closely with users, the management staff, and engineers. And the coming consumers of the application the agile product owner puts the project's vision together via:

- Aim of new software
- Setting priorities and managing resources

3.3.2. Development

Teams can begin working on the software's first step after completing the first step. All linked product tasks are included in the development phase, The most time-consuming aspect of the agile application development lifecycle is often developing the first step of a software product.

3.3.3. Testing

The staff are happy with the first version of the application, which went smoothly. The team performs the following tests to guarantee that the application is fully functional:

- Validating that the code is clean
- Fixing bugs and mistakes
- Running tests

3.3.4. Deployment

Users can now access the program because it has been fully delivered. This act puts it in the repairs chapter. In this part, the software development team provides ongoing help to the software working smoothly and to address any new problems. Later phases are useful to boost an existing product or improve new features throughout the duration.

3.3.5. Operations

Continuing repairs helps crush flaws and keep the system running. While users interact with the program, there are ways to gather feedback and do enhancements that will be released in future releases.

3.4. Gantt chart

A Gantt chart is usually used in project management, for the project we have used this Gantt chart which is one of the most popular and useful ways to show activities displayed against time. On the left of the chart is a list of the activities and along the top is the right time. Each action is represented by a bar, whose placement and length correspond to the activity's start, period, and end dates.

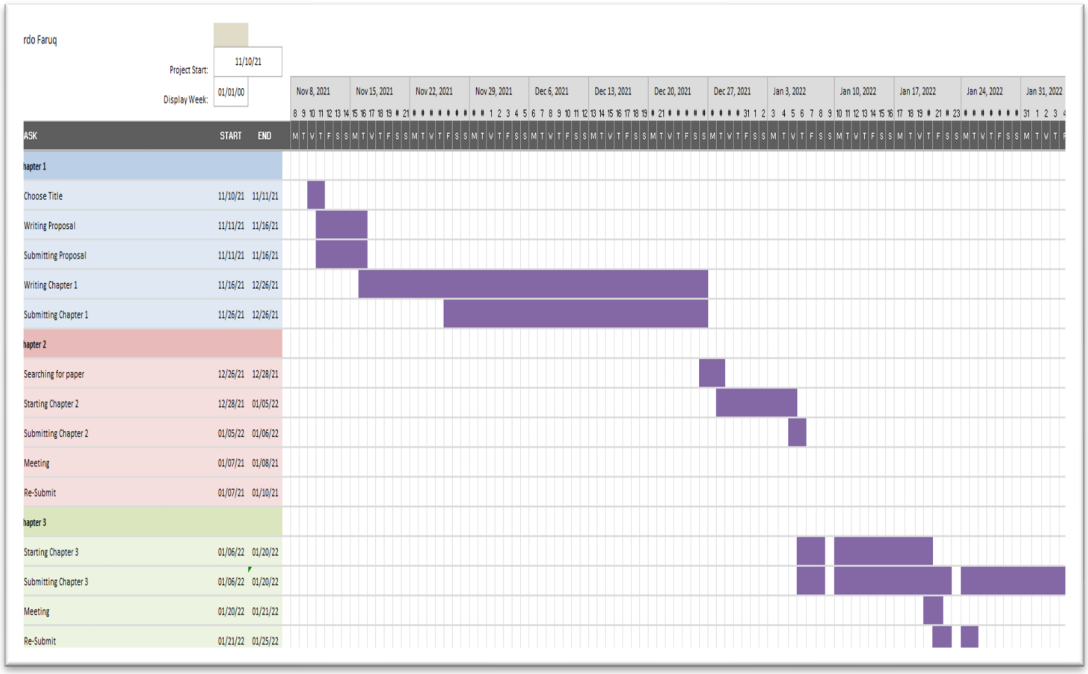

Figure 3-1 Gantt Chart

3.5. Technology or tools used to develop the system

For this part we will be talking about the technology used for creating our website, we will use Xampp to create and use our program on a local webserver. Front-end refers to the part that the user interacts with directly, any component that the user sees, the sublime text is the program that we use, so we will use HTML for making web pages, also CSS will be used, JavaScript and frameworks like bootstrap and jQuery will be also used. The backend focus on the server side of a website. It arranges then saves information, and guarantees if website works correctly, for back-end we will use PHP programming language, PHP is a programming language for the web that is included in HTML. And for the database, we will use MySQL, and for the hardware, we will need a computer.

3.6. System requirement analysis: hardware and software

For this part, system requirements will be explained for the hardware and software. For hardware, the CPU should be at least Intel Core i5 generation 5+ and minimum RAM of 4GB and storage at least 1GB free space and (LAN) or (Wi-Fi) and for the software requirement there is no such a complex requirement, the user needs a personal computer which should be windows 7 or newer which will be enough, PHP and HTML and other requirements as mentioned above.

3.7. Chapter Summary

Lastly, chapter 3 is finished the methodology is chosen and the phases and explained the steps of how should the project be done, and created a Gantt chart to see the process of our work, then described the technology and tools that is needed in creating the website in details then showing the needed hardware and software requirement this chapter was helpful so got to know new things and choosing between all the methodologies the perfect one for the project which now know all the methodologies there pros and cons which all these leads to do the project perfectly.

Chapter 4

SYSTEM REQUIREMENT AND DESIGN

4.1. Introduction

Requirement analysis and requirements will be discussed, at first, drawing the use case, sequence, and activity diagram and explain it, then there is the design of the OOP class diagram and the overall system architecture, after that, doing a database design and doing ERD for the system and then the normalized table and writing primary key and foreign key, in the last part interface should be done including menu and screen design to be done and system navigation and content design and page navigation for the web page and finally a summary for the chapter.

4.2. Requirements Analysis

4.2.1. Use Case Diagram

A use case diagram is a type of diagram that shows the visible interactions between actors and the developing system. The system is displayed in the diagram. For the use case, there is two stakeholder admin and user and made this use case to show what they can do. Users can view dealerships which all the dealerships are listed while clicking all the dealerships will be listed, for view car by clicking on the car user want all the information will be shown and lastly for searching the search can be done either with searching by brand or by price. Then admin which admin should log in at first, after that admin also can view the dealerships and view a car, another option for admin is posting the cars which admin must put price and information of the car while

posting and admin can delete posts as well, and explained how searching will be made, another thing admin can do is adding dealerships and managing them.

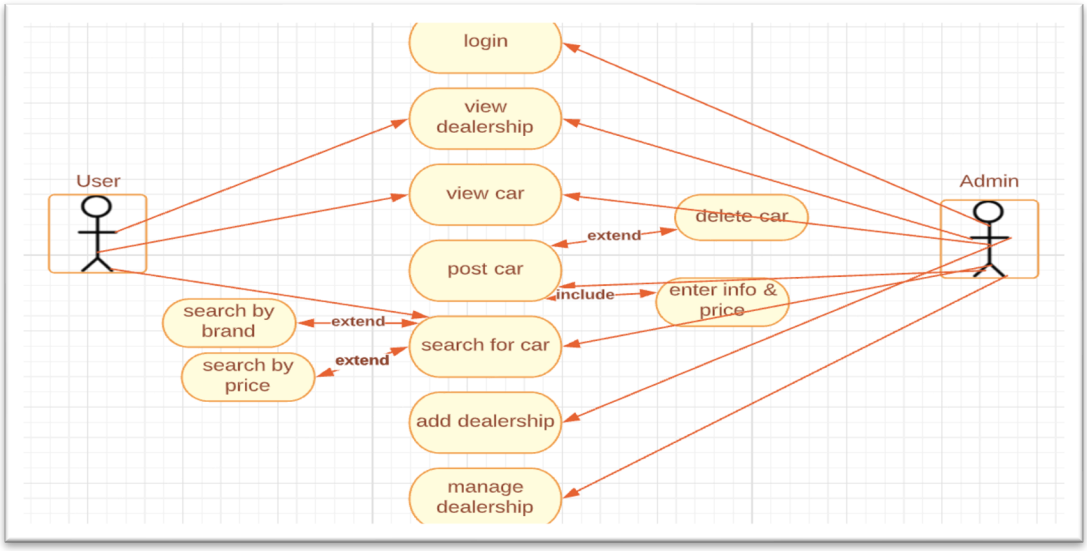

Figure 4-1 Use Case Diagram

4.2.2. Sequence Diagram

Interaction diagrams are sequence diagrams. Which shows how processes are carried out. They describe the interaction between components in an association context. Sequence Diagrams are time-focused, and they employ the vertical axis of the diagram to represent time, indicating when messages are sent and when they are received. For this part, a sequence diagram is made for the main user page and the search engine, and the database controller.

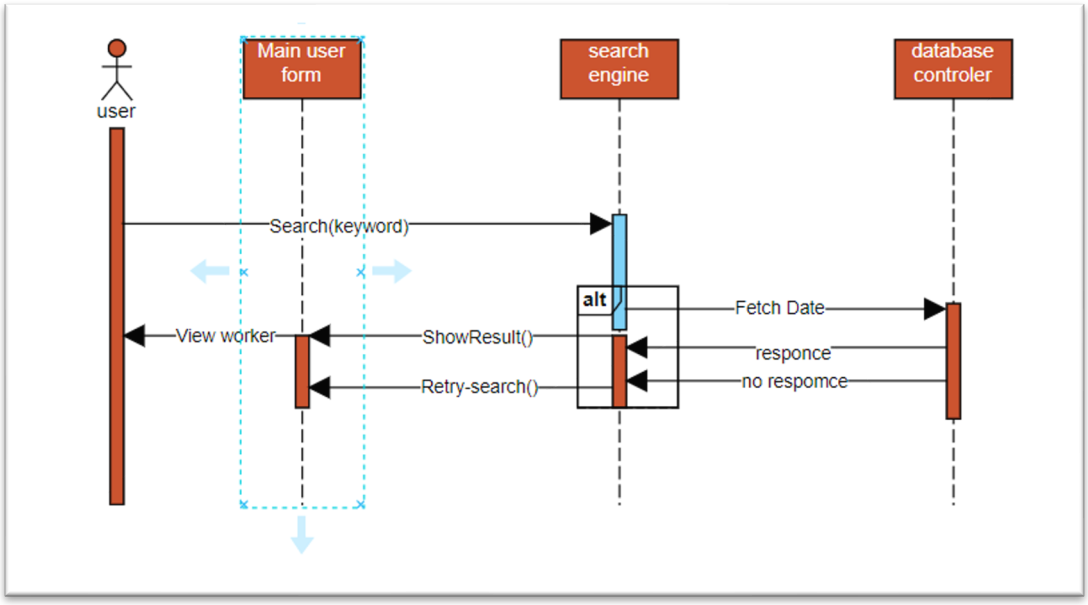

Figure 4-2 Sequence Diagram

4.2.3. Activity Diagram

It is used to show in what way while referring to its steps during implementation, actions flow in a system. The emphasis is on how the events that occur around the stages contribute to a smooth workflow. In figure 3 created an activity diagram for USER main screen about view car and search for car, in view car all the cars are listed so when user click will look at the available cars, and while looking when a car is selected the user can see information about the car and it finishes here, for searching when the user wants to use the search the searching can be with price or by the brand for example if it is available it will go to the available cars if not then it will go back to the search part.

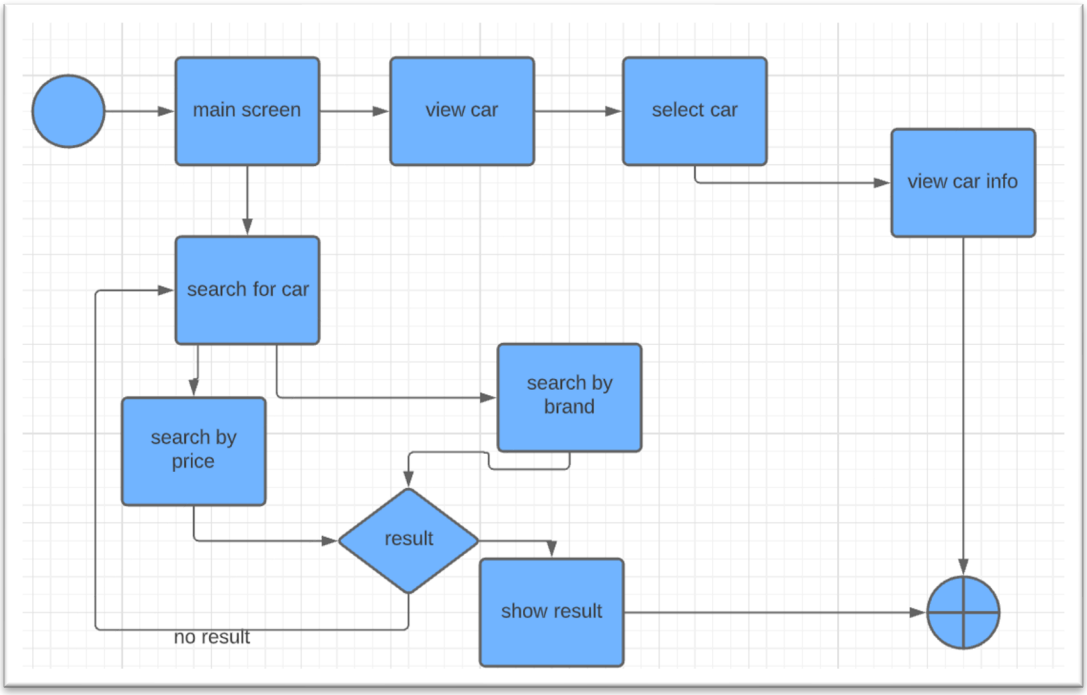

Figure 4-3 Activity Diagram

4.3. Design

4.3.1. Class diagram

Class diagrams helps to get a feel of where are in the class. They give a clear picture of the structure of your systems. At the same time, providing a fast overview of how the various system pieces interact, as well as their properties and relationships. A class diagram has been made for the project contains six classes for the user class and have three functions, and for login username and password attribute with login function, then class car with id and model, price, brand string, and so on.

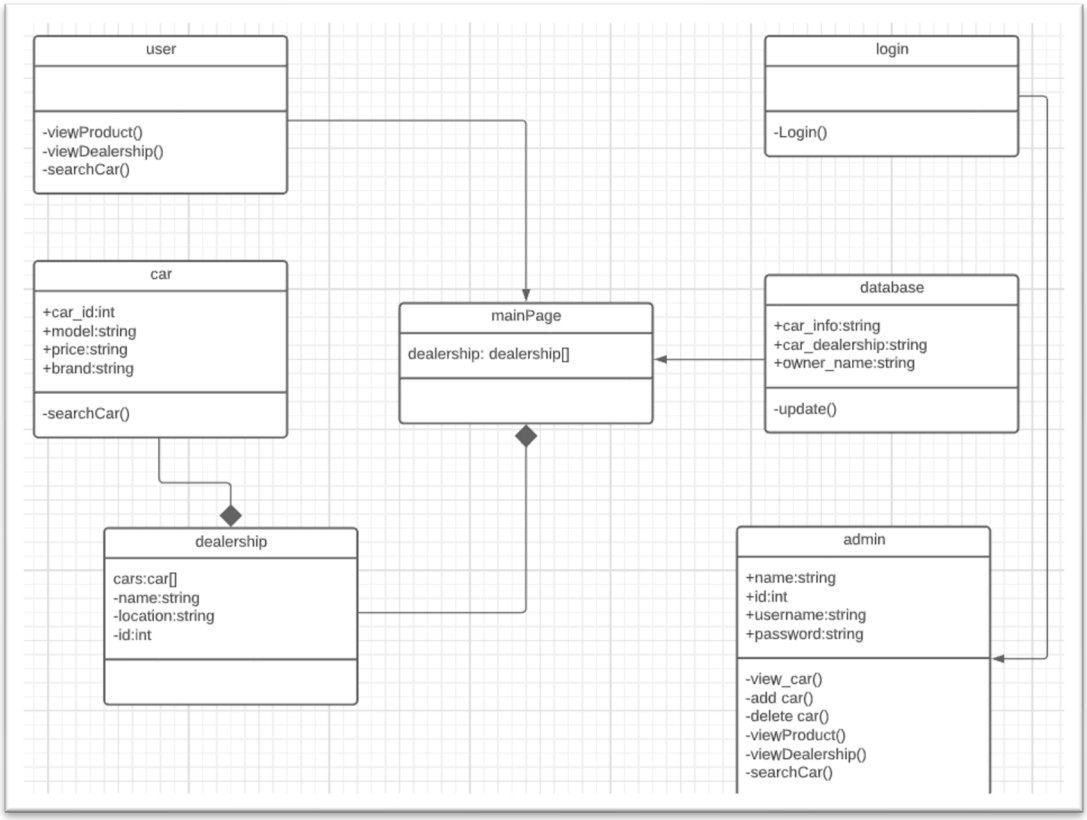

Figure 4-4 Class Diagram

4.3.2. Architecture style

A system architecture is a mental or conceptual model of a system that describes a system's structure, behavior, and other aspects. A formal description and representation of a system are called an architecture description, arranged in a way that makes it possible to reason about the system's architecture and actions.

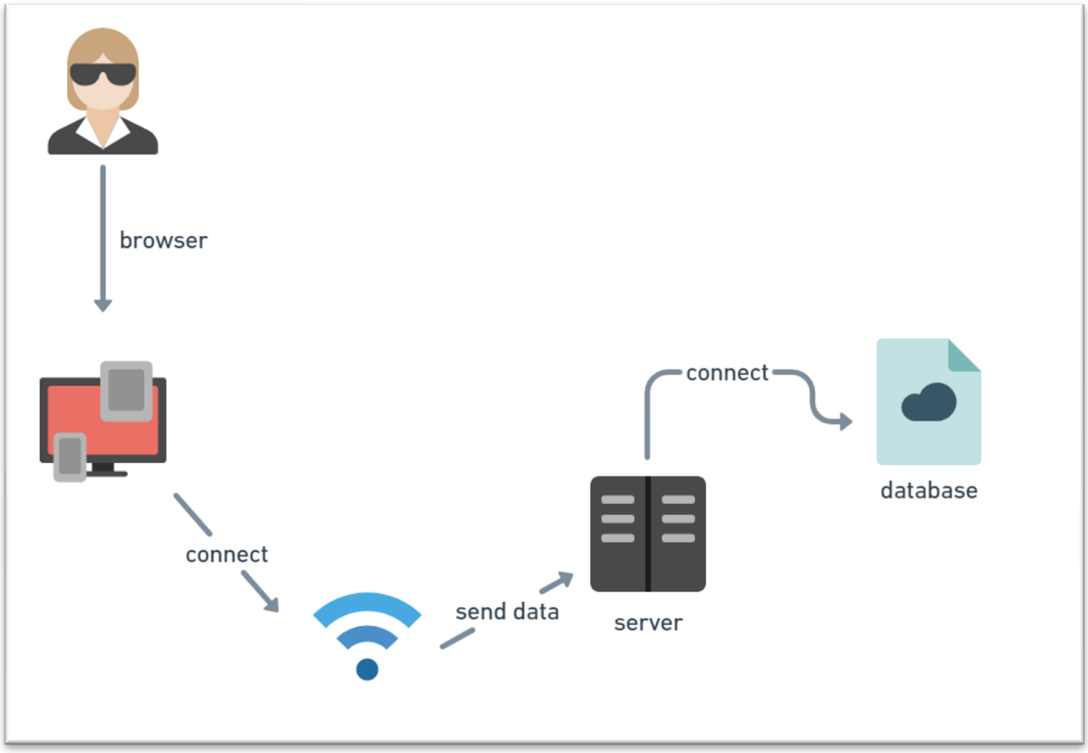

Figure 4-5 Architecture Style

4.4.Database design ERD

The most important benefit of utilizing ERD is that it gives you a visual representation of the layout. A well-designed database makes identifying the flow of data and the operation of the overall system much easier.

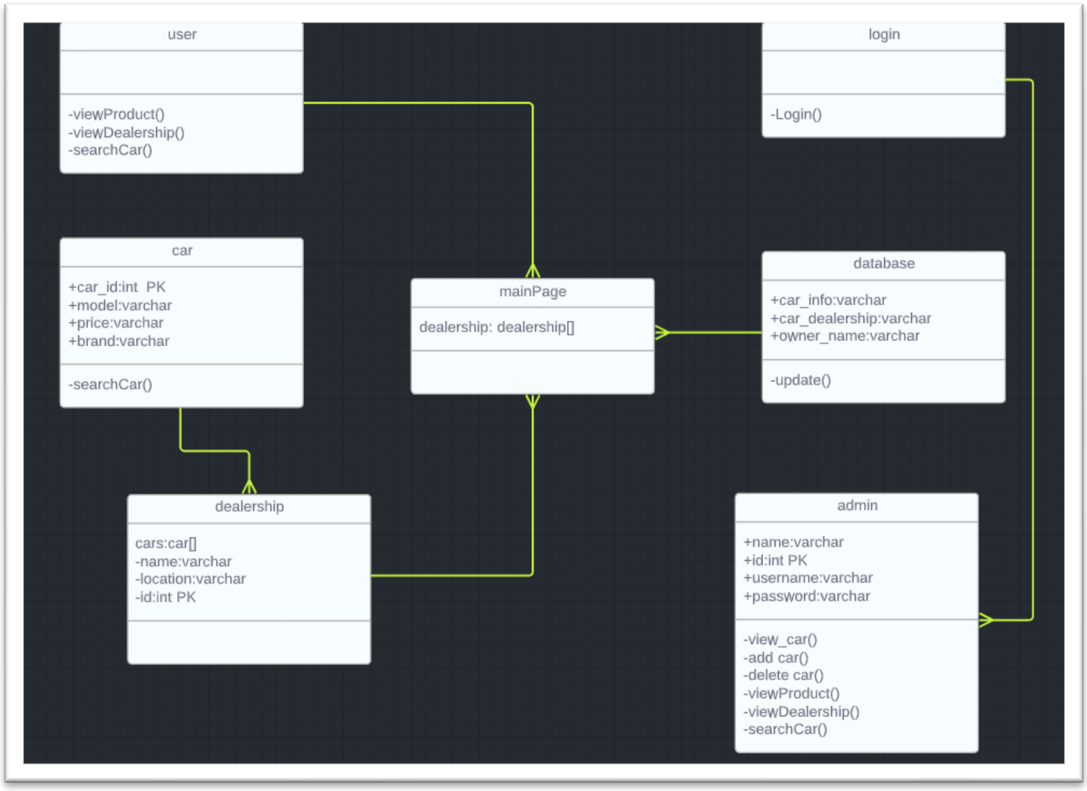

Figure 4-6 ERD

4.5. Chapter Summary

In chapter 4 requirement analysis is finished which contained a use case for the system which we explained who involve and what they can do after that we have done sequence diagram and the activity diagram, then donning the design containing the class diagram and system architecture for the project and after all the database design which all was a difficult task to do but after all, it was a great experience.

Chapter 5

IMPLEMENTATION, AND TESTING

5.1. Introduction

The process of system development in terms of coding based on the system definition is the focus of implementation and testing. After determining the system's behavior requirements and objectives, this step should be carried out. Iterative testing and code implementation was used to effectively fix any faults or errors that were found.

5.2. Coding of System Main Functions

Is a web-based application implemented using PHP and HTML, also CSS has been used, JavaScript, and frameworks like bootstrap and jQuery are also used. Xampp Is used to create and use the program on a local webserver.

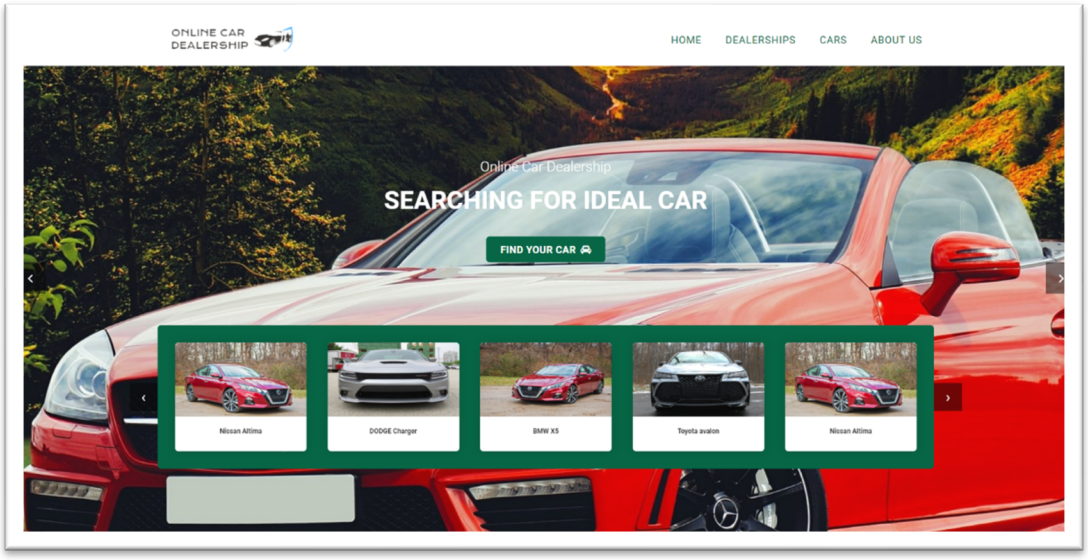

Figure 5-1 Website Home Page

5.2.1. Login

Login functionality is for the admin, admin can login to post cars and write the information and upload photos and then publish it, and admin can login also for adding dealerships after that adding it to the database the data will be authenticated throw the MySQL database.

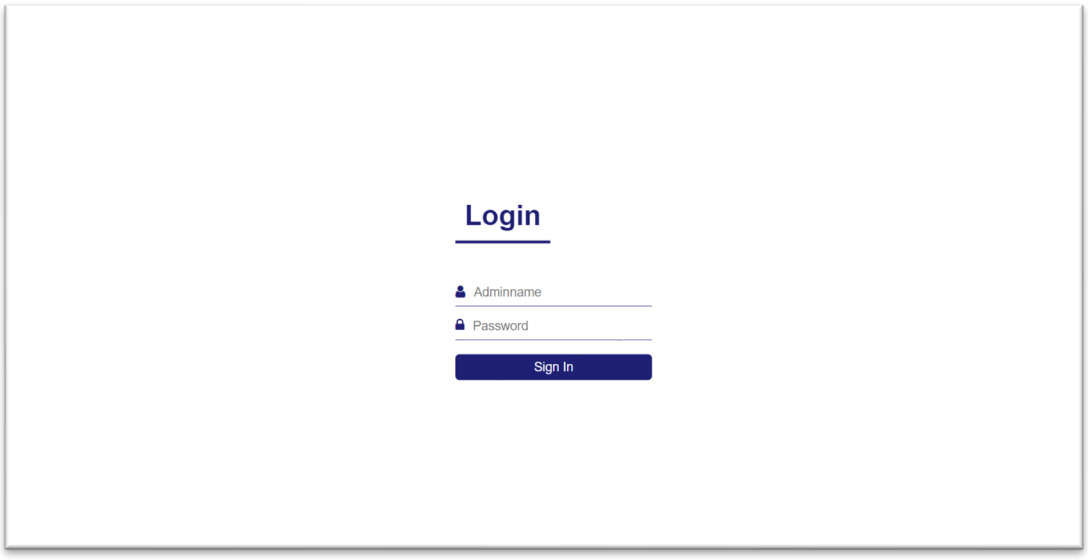

Figure 5-2 admin login page

5.2.2. Search engine

The website has a search engine that is used for searching for a specific car. When a user wants to search for a car by clicking on find your car it will redirect it to search engine. The quick search has selected brand and select model, by clicking on select brand user have to select the model as well after that user clicks on search button and it will redirect the user to the chosen car.

5.2.3. Cars

In the navigation bar of the website, we have cars, as it is clear know our website is about dealership and cars so it has specific part for cars, having different cars from a different dealership, by clicking on cars all the available cars from all the dealerships will be in this part by clicking on the cars all the information of the car will be shown.

5.2.4. Dealerships

For this part in the navigation bar of the website there is dealerships, in this page there are all the dealerships so by clicking on it all the dealerships will be shown, by clicking on a specific dealership all the available cars from that dealership will be shown.

5.3. Interfaces of System's Main Functions

Interface design is important as it is the main connector between the users and the system. Thus, having a user-friendly interface is essential for every system as well as

for our website. A user-friendly interface can be shown as a simple, understandable, and interactive interface. The Figure below shows some of the interfaces for online car dealerships.

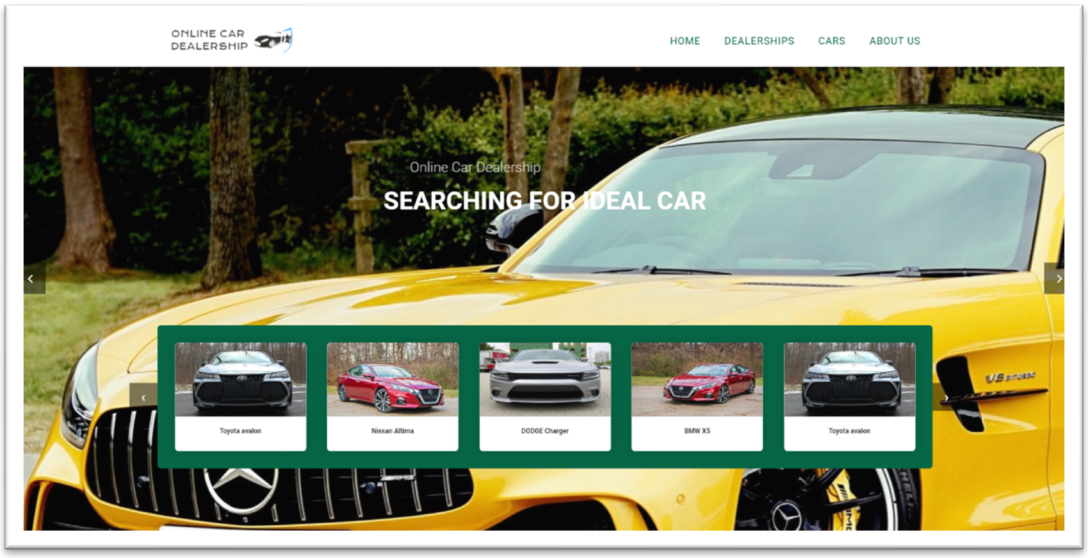

Figure 5-3 system interface

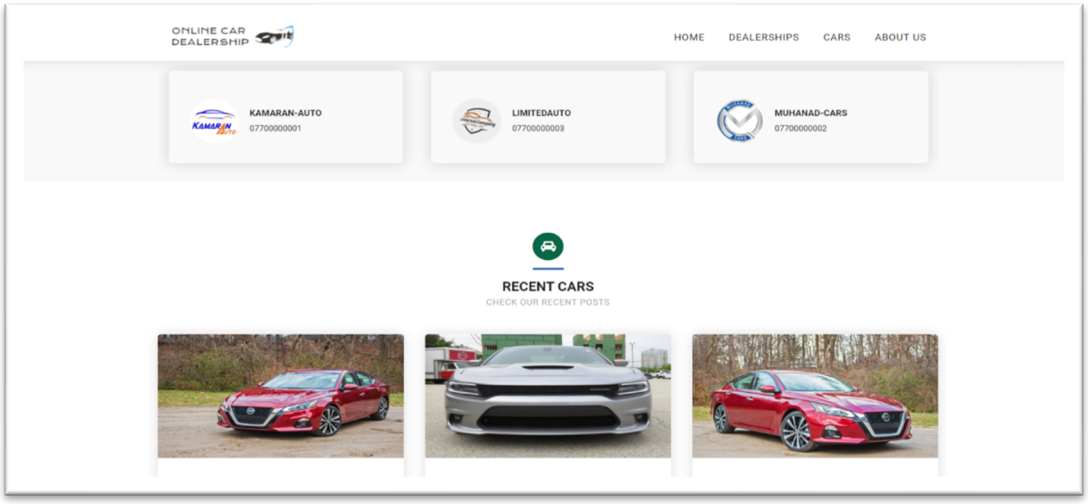

Figure 5-4 system interface

5.4. System Testing

System testing is crucial for system development since it may reveal early flaws and support the system's operation in accordance with its specifications. Black-box testing, white-box testing, and user acceptance testing are the three types of testing that will be included in the system testing.

5.4.1. Black-Box Testing

Black box testing, commonly referred to as behavioral testing, is a testing technique used when the tester is unaware of the internal structure or design. It is used to test the system's functionality. To verify the functionality of the functions, the test case comprises the input and output for each procedure. The table below shows the black box testing of login function where user requires to fill in their username and password to access the system.

Table 5-1 black box testing

Input	Expected Results	Actual Results	Status
Valid username and password, click “Sign In” button	A successful alert message is displayed and redirect to home page.	A successful alert message displayed and redirect to home page.	Pass
Invalid username and/or password, click “Sign In” button	Unsuccessful login alert message displayed.	Unsuccessful login alert message displayed.	fail

5.4.2. White Box Testing

White box testing is a testing method where the internal structure or design is Known to the tester. The internal structure is tested using Cyclomatic Complexity (CC) formula.

5.4.3. User Testing

The last phase of software testing is user testing which it identifies whether the user requirements are met or not. This testing was done to ensure there no errors or bugs existed during the implementation of the system. Early signs of errors could be fixed immediately and proceed with other types of testing which are unit testing, functional testing, and integration testing.

5.5. Coding System Main Function

5.5.1. How Search Works

The figure below shows the codes for how to get data a car data for instance it shows a select query that select ID brand model image from the table cars and then saves it in the query variable and then it was a while loop that goes through the list of cars and shows it in a html code.

```
                <h5>Online Car Dealership</h5>
                <h3>Searching For Ideal Car</h3>
                <h6 class="secondary-button">
                    <a href="#garran">Find Your Car <i class="fa fa-car"></i></a>
                </h6>
            </div>
        </div>
    </div>
</div>


<section class="top-slider-features wow fadeIn" data-wow-duration="1.5s">
    <div class="container">
        <div class="row">
            <div class="col-md-12">
                <div class="slider-top-features">
                    <div id="owl-top-features" class="owl-carousel owl-theme">
                        <?php

$query = mysqli_query($db,"SELECT id,brand ,model,image1 FROM cars");
while ($row = mysqli_fetch_assoc($query)) {?><div class="item car-item">
                            <div class="thumb-content">
                            <?php   echo "  <a href='car_details.php?id=".$row['id']."'> <img src='http:image/".$row['image1']."'>"; ?></a>
                            </div>
                            <div class="down-content">
                                <a href=""><h4 style="font-size: 0.6rem;text-align: center;"><?php echo $row['brand'];?> <?php echo $row['
                                    model'];?></h4></a>
                                <span style="display: none;">$</span>
                            </div>
                        </div><?php } ?>
                    </div>
```

Figure 5-5 how search works

And here is the code of the pre loader the three points that shows up while refreshing the website like a sign of loading, and the button of search in the top of the website, after that there is the header which is the navigation bar.

```
<div class="preloader">
    <div class="preloader-bounce">
        <span></span>
        <span></span>
        <span></span>
    </div>
</div>

<div id="search">
    <button type="button" class="close">×</button>
    <form>
        <input type="search" value="" placeholder="type keyword(s) here" />
        <button type="submit" class="primary-button">Search <i class="fa fa-search"></i></button>
    </form>
</div>

<header class="site-header wow fadeIn" data-wow-duration="1s">
    <div id="main-header" class="main-header" style="background-color: white;">
        <div class="container clearfix">
            <div class="logo">
                <a href="index.php"></a>
            </div>
            <div id='cssmenu'>
                <ul>
                    <li><a href='index.php'>Home</a></li>
                    <li><a href='dealerships.php'>Dealerships</a></li>
                   <li><a href='cars.php'>Cars</a></li>
                   <li><a href='about.php'>About Us</a></li>
```

Figure 5-6 navigation bar

5.6. Chapter Summary

This overall process of implementation and testing has been done according to the defined methodology, requirements, and design. The process is documented and explained in this chapter. The next chapter will explain the conclusion of the project.

Chapter 6

Conclusion

6.1. Introduction

In this chapter the benefits of the project will be explained and talking about the objectives of the project, and explain the finding of the project based on the literature review, then a survey has been conducted for collecting users requirements which is an objective of that is concluded in the project to gather needs of users for making a better website, finally giving a hint about what will be done in the implementation of the project.

6.1.1. Restate the project significance and objectives

Having a car is about to be one of the priorities of life and is one of the needs of each of us, the significance of the project is how can get that needs in the best possible way, Customers can visit the website and see all the dealerships and latest cars, and any car the user chooses will have a location so that the user can get the address. The objectives of the project are:

1. Making communication between buyer and seller easier
2. Saving time
3. Choosing your car from home and watching all the possible options lead to a greater selection
4. No sale pressure as long you don’t contact directly with the dealer

6.2. Achievements

The finding of the projects and the objectives that have been conducted such as a survey to collect user requirements for making a website as useful as it can be for the users, and use case diagram has been conducted to know who use the system and their tasks, sequence diagram and activity diagram has been conducted as well, the class diagram has been made for organizing the implementation, after that an ERD conducted, The most significant advantage of using ERD is that it provides a visual representation of the layout. A well-designed database makes it easy to detect the data flow and the overall operation of the system.

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https://www.fairtrading.nsw.gov.au/__data/assets/pdf_file/0007/367936/Car_buyers_guide.pdf

Appendix A Software Requirements Specification

Software Requirements Specification

Online Car Dealership

Version 1.0

June 25/ 2022

Software Engineering

Prepared by: Kardo Faruq

Revision Page

a. Overview:

Everything pertaining to the software requirements specifications will be demonstrated in this document. Detailed criteria follow general statements in the introduction. Each section has a subsection with all the relevant explanations.

b. Target Audience

The target audience for my project is users and admin.

c. Version Control History

Version	Primary Author(s)	Description of Version	Date Completed
<Version 1.0>	Kardo Faruq	I added the sections	25/6/2022

Table of Contents

1. Introduction

1.1 Purpose

SRS serves as a medium for communication between teams from the customer/client, business analyst, system developers, and maintenance. A contract between a buyer and a supplier is another option. It will provide a solid basis for the design phase, supports project management, and helps to regulate system evolution. the intended audience for the SRS Is the persons who want to see the requirement and the interface of the system although the hardware and software.

1.2 Scope

- The scope of this project is to make a website so that the dealerships can sell their car and the customers to find the car they want.
- The user can browse from the website and search for cars and see all the needed information, the admins of the website can manage the website such as adding cars, writing information, and adding pictures.

Target users:

- Dealerships
- Customers

1.3 Definitions, Acronyms and Abbreviation

Acronym and abbreviation	Definition
SRS	System requirement specification
UC	Use case
UTM	University teknologi Malaysia

1.4 References

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1.5 Overview

The subsequent sections of this paper give a broad description of the project, the users it will serve, the hardware it will employ, and the functional and informational needs it will have. In part two of this publication, the project's general description is covered. The restrictions and assumptions used when creating the system for online auto dealerships are listed in Section 3 together with the functional requirements, data needs, and other information. A user's perspective of the product is also provided. The particular specifications of the product are also provided in Section 3. Detailed descriptions of the functional requirements are provided in Section 3 along with a discussion of the needs for the external interface.

2. Overall Description

A list of the stakeholders and users of the potential solution is also provided, along with the issue description for the present system. It also illustrates the demands and preferences of the stakeholders that were documented during the brainstorming session of the requirements workshop. Additionally, it provides a list of the key characteristics of each suggested system as well as a brief explanation of each. The detail product viewpoint from many stakeholders is covered in the SRS that follows. It provides user characteristics, allowable constraints, assumptions, and dependencies, together with necessary subsets, for the project's particular product functionalities.

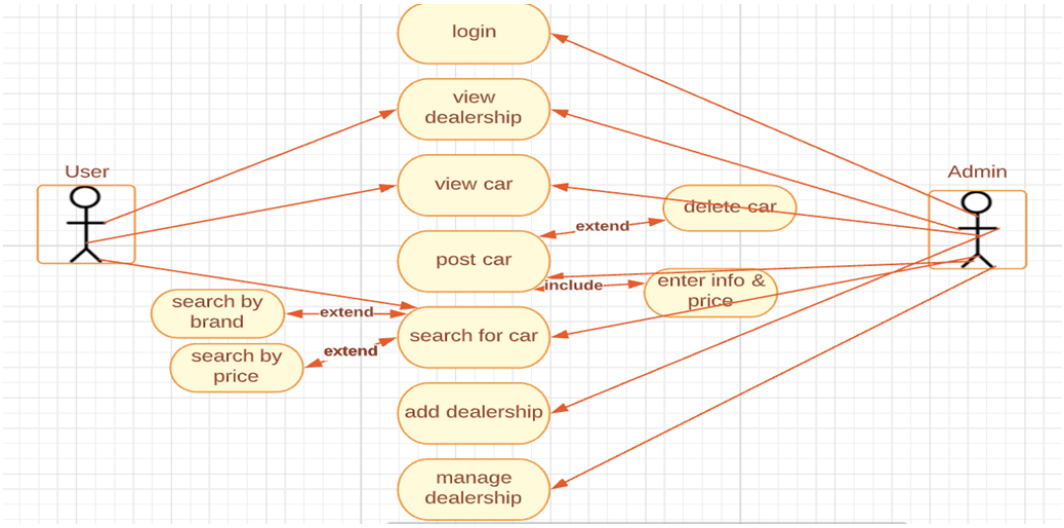

Figure 2.1: Use Case Diagram of <online car dealership>

2.1 Product Perspective

This program operates comparatively as effectively as other relevant programs and is entirely self-contained. It offers simple databases rather than complicated ones for demanding requirements, and it gives both novice and seasoned computer users a decent and simple graphical user interface.

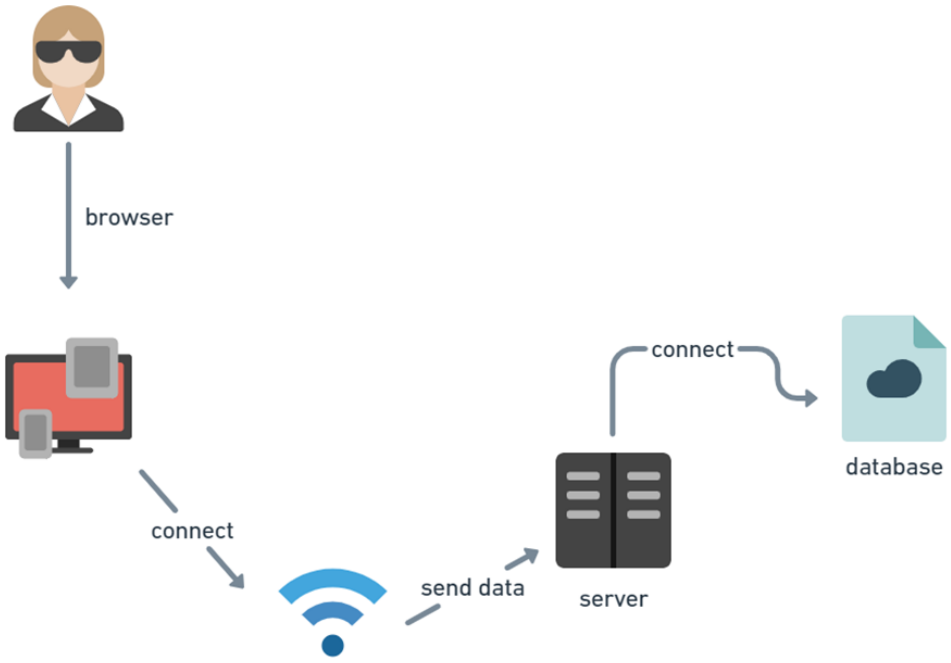

Figure 2.2 product perspective

2.1.1 System Interfaces

The interface defines how two (or more) systems "communicate" by enabling mass, energy, and information to move back and forth between them. But for my system, there is only a database interface between the database and the website.

2.1.2 User Interfaces

The software's user interface must work with any browser, including Internet Explorer, Google Chrome, and Mozilla Firefox. Through a browser, the user and administrators communicate with the system. In order to manage the system, an administrator should be able to access the online portal.

2.1.3 Hardware Interfaces

The Hardware Interfaces of the system are handled by the Windows,

- CPU — Intel Core i5 generation 5+
- RAM — 4GB
- storage — at least 1GB free space
- internet — (LAN) or (Wi-Fi)
- Hardware Devices — Keyboard with mouse
- Display — Standard Output Display

2.1.4 Software Interfaces

for the software interface, there is no such complex requirement, the user needs a personal computer which should be windows 7 or newer which will be enough, PHP and HTML, also CSS will be used, JavaScript and frameworks like bootstrap and jQuery will be also used. We will use xampp to create and use our program on a local webserver.

2.1.5 Communication Interfaces

Communication between the different parts of the system is important since they depend on each other. However, in what way the communication is achieved is not important for the system and is therefore handled by the underlying operating systems for both the web application and web portal.

2.2 Product Functions

There are 7 use cases that represent the main functions performed by the Proposed system:

No	Use Case	Description
1.	Login	The login use case is one of the functions that are related to the admin
2.	View dealership	View dealership is one of the functions which admin and user can see the dealerships from it.
3.	View car	View car is one of the functions in which admin and user can see the available cars from all the different dealerships it.
4.	Post car	Posting and deleting cars admins have access to, while publishing price and information must be written,
5.	Search for car	Admin and user can search for car and it can be searched by brand.
6.	Add dealership	Admin can add a dealership
7.	Manage dealership	Managing a dealership can be done through admin either by adding or removing the cars from a specific dealership

Table 2.1 main function of use case

2.3 User Characteristics

Based on table 2.2 we have to actor user and admin in this part we will focus on their role.

No	User	Role

	Admin	Admin has a major role in the system which has total ability on the system which can view dealerships, see cars, post car, add or delete dealerships.
	User	User's role in the system is to see the cars and dealerships and search for them.

Table 2.2 user characteristics

2.4 Constraints

- Admin cannot log in with a false username or password.
- Admin cannot publish a car without filling whole information fields.
- Cars cannot be published with more than 5 images.
- The system should have a Windows XP operating system and above.
- The computers must be equipped with web browsers such as Internet Explorer, Google Chrome, Mozilla Firefox, etc.
- General knowledge of basic computer skills is required to use the product.

2.5 Assumption and Dependencies

- Developers have access to the software tools needed for system development.
- The demands obtained are accurate and doable.
- The project's final product may be stored on a server.

3. Specific Requirements

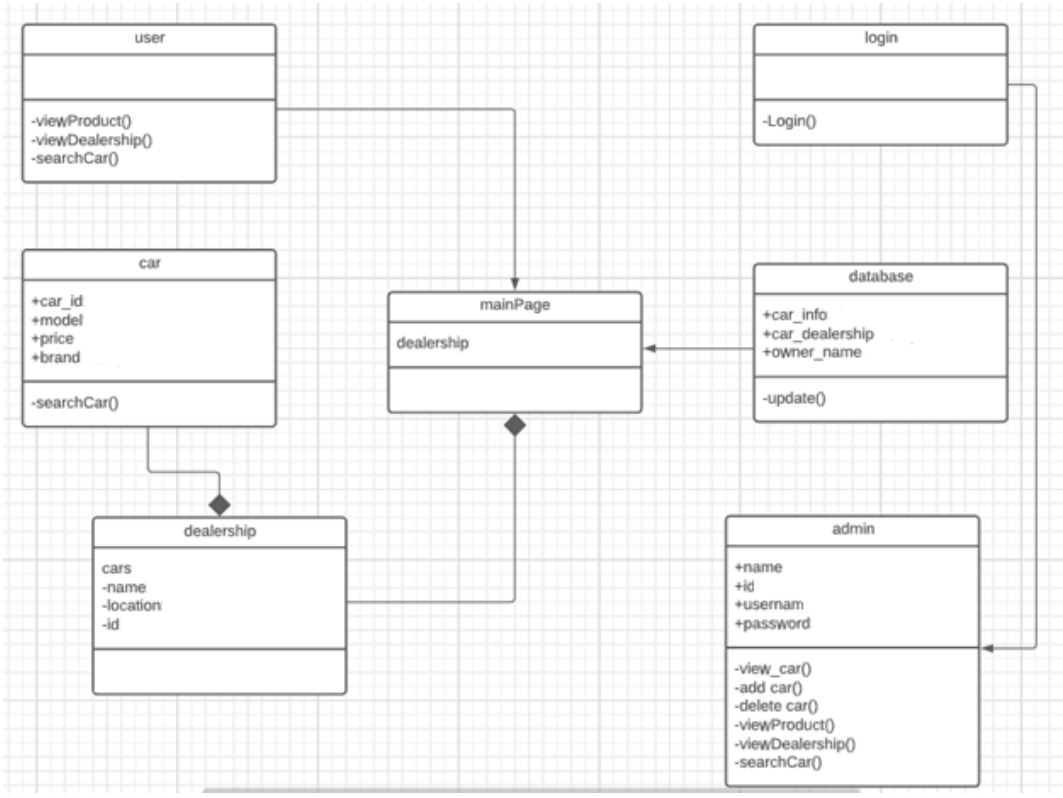

Figure 3.1: <online car dealership>

3.1 System Features

3.1.1 Use case diagram

A use case diagram is a type of diagram that shows the visible interactions between actors and the developing system. The system is displayed in the diagram. For the use case, there is two person admin and user and so made this use case to show what they can do.

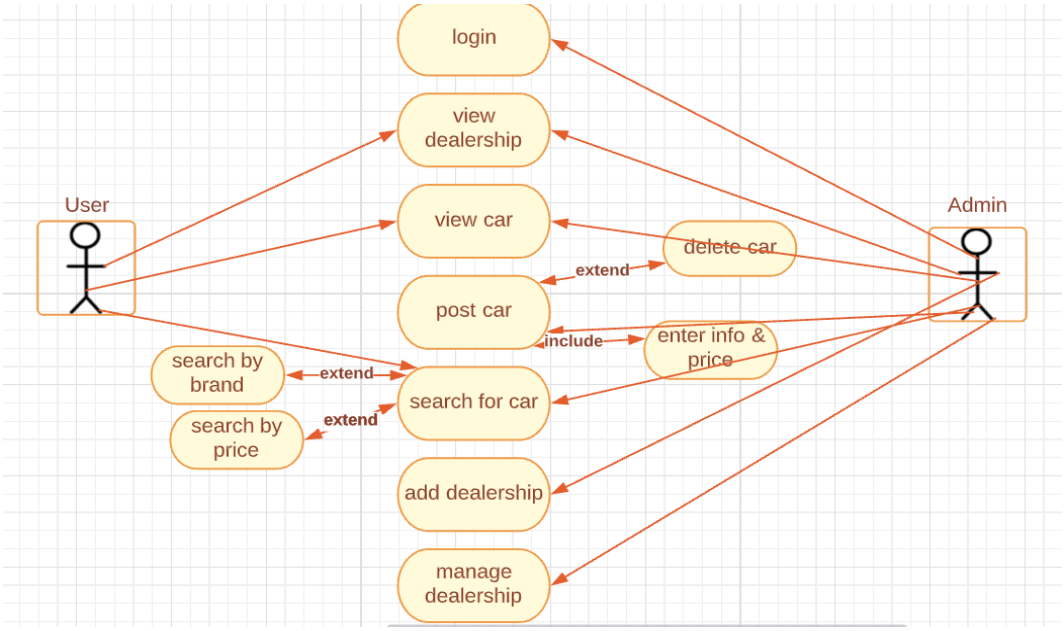

Figure 3.2 use case diagram

3.1.1.1 UC001: Use Case <login>

Use case name	login
ID	UC001
Brief description	This use case describes how the admins login to their own account.
Actor	admin
Pre-condition	Admin must have an internet connection
Normal flow	1-admin goes to the login page 2-The system displays login form page. 3-admins fill in user name and password 4-admin click on sign in button 5-The system redirects the admin to the admin page.
Alternative Flow	1. Invalid Login 1.1 An error message indicating that can't sign in
Post-condition	Admin will successfully login

Table 3.1: Use Case Description for <login>

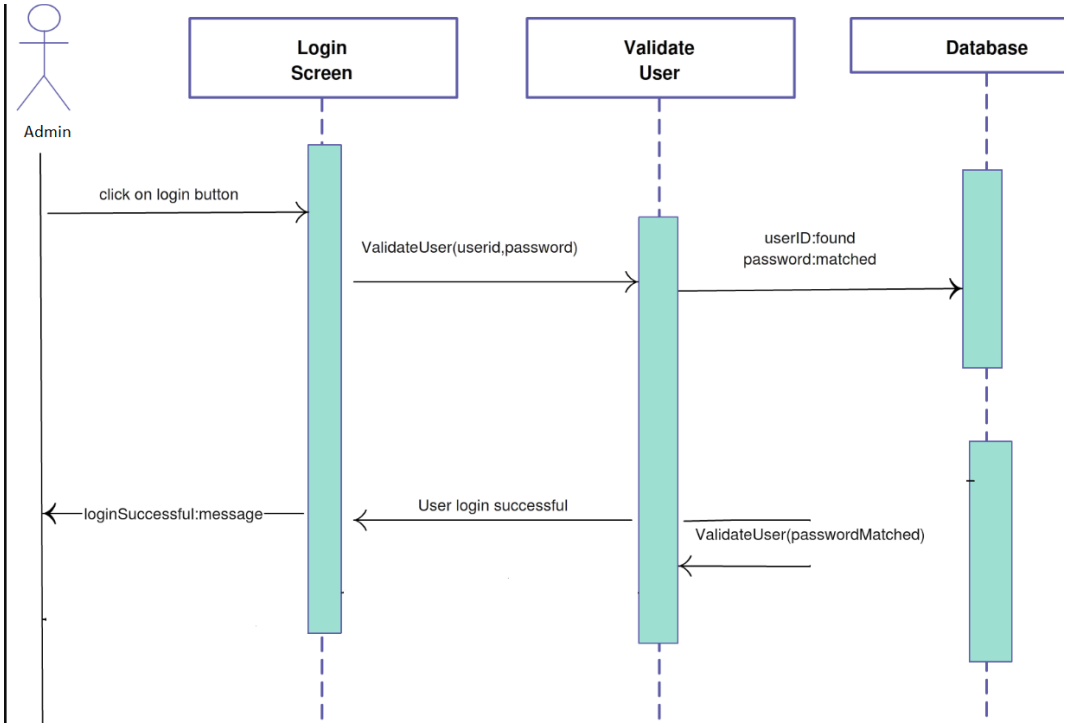

Figure 3.3: System Sequence Diagram of <login>

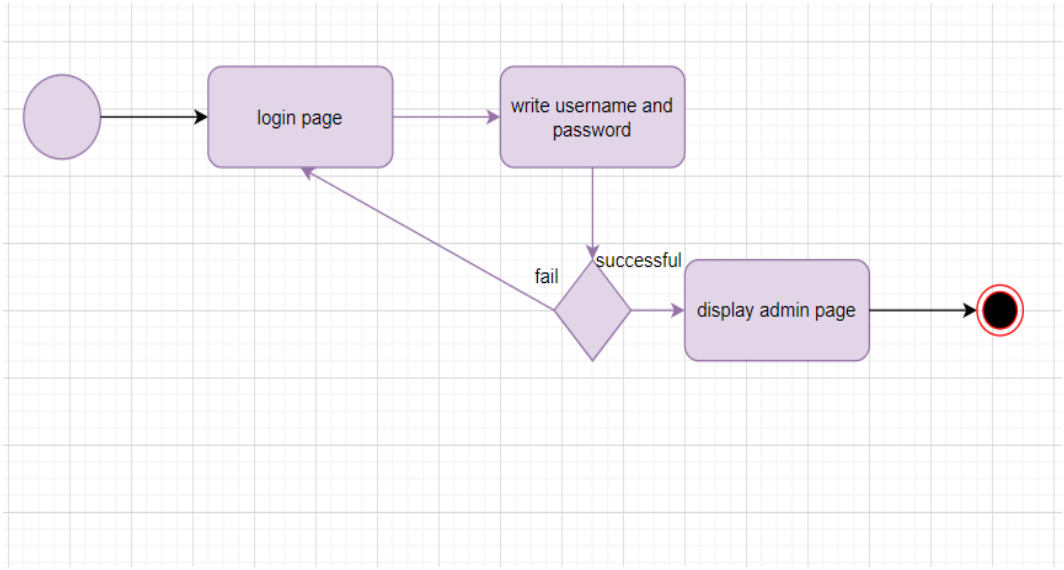

Figure 3.4: Activity Diagram of <login>

3.1.1.2 UC002: Use Case <View dealership>

Use case name	View dealerships
ID	UC002

Brief description	This use case describes how the admin and user can see the dealerships
Actor	Admin , user
Pre-condition	Admin or user must have an internet connection
Normal flow	1-admin or user open the website 2- admin or user clicks on dealership 3- The system redirects the admin or user to the dealership page.
Post-condition	Admin or user will successfully open dealerships page

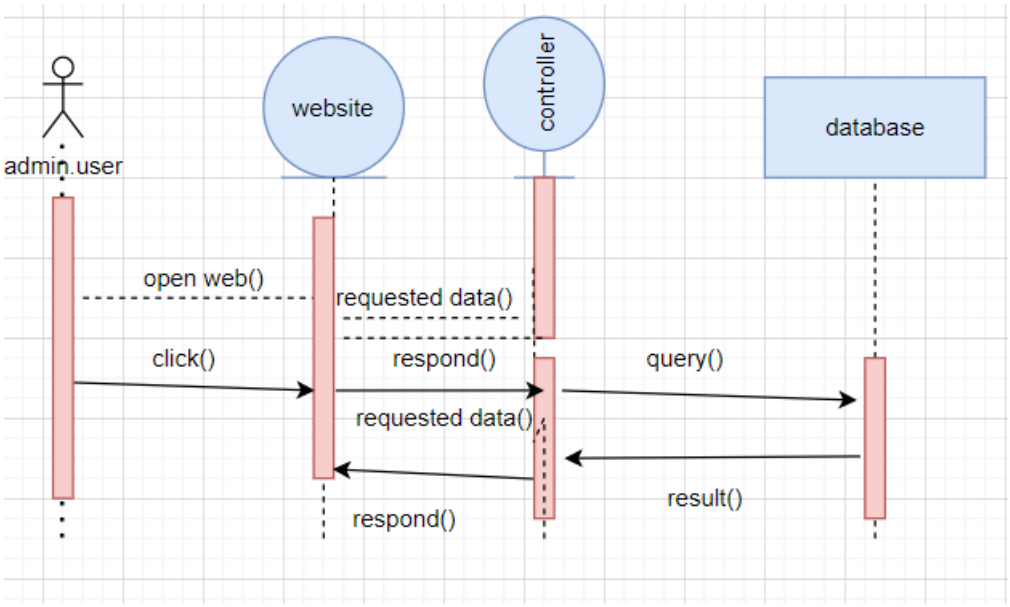

Figure 3.5: System Sequence Diagram of <view dealership>

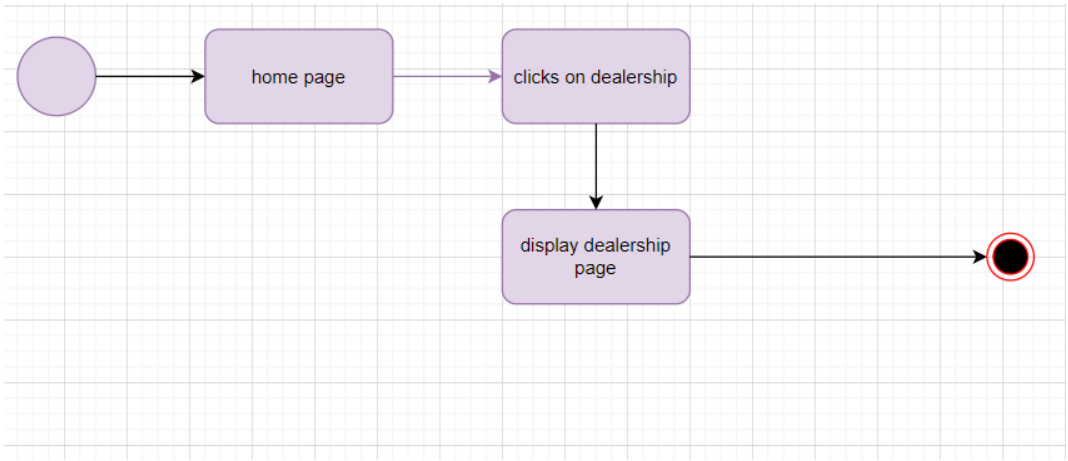

Figure 3.6: Activity Diagram of <view dealership>

3.1.1.3 UC003: Use Case <View car>

Use case name	View car
ID	UC003
Brief description	View car is one of the functions in which admin and user can see the available cars from all the different dealerships.
Actor	Admin , user
Pre-condition	Admin or user must have an internet connection
Normal flow	1-admin or user open the website 2- admin or user clicks on cars 3- The system redirects the admin or user to the cars page.
Post-condition	Admin or user will successfully open cars page

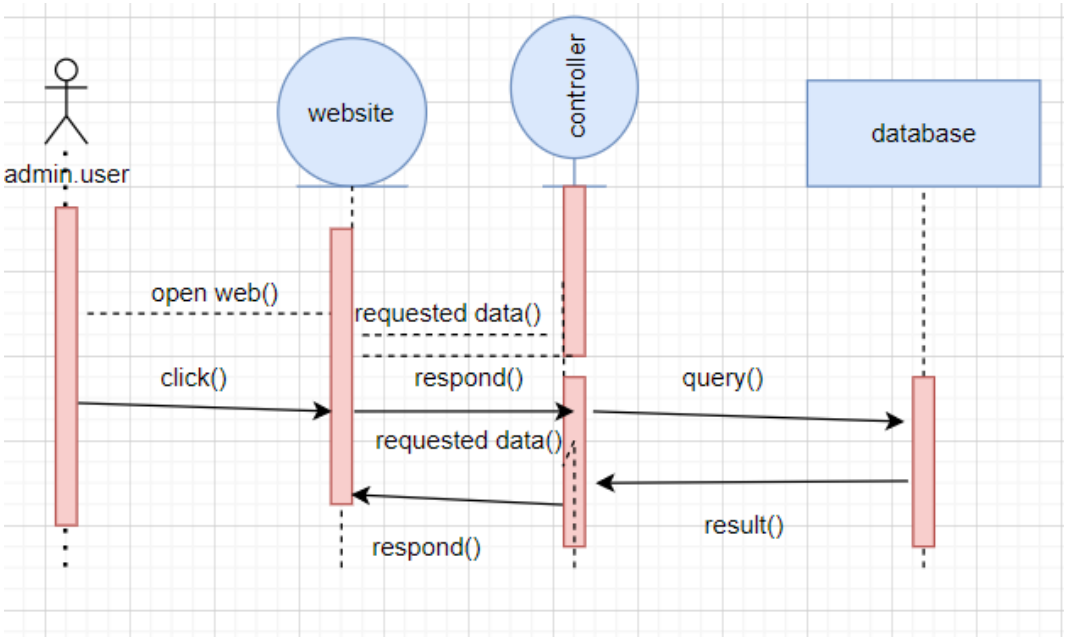

Figure 3.7: System Sequence Diagram of <view car>

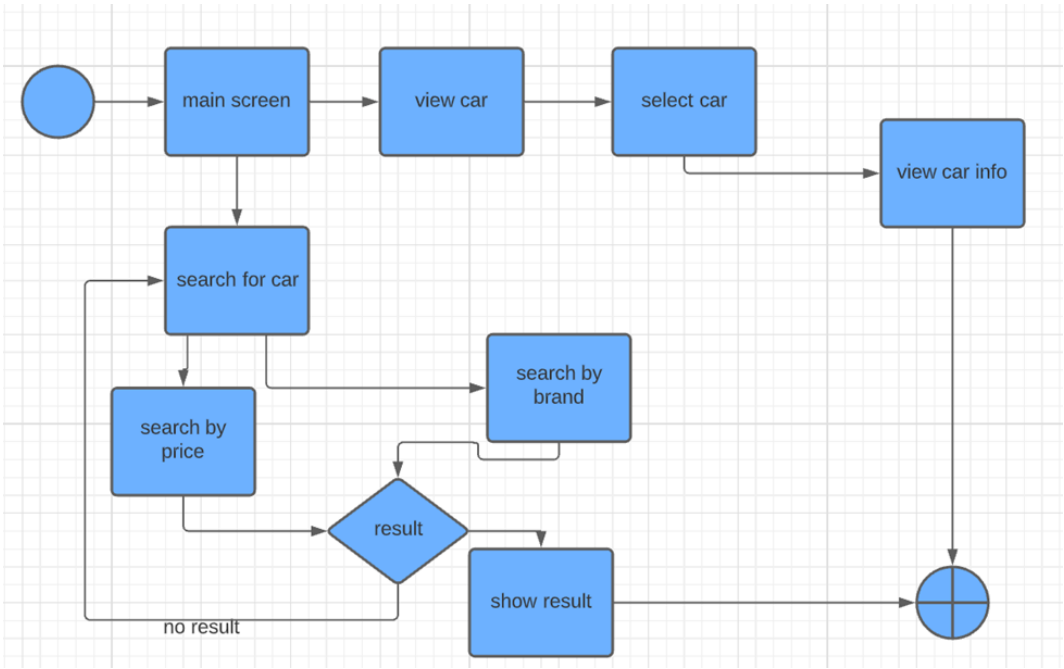

Figure 3.8: Activity Diagram of <view car>

3.1.1.4 UC004: Use Case <Post car>

Use case name	Post car
ID	UC004
Brief description	Posting and deleting cars admins have access to, while publishing, price and information must be written.
Actor	Admin
Pre-condition	Admin must have logged in to the admin page
Normal flow	1-admin goes to the login page 2-The system displays login form page. 3-admins fill in user name and password of specific dealership 4-admin click on sign in button 5-The system redirects the admin to the posting car page. 6-admin fills all the information 7- after filling the information admin click on add to database button
Post-condition	Car will be successfully published.

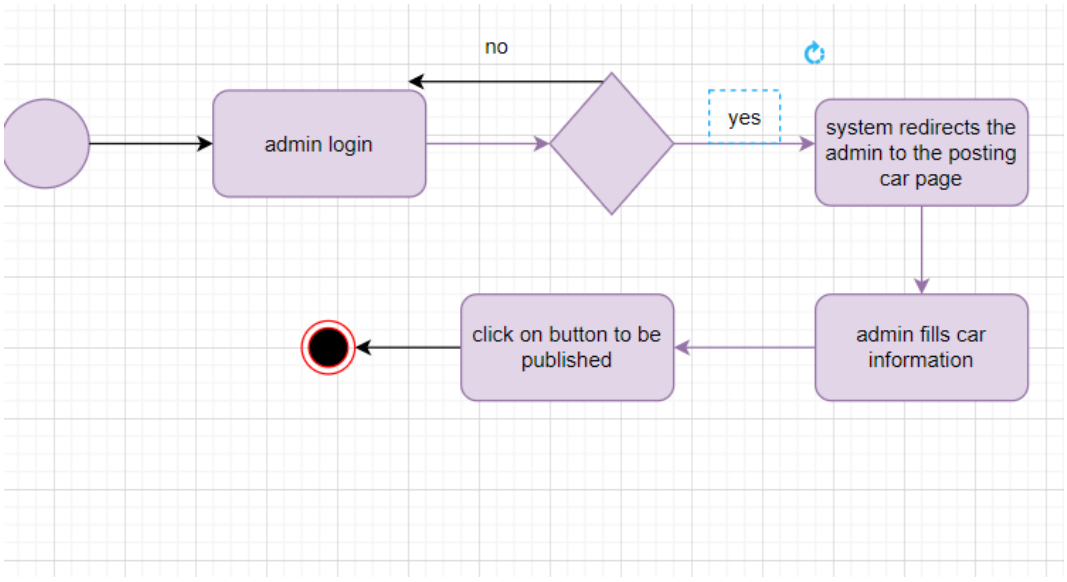

Figure 3.9: Activity Diagram of <post car>

3.1.1.5 UC005: Use Case <Search for car>

Use case name	Search for car
ID	UC005
Brief description	Admin and user can search for car and it can be searched by brand.
Actor	Admin , user
Pre-condition	Admin or user must have an internet connection
Normal flow	1-admin or user open the website 2- admin or user clicks on (find your car) or scroll down to the search 3- admin or user clicks on select brand button and select it 4- admin or user clicks on select model button and choose model 5-the system will redirect to the available car
Post-condition	The car that has been searched for will be redirected to.

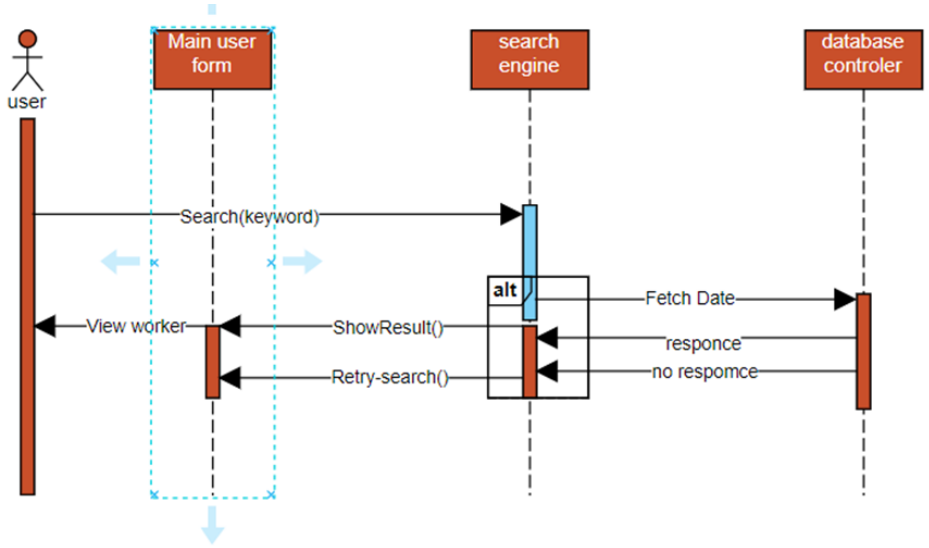

Figure 3.10: System Sequence Diagram of <search engine>

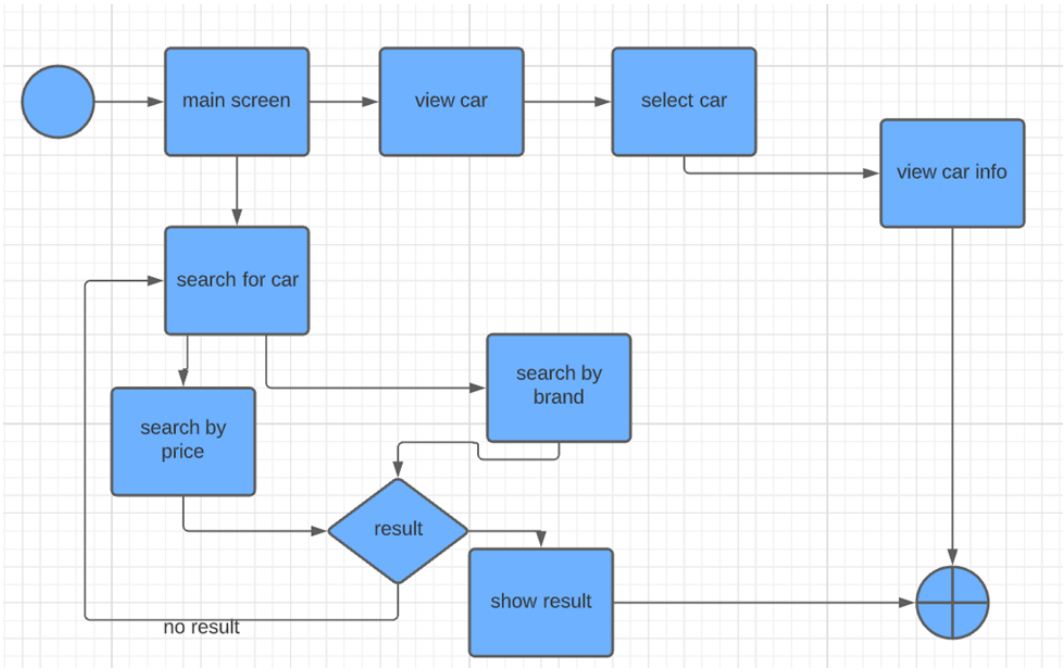

Figure 3.11: Activity Diagram of <search for car>

3.1.1.6 UC006: Use Case <Add dealership>

Use case name	Add dealership
ID	UC006
Brief description	Admin can add a dealership
Actor	Admin

Pre-condition	Admin must have logged in to the main admin page
Normal flow	1-admin goes to the login page 2-The system displays login form page. 3-admins fill in user name and password of the main admin page which is for adding dealerships 4-admin click on sign in button 5-The system redirects the admin to the adding dealerships page. 6-admin fills all the information for adding dealerships 7- after filling in the information admin click on add to database button
Post-condition	Account for Dealership will be successfully made.

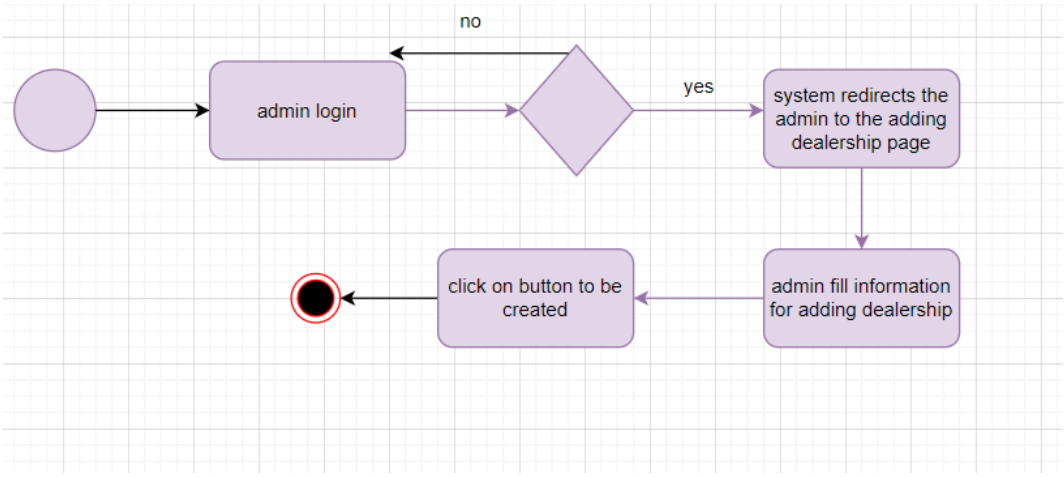

Figure 3.12: Activity Diagram of <add dealership>

3.1.1.7 UC007: Use Case <Manage dealership>

Use case name	Manage dealership
ID	UC007
Brief description	Managing a dealership can be done through admin either by adding or removing the cars from a specific dealership
Actor	Admin
Pre-condition	Admin must have logged in to the main admin page
Normal flow	1-admin goes to the login page

	2-The system displays login form page. 3-admins fill in user name and password of the dealership admin page 4-admin click on sign in button 5-The system redirects the admin to the specific dealership account 6-admin can see all available cars
Post-condition	Adding or removing cars can be done

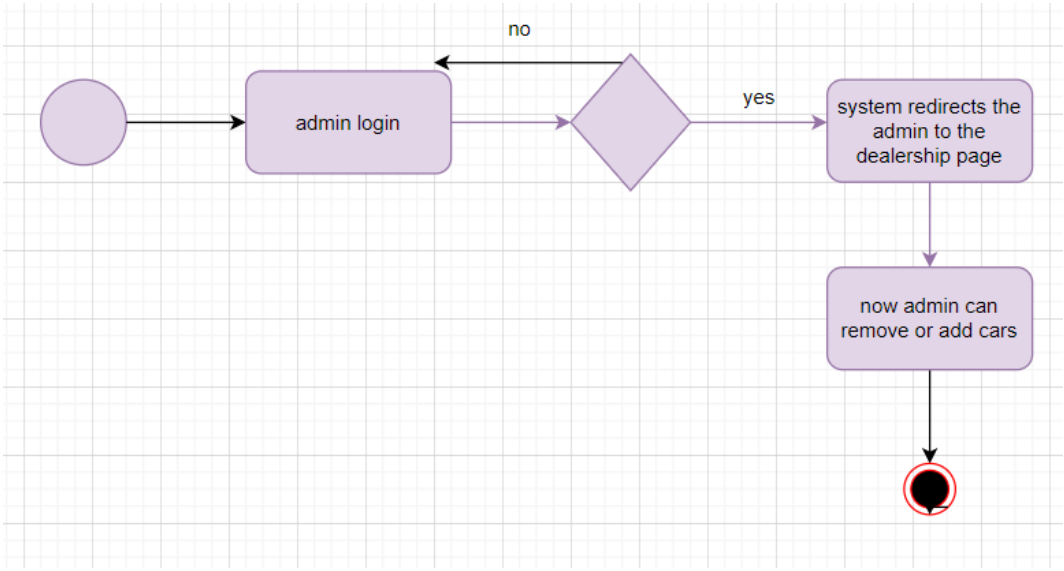

Figure 3.13: Activity Diagram of <manage dealership>