



CCSW 223

College of Computer Science & Engineering



# Car Sales And Rent Project

Prepared for :

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# Introduction

**Sometimes** we get some car issues, and we might try to reach a friend for help or use some other transportation apps like Uber, and Kareem. And since car transportation has become necessarily these days you might consider renting a car. But you just don't want to take the trouble going to the office well, we brought the office to you. With our Selling and Renting Car application renting never become easier. With excellent car deals and amazing prices our application is a no match among other renting apps. With an easy to use and a variety of options our app is made exactly for you.

# Project Description

**This** app sells automobiles and auto components, and it offers listings of numerous vehicles and descriptions of their attributes. Car accessories and parts are also included. This technology enables users to purchase inventory and cars online. The system enables users to check a variety of vehicle statistics, such as the engine, mileage, tank capacity, and other elements. There is a credit card payment option for auto parts. There are several ways to reserve a car, register, and even register for a test drive. The user of the system must register by providing personal information.

After registering, a user can use the system by logging in with their username and password. The user can study each car's attributes and browse through various car listings. The user may also check features of the car along with inventory parts. The product can be chosen by the user and added to the shopping cart. By selecting the credit card payment option, a user can make a payment using a credit card. For the test drive case, the user has to register himself. In the section on buying cars, there are options for auto loans. This program combines inventory management for cars and automotive parts with sales management for cars. By employing this technology, a user can quickly buy an automobile or car parts without having to physically visit a store. He is able to see the car and its components using an efficient graphical user interface. To choose a better product, the user can check the features of each product and compare them.

# Information Gathering

## 3.1 Interview Information

- 1- Eng. Jehad Arif, an industrial engineer graduate with a 5 years' experience in the field, Zoom, 16:00, 23 September 2022.**
- 2- Shali AL-Jadaani, a student in UJ, Discord, 5:30, 29 September 2022.**

## 1- *INTERVIEW WITH JEHAD ARIF*

	Questions	Answers
1	HAVE YOU EVER HAD ANY TROUBLE BUYING OR RENTING A CAR? DO YOU THINK THE SITE WILL SOLVE THESE PROBLEMS OR NOT?	Yes, when my car breaks down, I must go to the rental shop and then I will choose a car to rent and it will take a long time and sometimes I cannot find the right car, opposite the site I will choose the car I like and rent it.
2	IF YOU RENTED THE CAR FROM THE SITE, WOULD YOU LIKE TO COME TO PICK IT UP OR DO WE DELIVER IT TO YOU?	Depending on, maybe if I don't have enough time and, in a hurry, I'll choose to deliver it to me, and if I don't have anything I'll choose to come and pick it up myself
3	IF YOU DECIDE TO BUY A CAR, WILL YOU JUST SEE IT THROUGH THE APP OR WOULD YOU LIKE TO SEE IT IN THE CAR SHOW ITSELF?	If I know the specifications and characteristics of the car, it does not need me to come to see it

## 2- INTERVIEW WITH SAHLI AL-JADAANI

Questions	Answers
<p>1 HAVE YOU EVER HAD ANY TROUBLE BUYING OR RENTING A CAR? DO YOU THINK THE SITE WILL SOLVE THESE PROBLEMS OR NOT?</p>	<p>Yes, when my car breaks down, I must go to the rental shop and then I will choose a car to rent and it will take a long time and sometimes I cannot find the right car, opposite the site I will choose the car I like and rent it.</p>
<p>2 IF YOU RENTED THE CAR FROM THE SITE, WOULD YOU LIKE TO COME TO PICK IT UP OR DO WE DELIVER IT TO YOU?</p>	<p>Depending on, maybe if I don't have enough time and, in a hurry, I'll choose to deliver it to me, and if I don't have anything I'll choose to come and pick it up myself</p>
<p>3 IF YOU DECIDE TO BUY A CAR, WILL YOU JUST SEE IT THROUGH THE APP OR WOULD YOU LIKE TO SEE IT IN THE CAR SHOW ITSELF?</p>	<p>If I know the specifications and characteristics of the car, it does not need me to come to see it</p>

## **3.2 Interview Description**

### **Description of the problem**

Most car renters do not have a car to reach the rental office, and if he arrives, he will not find the right car at the right price and he has to repeat the same with another rental office.

### **Analyst comments**

From the interview, they concluded a number of things, including that the application should allow the user in more than one way to receive the car, because there are users who prefer to see the car before they rent it, and others do not have the ability to reach the rental office, and that the application provides all the necessary information to the buyer so as not to He sees it himself.



## 4. Project Planning Phase

### **4. The purpose of the Project**

#### **4.1. The User Business or Background of the Project Effort**

##### **Content**

After research and interviewing we concluded that the app outcome is going to be worth the effort. One of the main triggers of this development is that one of the project creator Abdulaziz Alawlaqy, had his car break down, he had to stay on the road for 4 hours under the sun waves.

With this app the user can easily get a new car in hours and save up the taxi payments.

## Motivation

To help all people have easy access to cars in any time with cheap prices, people should never worry if their car broke down.

## Consideration

Without an easy way to rent a car people will suffer unnecessarily troubles and spend hours that otherwise could have been spent in other valuable ways.

## Goal of the Project

Helping the largest amount of people to get their cars ready in a fast way.  
Reducing the time spend on car offices and decreasing the money they spend with the best online deals.

## **5. Preliminary Report**

### **5.1 The Problem**

Because of the increasing amount of people who in need of help on the roads.

### **5.2 Findings**

We found out through our interviews and social media and from the stories we hear that many people are many people are in need of an easy way to rent a car.

### **5.3 Recommendation or proposed solution:**

This project is seeking to improve the society life and an easier way of reaching solutions.

## 5.4 Cost & schedule estimates

phases	Description	Time (week)	Time (hours)	Cost 400 SR per hours
<b>Phase 1 : specification</b>	Defining what the system will do and the requirements of the system	1week	10 hours	8,000 SR
<b>Phase 2 : Design the system</b>	Designing the structure of the system and the elements inside the system	3week	50 hours	24,000 SR
<b>Phase 3 : implementation</b>	Code writing	4week	90 hours	32,000 SR
<b>Phase 4 : validation</b>	Verify the system and verify that it meets the requirements	1week	15 hours	8,000 SR
<b>Phase 5 : maintenance</b>	System optimization and bug fixes	6month	-	-
<b>TOTAL</b>	-	2 month and 1 week	165 hours	VAT(%15)+TOTAL= 82,800 SR

## 6. PLANNING PHASE 2

### 6.1 The Feasibility Study:

The idea of the app is to help people to find all available solutions and help themselves in the easiest way possible.

The app makes it easier to find the best car deals and solving any type of issue that might occur. Furthermore, it has valuable information about the time of the app goals and how to get in. It also helps to reduce the time in finding a car, which is the purpose of the app, in our opinion this project is going to help a lot of people.

Approximately the total cost of the app is around 82,800 SR, this number contains all prices and cost such as the car storage, the workers, and the programmers of the app.

The main reason of the app is to help out other in-need people. Everyone needs to rent a car from time to time, and car offices makes it harder for them. People could have saved many hours if they just knew about the app. They could have also saved tons of money if they knew about the car deals. Our app is easy to use, adaptable and comfortable to use.

## 6.2 Report Writing:

### 1- Problem Definition:

People who had car issues will try to rent a car as one of their options. And when they do, they will be faces with numerous problems and a lot of complicated process. This act takes a lot of valuable time that could have been saved. Other car offices prices varies and it's hard for a person to go and look out for prices at every car rent office. Tons of the car offices do not help the customer as they should have. They could lose interest with idea and forget about it.

### 2-Scope Objectives of " Car Sales "

To choose all kind of models and cars related to in one platform. Everybody can join and register in the app to see the available cars. We have special function that the user like being able to reminder the car delivery date, reschedule delivery for the car, and much more. Our targeted groups are common people who need a car. Everybody can join and fined their favorite car.

### 3-Alternative Solutions:

Rather than spending hours on the street just to find a car company or renting that fit with your needs we are going to build a app that will make it easier and less time consuming.

## 4- Cost and benefits of Alternatives:

phases	Description	Time (week)	Time (hours)	Cost 400 SR per hours
<b>Phase 1 : specification</b>	Defining what the system will do and the requirements of the system	1week	10 hours	8,000 SR
<b>Phase 2 : Design the system</b>	Designing the structure of the system and the elements inside the system	3week	50 hours	24,000 SR
<b>Phase 3 : implementation</b>	Code writing	4week	90 hours	32,000 SR
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<b>TOTAL</b>	-	2 month and 1 week	165 hours	VAT(%15)+TOTAL= 82,800 SR

## 5- Software impacts:

The information we got from the interviewer was very helpful for us as program developers to improve our application and we consider it to add more features for the students to get the most benefits from it. the application is used by the common of people it serves their needs. Time saving is the main key for this app. The clients will spend less time searching. They will be able to choose from a list of cars the one that fit his needs and favorite. We are also happy to get feedbacks from the clients about how helpful the application is and what would they like to add in term of features to serve their needs.

## 6- Potential Changes in the Organization:

By using our app, the client will be able to choose any car from the list. The client who has an ID number will be able to register and log in and see a list of suggested cars that is related to their needs. After registration the clients can put a reminder or choose to the car they like. To reach the client convenience we provided our app with an online chat to a helping center.



## 5.2 Project plan (by using Clickup website):

Phase 1 - Strategy

+ NEW TASK

COMPLETE

1 TASK

planning

2

+

planning

project Definition

planning

Define Requirements

+ New task

DUE DATE

PRIORITY

WHO WORKED

Mon

AA

Thu

FT

Fri

O

READY

1 TASK

Analysis

2

+

Analysis

Requirements Analysis

Analysis

Information gathering

+ New task

DUE DATE

PRIORITY

WHO WORKED

Nov 1

A

Nov 3

FT

Nov 4

AA

Phase 2 - Design

+ NEW TASK

READY

1 TASK

Designing

4

+

Designing

Choose the platform

Designing

Interface design

Designing

Component design

Designing

Database design

+ New task

DUE DATE

PRIORITY

WHO WORKED

Nov 20

AA

Nov 21

FT

Nov 24

A

Nov 27

AA

Nov 30

FT

Phase 3 - Development

+ NEW TASK

COMPLETE

1 TASK

IMPLEMENTATAION

1

+

IMPLEMENTATAION

Coding

+ New task

DUE DATE

PRIORITY

WHO WORKED

Dec 1

FT AA

Dec 20

FT A

Phase 4 - Validation

+ NEW TASK

READY

1 TASK

Validation

4

+

Validation

System testing

Validation

Component testing

Validation

Acceptane testing

Validation

Maintenance

+ New task

DUE DATE

PRIORITY

WHO WORKED

Dec 21

AA

Dec 23

A

Dec 25

AA D

Dec 27

AA D

Dec 29

FT A

**Green AA: Abdulaziz**  
**Red FT: Feras Turkstani**

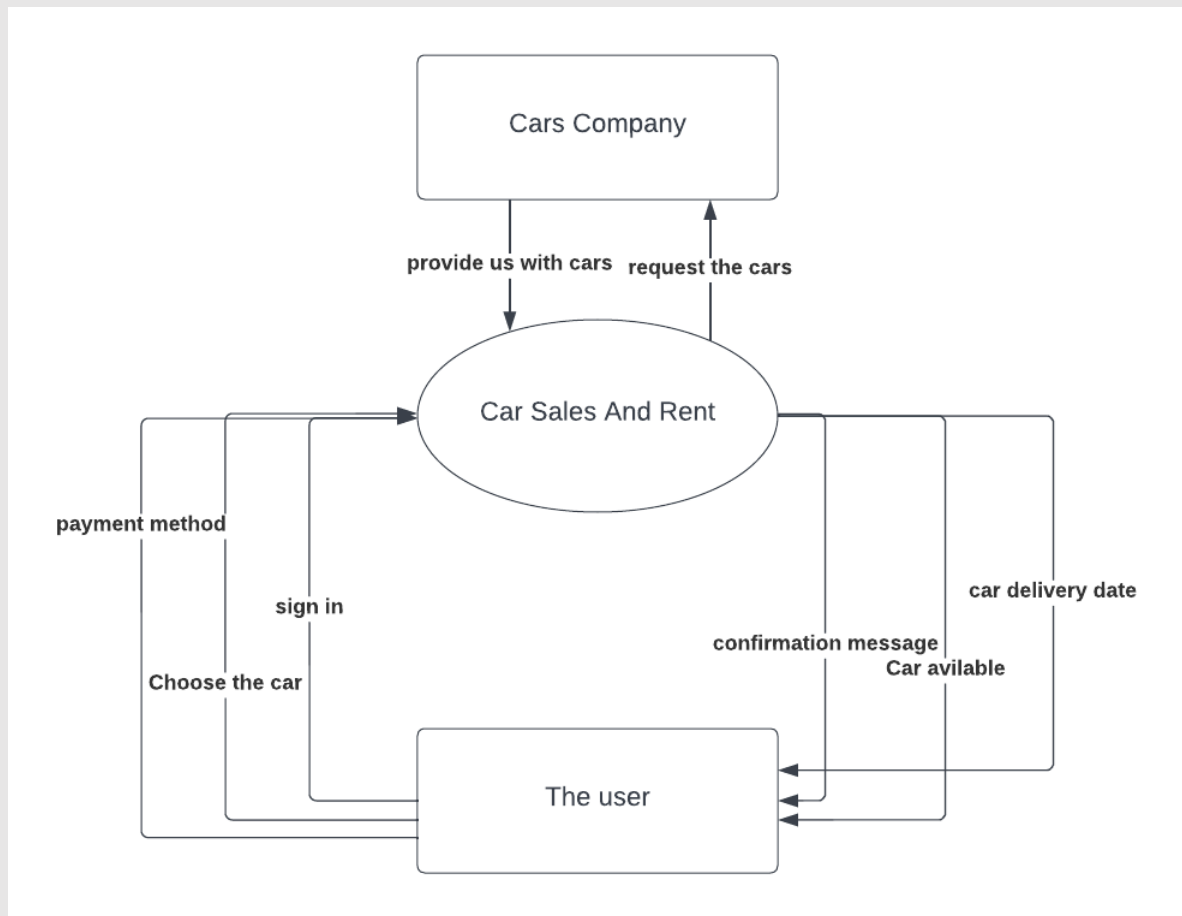
**purple A: Mohmmmed Aljouidi**  
**Purple O: Mohmmmed bantan**

# 6.ANALYSIS PHASE 1

## 6.1 Stakeholders:

- Stockholder definition
  - a. Admin
    - Those who in charge of the car office
  - b. The Customers
    - The clients who in need of the car.
  - c. Other stakeholders
    - Programmers, Car companies, Workers, Managers, Car distributors, Security staff

## 6.2 Context Diagram:19



## 6.3 Event Table:

1. Sign in	Sign in (in)	Signed-in to the customer's page
2. Requesting for an order	Requesting for an order (out)	The order is requested
3. Buying	Buying (in)	The customer is buying a car
4. Renting	Renting (in)	The customer is renting the car from the office
5. Receipt	Receipt (out)	The customer receives a receipt for his order
6. Check-in receipt	Check-in receipt (Out)	The customer receives the check-in receipt for his order
7. Car delivery	Car delivery (Out)	The car is sent to the customer
8. Car record	Car record (in)	The car is recorded under the customer's name.
9. Office warranty	Office warranty (out)	The office provides car warranty for the customer
10. Reporting car	Car report(out)	The office provides a scar report to a user.

## 6.4 Functional requirement:

ID	Requirement Definition
<b>FR1</b>	<b>Sign in</b>
FR1.1	The office shall allow to all customers to gain the office account supposed username and password.
<b>FR2</b>	<b>Requesting for an order</b>
FR2.1	The office shall identify the possible locations to the customer to allow him to request and choose one of the available locations
<b>FR3</b>	<b>Buying</b>
FR3.1	The office shall allow the customer to be able to buy a car through the car office
<b>FR4</b>	<b>Renting</b>
FR4.1	The office shall allow the customer to be able to rent available cars through the car office
<b>FR5</b>	<b>Receipt</b>
FR5.1	The office will give all customers' who ordered a receipt
<b>FR6</b>	<b>Check-in receipt</b>
FR6.1	The office gives a check-in receipt including all the necessarily information's
<b>FR7</b>	<b>Car delivery</b>
FR7.1	The office shall send the car to the customer in the agreed time
<b>FR8</b>	<b>Car record</b>
FR8.1	The office shall record the car under the customer's name
<b>FR9</b>	<b>Office warranty</b>
FR9.1	The office shall give the customer a car warranty
<b>FR10</b>	<b>Reporting the car</b>
FR10.1	The office will be notified by the order and the customer will receive a car report

### **Interface requirements**

- Show the available car order request.
- Shows the customers personal information's and orders, along with previous orders.
- Ability to print request order receipt, confirmation orders, previous orders.

### **Business Requirements**

- In case of an order the customer must log-in to his account and enter a PIN code.
- When clicking the Confirmation Button, it moves the request to the Confirmed tab
- In a case of canceling an order, the customer can select a reason from many. canceling options for their reasons, along with a box for writing their own reason.

### **Regulatory/Compliance Requirements**

- The office database should have a functional audit trail.
- The office system will prevent any unauthorized access.

### **Security Requirements**

- The office system manager can see, delete, and have full control over all customer requests.
- Customers cannot make unauthorized events.
- The office system ensures customers integrity and privacy even under system attacks.
- In case of an attack the office system is sent to the security program protocol

## **6.1 Non-Functional requirement:**

### **User Interface**

**UI1:** Depending on the authorized access level gives specific event access.

**UI2:** The office system will be easy to use interface, good on the eye design and reliable.

**UI3:** The office system interface will be using the GUI .

**UI4:** The office system interface will be editable by certain authorization level.

**UI5:** The office system interface will have changes based on the customers suggestionsin the suggestions box.

- **Hardware Interface**

**HI1:** The office system will be implemented in a hardware-independent manners and won't relies on a specific hardware interface, rather it would support all hardware devices including PCs, Laptops, Mobile Phones etc.

- **Software Interface**

**SI1:** The office system management team will have access to customer's database to extract the necessary information such as username and password to ensure the user access to the office system management system.

**SI2:** The software interface shall be manageable and maintainable and adapts to any environment and software system.

- **Security Requirements**

**SE1:** The office system will provide log-in page which contains the username,password and a 2-Step Verification method if chosen.

**SE1.1:** The office system username and password will math the ones on the website

**SE1.2:** On the first log-in time, the office system will send a PIN code to the registered mobile phone number to increase the security.

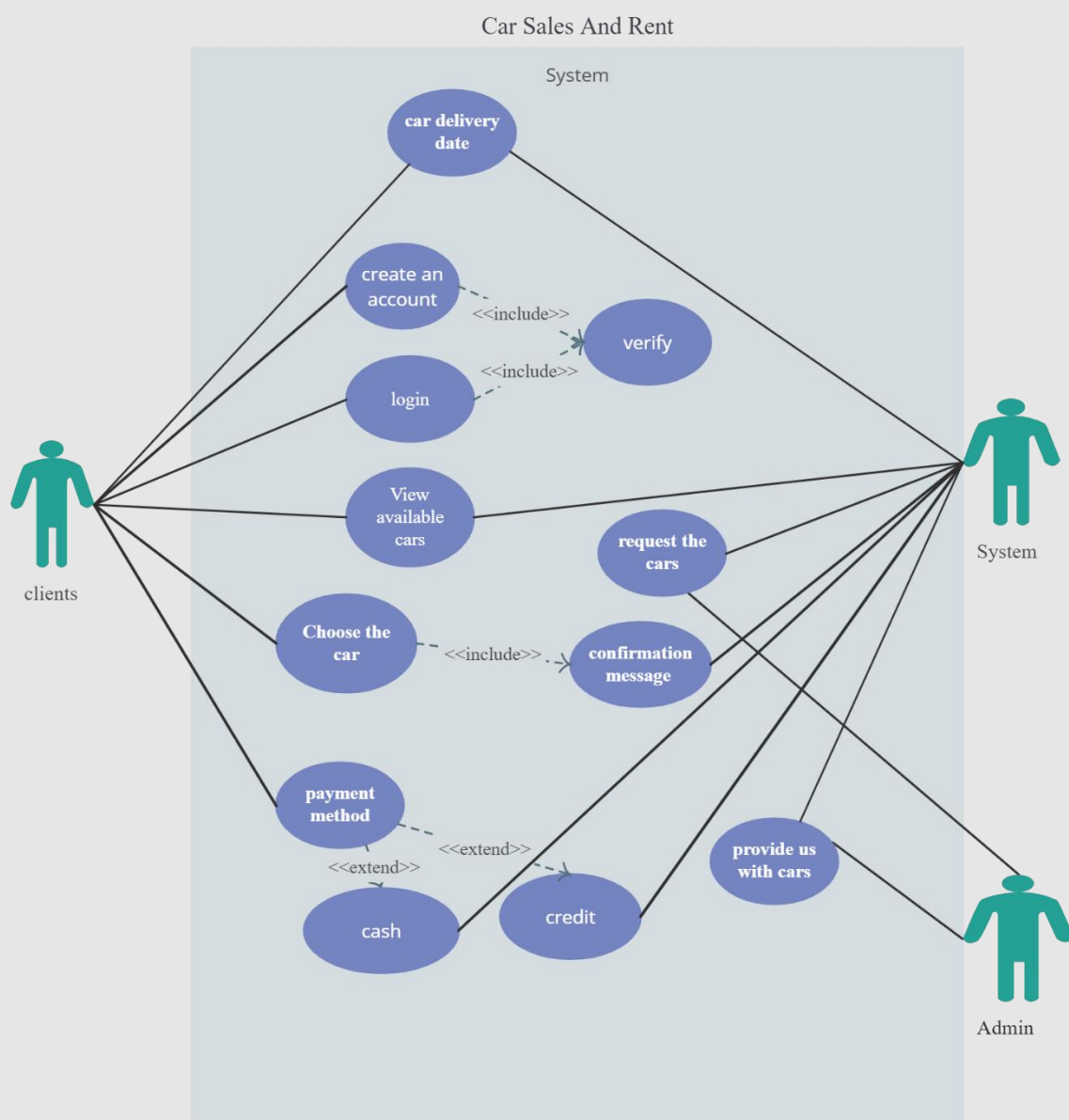
**SE2:** The office system will only permit user to access the events or services whichhe/she have the authority to access.

**SE3:** The office system will only make authorized customers to make, change, delete based on their needs

**SE3:** Based on the authority access level, the higher the authority level the more changes the person can make, making the office system manager have the highest levelof authority. Thus, making him able to edit or remove based services on his needs.



## 6.1 Use Case Diagram:



## Car Delivery Date

UC 1	<b>Scope:</b> The Office System <b>Level:</b> primitive <b>Primary actor:</b> Clients <b>Precondition:</b> The client must be in the office data base <b>Stakeholders and Interests:</b> The Admin, The Clients
Scenario	<ol style="list-style-type: none"> <li>1) After the client has already made an order the office security system will make sure the order is legitimate and all the data are correct</li> <li>2) The office system will notify the client with a car delivery date through his email and his phone number</li> </ol>

## Create an account

UC 2	<b>Scope:</b> The Office System <b>Level:</b> mandatory, primitive <b>Primary actor:</b> the clients <b>Precondition:</b> The client must be in the office data base <b>Stakeholders and Interests:</b> admin, clients, security staff
Scenario	<ol style="list-style-type: none"> <li>1) The client has to fill necessarily data such as username, password, email and phone number along with other needed informaion</li> <li>2) After the informaions are checked a message will be sent to the client email and phone number for conformation</li> </ol>

## Login

UC 3	<b>Scope:</b> Security staff of the office system <b>Level:</b> mandatory, primitive <b>Primary actor:</b> the clients <b>Precondition:</b> The client must be in the office data base <b>Stakeholders and Interests:</b> the office system, security staff
Scenario	<ol style="list-style-type: none"> <li>1) The office security system receive an attempt to login</li> <li>2) The office security system will verify the client information</li> <li>3) If the information are correct the client will login to the systm, if not the client will have to try again for up to 5 attempts</li> <li>4) After 5 incorrect attempts are made the login will be paused and a notify message will be sent to the client email and phone number</li> </ol>

## View available cars

UC 4	<b>Scope:</b> The Office System <b>Level:</b> primitive <b>Primary actor:</b> Clients <b>Precondition:</b> The client must be in the office data base <b>Stakeholders and Interests:</b> The Admin, The Clients
Scenario	<ol style="list-style-type: none"> <li>1) After the client has already made an order the office security system will make sure the order is legitmaent and all the data are correct</li> <li>2) The office system will notify the client with a car delivery date through his email and his phone number</li> </ol>

## Choose the car

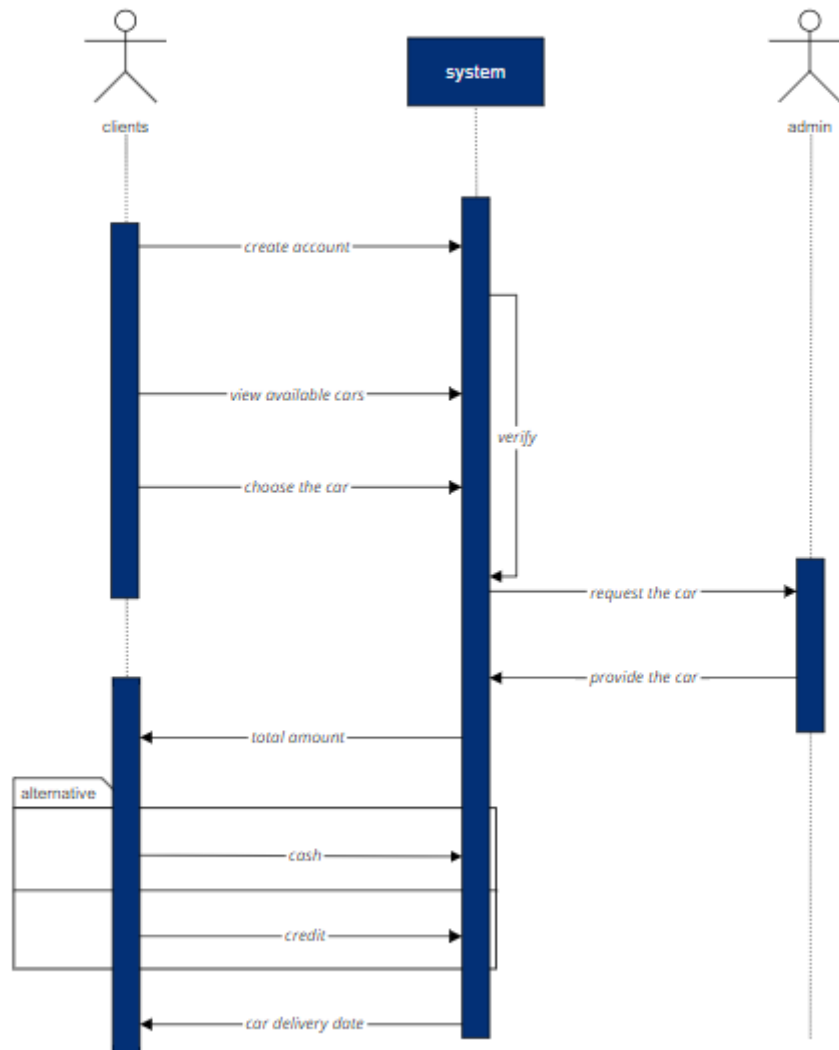
UC 5	<b>Scope:</b> The Office System <b>Level:</b> primitive <b>Primary actor:</b> Clients <b>Precondition:</b> The client must be in the office data base <b>Stakeholders and Interests:</b> The Admin, The Clients
Scenario	<ol style="list-style-type: none"> <li>1) After the client has already made an order the office security system will make sure the order is legitmaent and all the data are correct</li> <li>2) The office system will notify the client with a car delivery date through his email and his phone number</li> </ol>

## Payment method

UC 6	<b>Scope:</b> The Office System <b>Level:</b> primitive <b>Primary actor:</b> Clients <b>Precondition:</b> The client must be in the office data base <b>Stakeholders and Interests:</b> The Admin, The Clients
Scenario	<ol style="list-style-type: none"> <li>1) After the client has already made an order the office security system will make sure the order is legitmaent and all the data are correct</li> <li>2) The office system will notify the client with a car delivery date through his email and his phone number</li> </ol>

## 7 System Sequence Diagram

### Car Sales And Rent



## 8 Class Diagram

