Faculty of Computers and Information

(Graduation Project Documentation)

Car Deals

(Flutter Application)

Supervised by

Dr. Noura Elsemary

2022/2023

Team Members

Ahmed Abdelmenem Ibrahem Nassef

Ahmed Ibrahem Abdelmaksoud Zidan

Ahmed Saad Abdelrahman Negm

Salah Ashraf Rashad Behairy

Karim Mostafa Fahmy Hussein

Ibrahem Ashraf Elsayed Eltahan

Acknowledgment

Firstly, thanks GOD. Then we are grateful to our project guide Dr. Noura Elsemary for the guidance, inspiration, and constructive suggestions that helpful us in the preparation and execution of the project.

We would like to acknowledge all the assistance and contributions of Faculty of Computers and Information of Menoufia university for supporting us with all that is needed starting from the books, and ending with the full care that it provided us with, to help us to be professionals in the field of Information Technology.

We sincerely thank our parents, families and friends for all support, encouragement and patience they have provided us with throughout the project.

Summary

Development of an interactive car sale system which lets a customer to find a car and its details is the main objective of this project. Both the user and the administrators can access enter the details of every car. Administrators are responsible of maintaining the details of vehicles like the Manufacturer information, Year, Model, Price, and Kilometers traveled. The system provides a search algorithm which enables the user to find a car with all details displayed matching the car model. Users can also view information of vehicles purchased and their particulars. Menus and toolbars are part of the user interface implemented in the project.

Table of Content

Contents

List of Figures

Chapter 1: Introduction

1.1 Project Description:

In our project, we will help people to sell their car in a safe way and helps people who want to buy a car in a safe way. This app consists of two apps, one for the user and another to the admin. In the process of user that needs to sell his car. The user will use the user app to send a request to admin for checking his car, and the admin will receive the user request and give the person appointment to go to the company to check his car. When the user agrees with the inspection engineer about the car specification and price, the official will raise the car in its condition and price on the application. In the other hand the process of the user that needs to buy a car should enter the user app and explore the car that he needs, then sends a request to an admin that he needed to buy this car when he founds what car he needed.

1.2 Goals

The goal of the project or application is connecting the customer with the admin. It is to meet people's needs with searching, buying, or selling cars, and this is the nominal and primary goal of our project. Now it is easy to work with mobile phones, so why not develop an application that connects a customer to the admin? Now it is very easy with our application. Buying or selling the car you want in record time and time is our requirement, which is the goal of this app.

1.3 Objectives of Project

-- The main aim of this project is to create a System that can work on android and it is easy and not complicated to deal with and easy to register and make a personal account and secure this information to preserve the safety of the customers.

-- Easy access for users because they can view the cars that is available in the application.

-- It is also time saving as manual work is less.

-- There is less chance of error.

-- Enable users to sign up easily.

-- Easy communication with admin.

-- Making smart design.

-- Providing efficient marketing of cars.

1.4 Tools of project:

1-Dart

2-Firebase

3-Figma

4-Flutter

5- Android Studio

Chapter 2: Related Work

2.1 Related Applications:

1) eBay motors

eBay Motors is one of the biggest marketplaces for buying and selling cars. This app handles all that must be done with automobiles, from cars, trucks and car parts. You can always use eBay Motors to list your cars, you'll be connected to interested buyers and there's also an escrow service that'll make a sweat deal happen between a car seller and the buyer.

Selling used or new cars in the USA is one of the features of eBay Motors. Listing cars is easy and there's also a community of auto enthusiasts where buyers and sellers can interact with each other, if you're looking for an app to sell cars online, you should try eBay Motors.

2) Edmunds

Edmunds also ranks as one of the best apps to sell cars. There’s a lot you can do than list cars on Edmunds, Edmunds is very popular due to the features it offers. You can sell used and new cars on Edmunds, if you want to buy cars, trucks or SUVs online, you can search for them easily on Edmunds. You’ll find a large inventory of cars on Edmunds, the app is also user-friendly and makes navigation easy.

3) Carvana

Carvana is an exclusively-online dealership. In the last few years, it's gained notoriety as a one-stop-app for researching, comparing and financing vehicles all online.

Carvana sells used and new cars, and you can trade in your vehicle as well. With an account, you can “favourite” cars for quick comparison and get an estimate for your trade-in. Each vehicle is photographed multiple times — exterior and cabin — and any imperfections are clearly noted. After you complete a purchase, you can track your delivery, get recall notifications and make monthly payments all through the app.

Carvana's financing options are decent, though it features a very high maximum rate at a staggering 27.9%. However, the income requirements are very low, only requiring $4,000 of annual income.

4) TrueCar

TrueCar lets you view what other people paid for similar cars, new and used. You can shop by brand, compare model trims and view TrueCar's best-rated vehicles. When you select a car, TrueCar shows you a personalized offer from a dealership that includes taxes and fees, which means less guessing on the final price. And when you're ready to sell your car, you can get an estimate and skip the trade-in hassle at the dealership.

It works with over 16,000 dealerships nationwide, so it can give you an accurate idea of what you should be paying for your car. And it also works with organizations to help you find special deals and discounts you might qualify for. However, your contact details may be shared with these dealerships and organizations, so be prepared for sales calls.

5) CarFax

CarFax is the most well-known source for vehicle history reports — and its app makes it easy to look at the history of used cars in your area. It allows you to filter cars based on reported accidents or damage, the number of previous owners, how the car was used and its service history.

Each listing offers a free CarFax report along with pictures of the car and dealership contact information. You can even estimate your monthly payment for each car to ensure it fits your budget.

But it lacks calculators and overall reviews for specific models. So if you're hoping to find the best deal out there, it may be worth downloading an app like Edmunds or KBB to look at comparable listings in your area.

6) AutoTrader

There are several reasons that AutoTrader is popular with both buyers and sellers. For buyers, the advanced search tools make it simple to find what you're looking for. For sellers, some of the listing package options come with a money-back guarantee, meaning that if you don't make a sale, you won't be charged.

Another thing that makes AutoTrader one of the best websites to sell a car is that you can sell it to a dealership or receive an instant cash offer. AutoTrade can be useful if you're more concerned with selling your vehicle fast than squeezing out as much profit as possible.

7) Hemmings

Hemmings is one of the most popular sites for classic car enthusiasts. When you make a listing, it has the potential to reach millions of prospective buyers. This site is a bit different from the others, in a good way, because the people who visit the website are super into cars and usually know what they're looking for.

When you sell a classic or collectible car through this site, you'll deal with someone who understands your car and its auto transport needs. This can be a weight off your shoulders compared to some of the annoying potential interactions with people buying a car they know nothing about for practical reasons.

2.1 Provided Services:

In our application, there are many information about it:

- Admin panel for the admin that he can upload cars.
- More options for the admin to give himself the control over the site.
- Page for the users that they can login and see the cars in the application.
- Users can buy or sell car but after communication with the admin.
- Users can get any information about any car he needs.
- In our application, users can pay by using credit card.

Chapter 3: System Analysis

3.1 System Requests:

1) Saving time

2) Easy to use

3) Availability of Internet connection.

4) take users names and phones number and save it and use it to record the communication.

5) Provides data backup and restore.

6) Saving efforts

3.2 User Requirement:

1) Sign up

Allows new users to fill registration form which contains information such First-name, Last-name, User-name, Mobile phone, Confirmation email address and Password to create new user account.

2) Login

Allows registered users to log in to their profile and access their home page, profile, posts, etc.

3) Search for admin

Allows the admin to search for the user to communicate with him

4) Search for user

Allows users to search for admin to communicate with him.

5) Information about cars

Users can see any information about the cars.

6) User profile

It has all the information about the users.

7) Add users

The admin can add new users.

8) Add cars

The admin can add new cars.

9) Update user profile

Through which users can modify their information and add new information as they can also change their images.

10) Sign out

Allows Logged in user to sign out from his account

3.3 System Requirements:

3.3.1 Functional Requirement:

1) Login
2) Sign Up
3) User profile
4) Search about car
5) Search for admin

3.3.2 Non-functional Requirement:

1) Usability
2) Consistency of colors
3) Flexibility in moving between pages

4) Reliability

5) Readable Results

6) Efficiency

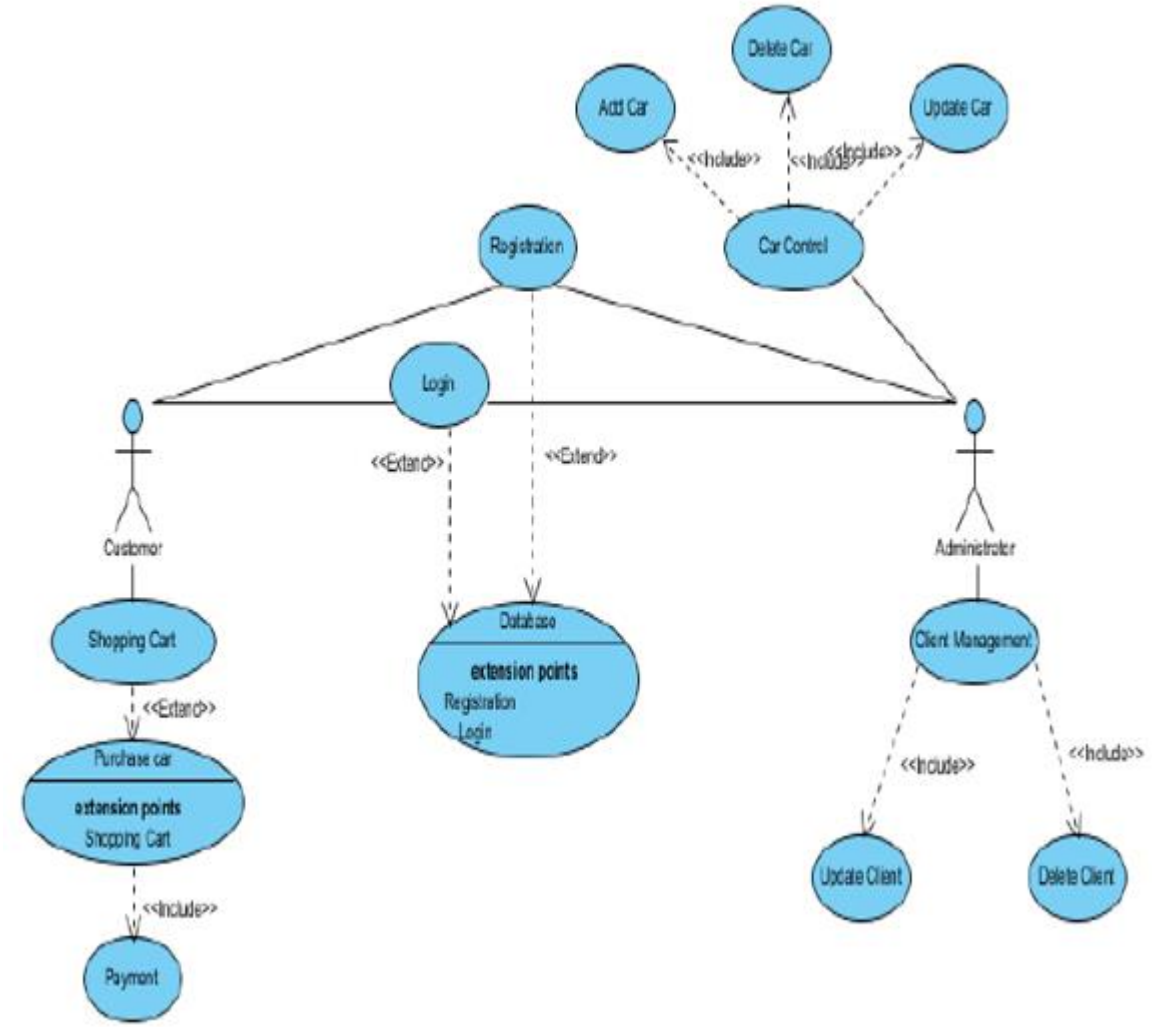
7) Security

8) Performance

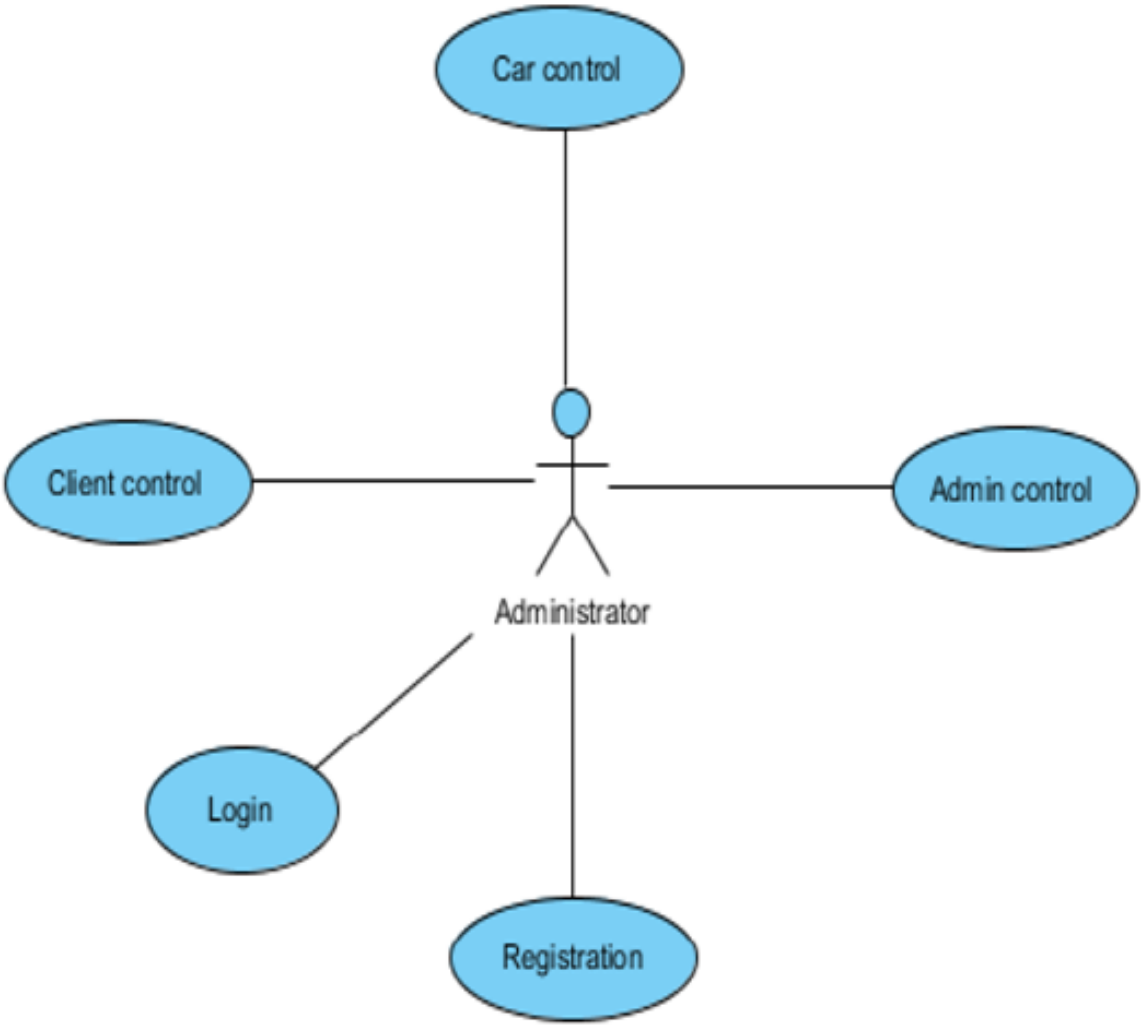
3.4 Methodology:

3.4.1 Use Case Diagram:

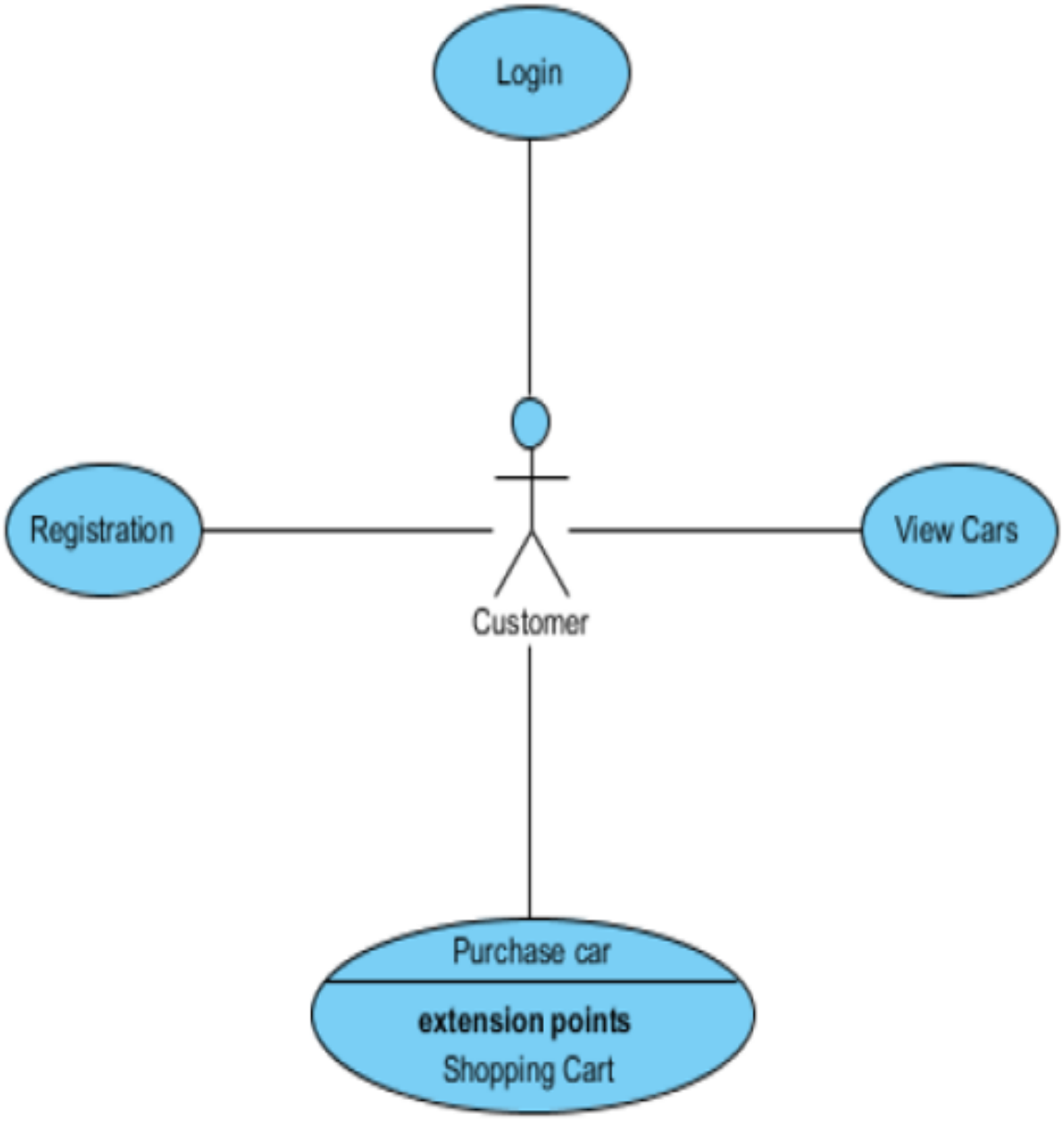
A UML use case diagram is the primary form of system/software requirements for a new software program underdeveloped. Use cases specify the expected behavior (what), and not the exact method of making it happen (how). Use cases once specified can be denoted both textual and visual representation (i.e., use case diagram). A key concept of use case modeling is that it helps us design a system from the end user's perspective. It is an effective technique for communicating system behavior in the user's terms by specifying all externally visible system behavior.



UML Diagram 1 Use Case Diagram

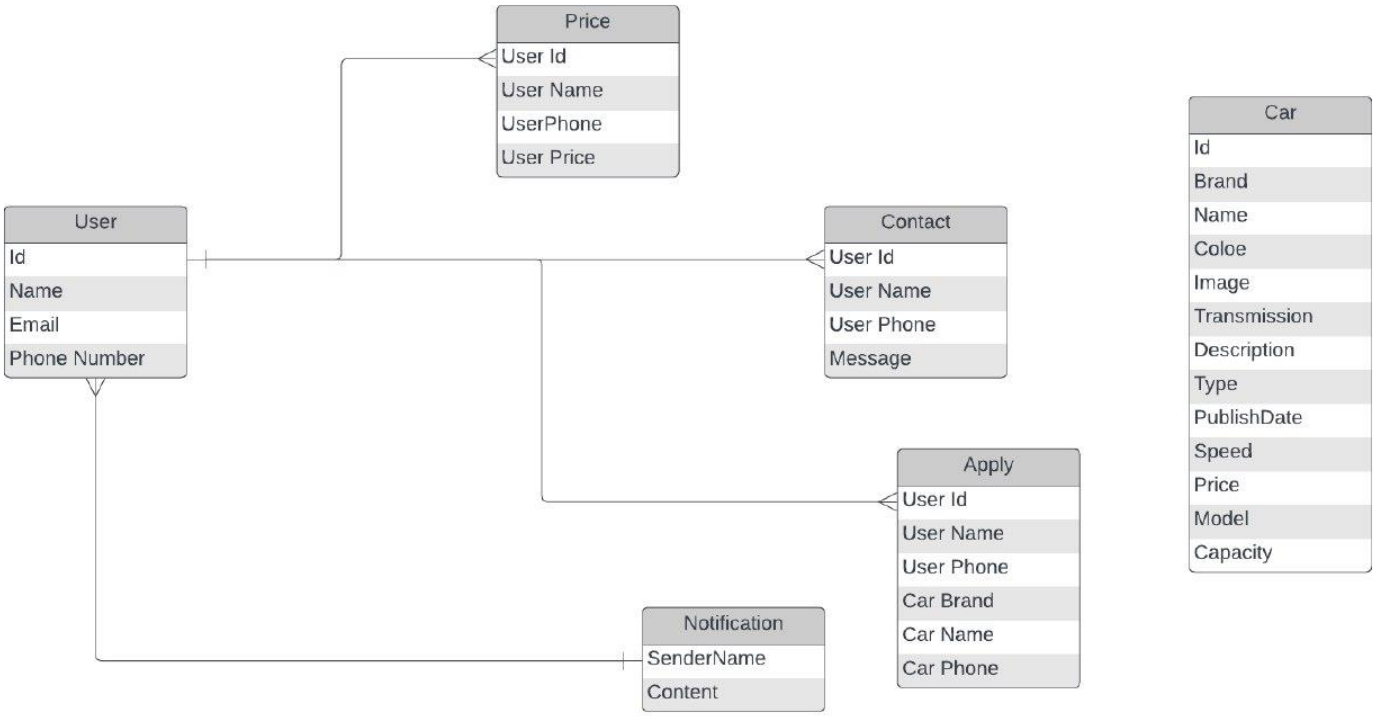


UML Diagram 2 Use Case Diagram



UML Diagram 3 Use Case Diagram

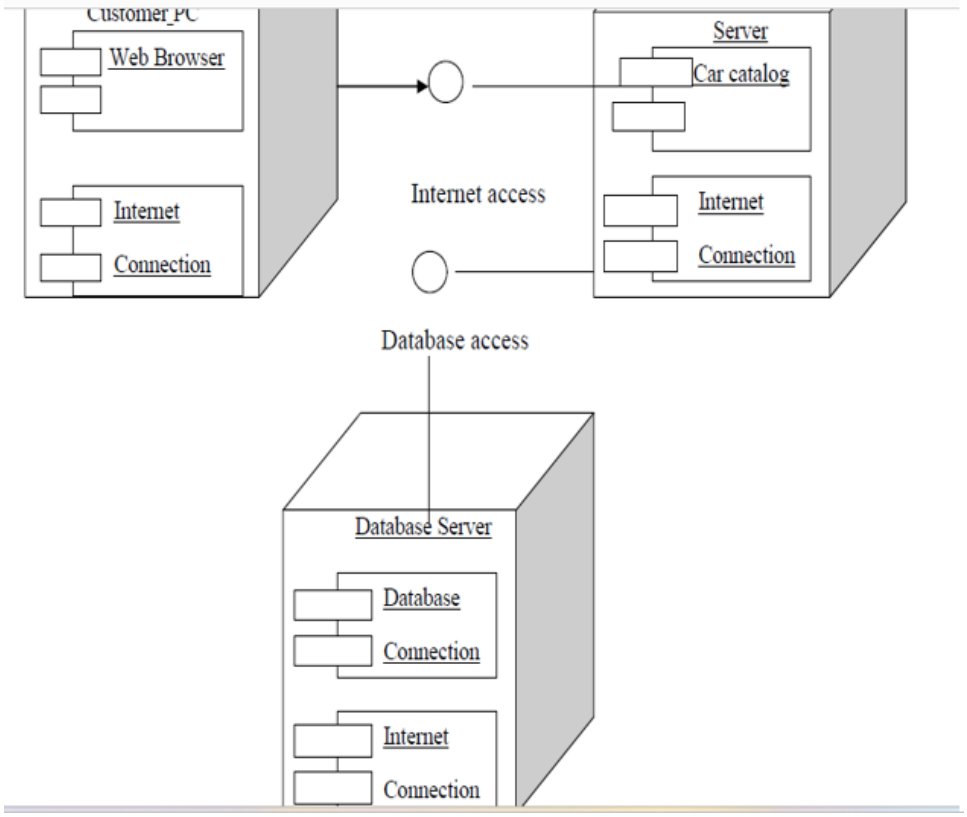
3.4.2 ERD Diagram:



UML Diagram 4 ERD Diagram

3.4.3 Deployment Diagram:

A **deployment diagram** in the Unified Modeling Language models the *physical* deployment of artifacts on nodes. To describe a web site, for example, a deployment diagram would show what hardware components ("nodes") exist (e.g., a web server, an application server, and a database server), what software components ("artifacts") run on each node (e.g., web application, database), and how the different pieces are connected (e.g. JDBC, REST, RMI).



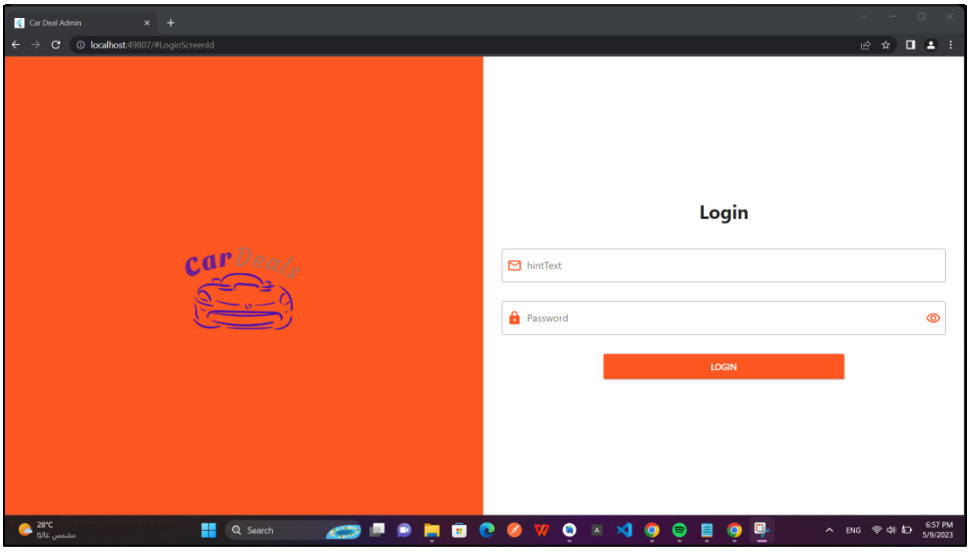
UML Diagram 5 Deployment Diagram

Chapter 4: System Design

4.1 Admin Panel:

1) Login

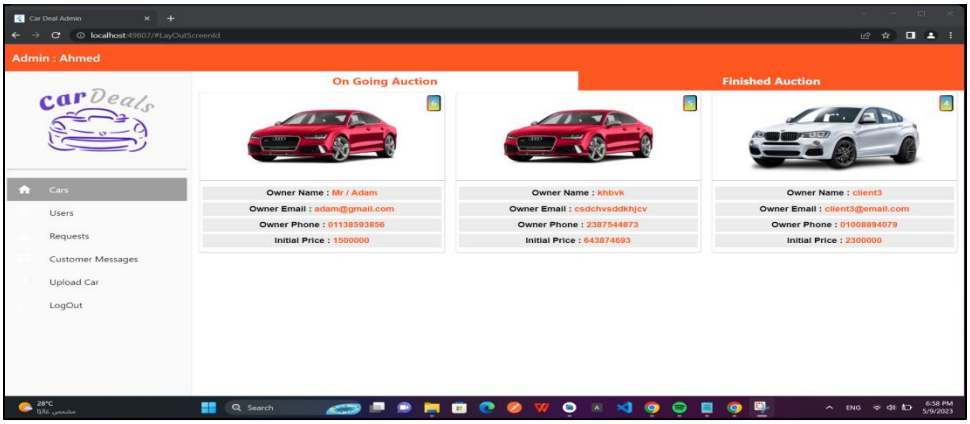
--Admin should login to admin panel first, to he can enter to it.



Admin Panel 1 Login

2) OnGoing Auction

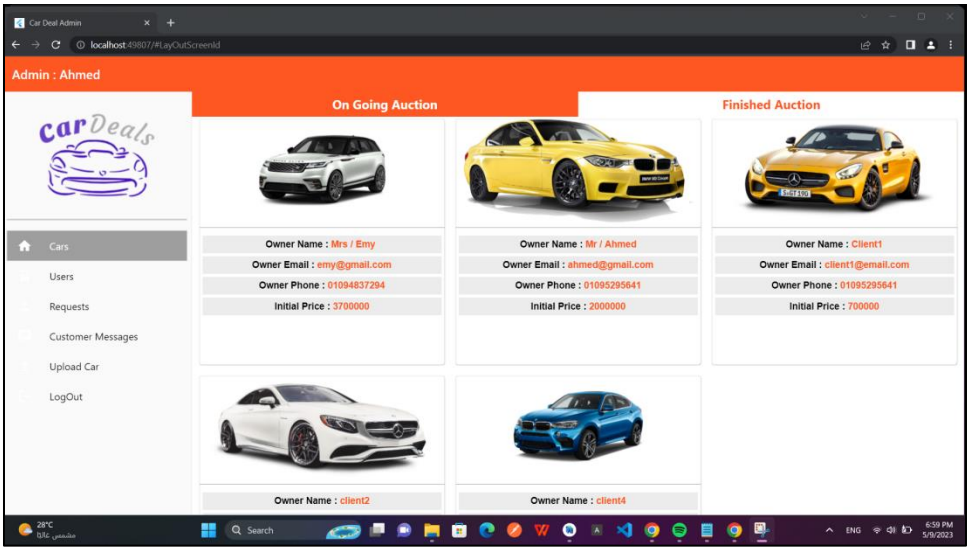
--Admin can keep an eye on the onGoing auctions.



Admin Panel 2 OnGoing action

3) Finished Auction

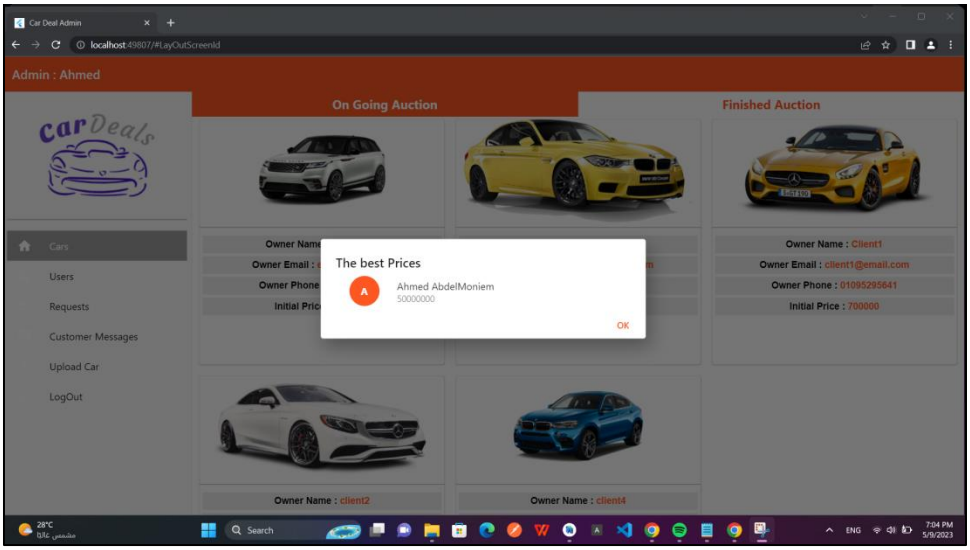
--Admin keep an eye on the finished auctions to select the best price of auction.



Admin Panel 3 Finished action

4) Best Price for finished Action

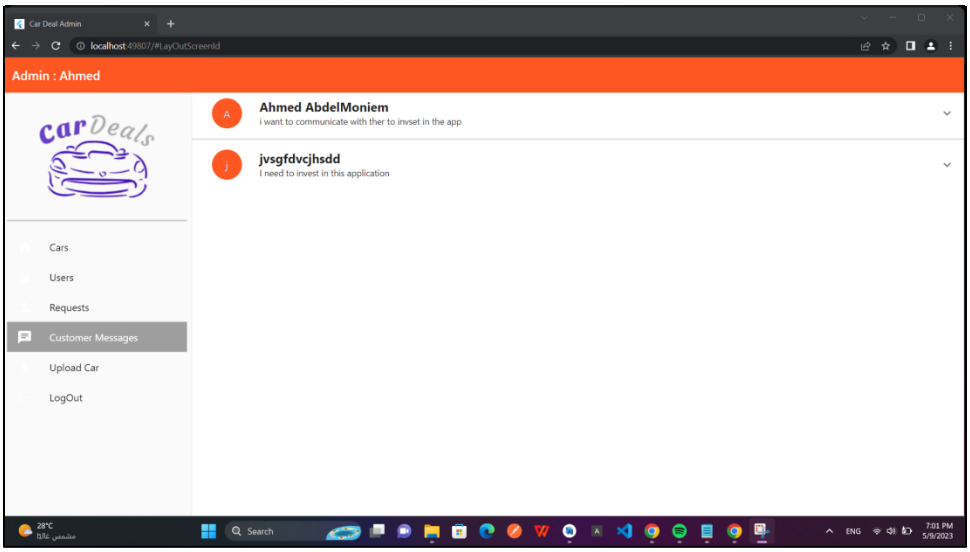
--Admin show the best price of specified finished auction.



Admin Panel 4 Best price for finished action

5) Customer Messages

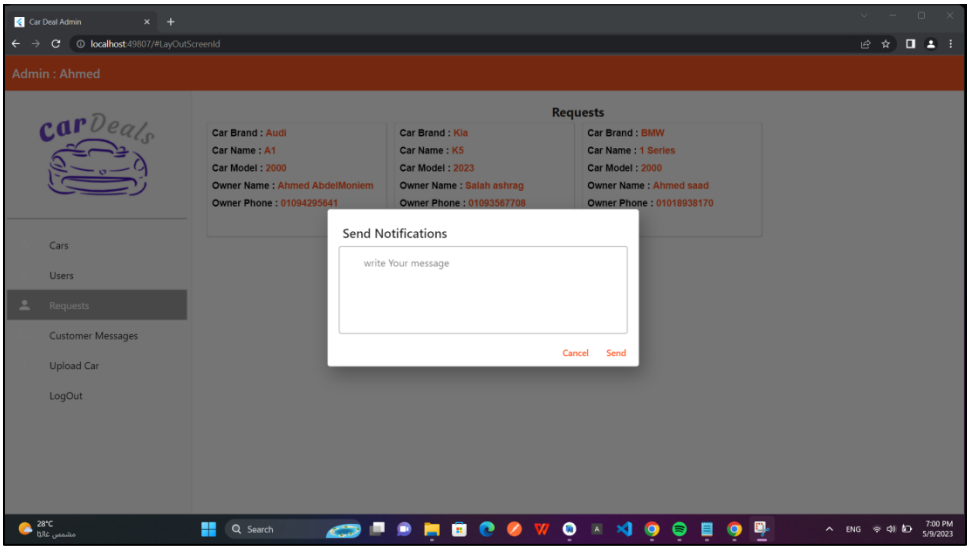
--Admin can see the user messages in this screen.



Admin Panel 5 Customer Messages

6) Sent Notification for requests

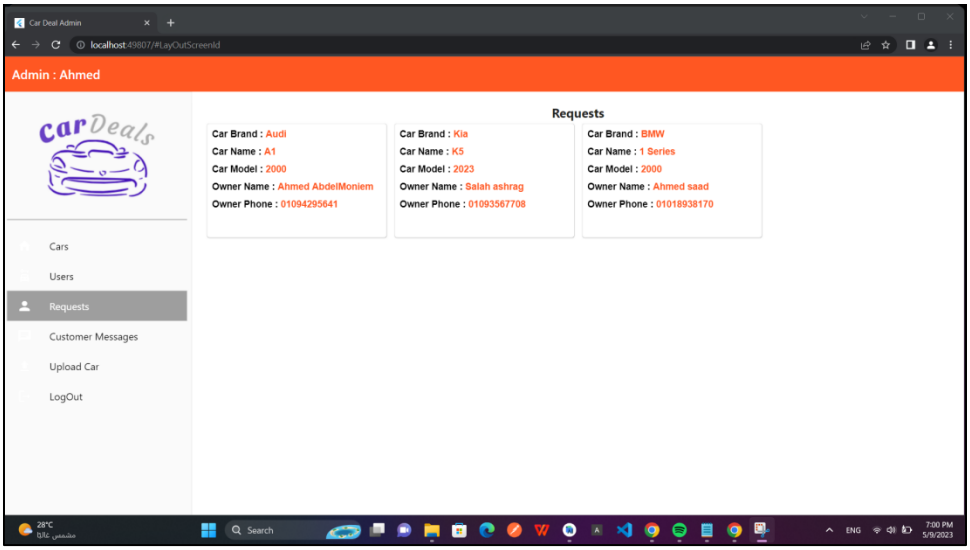
--Admin send notifications contain the date and location to users that applied requests to check his cars.



Admin Panel 6 Sent notification for requests

7) Requests

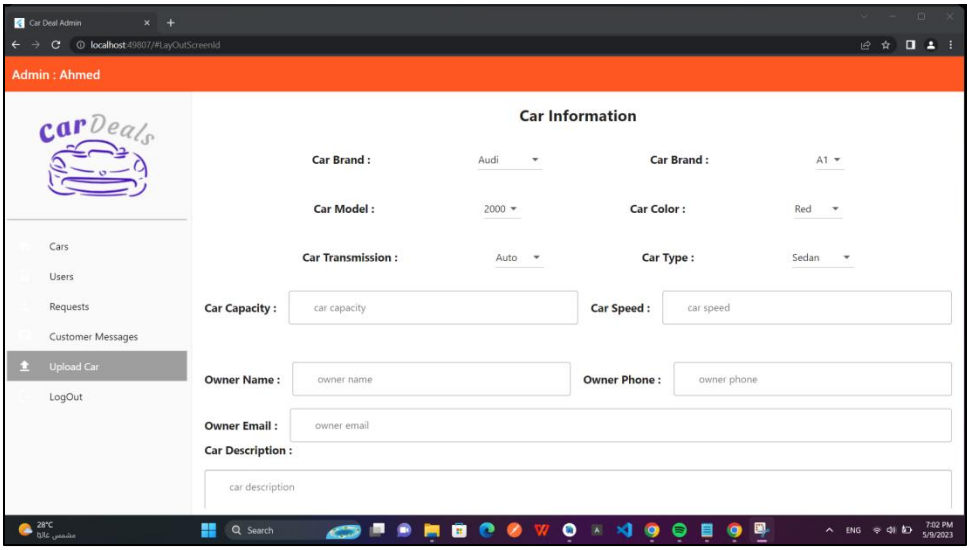
--Admin can see user requests to check his cars



Admin Panel 7 Requests

8) Upload Car

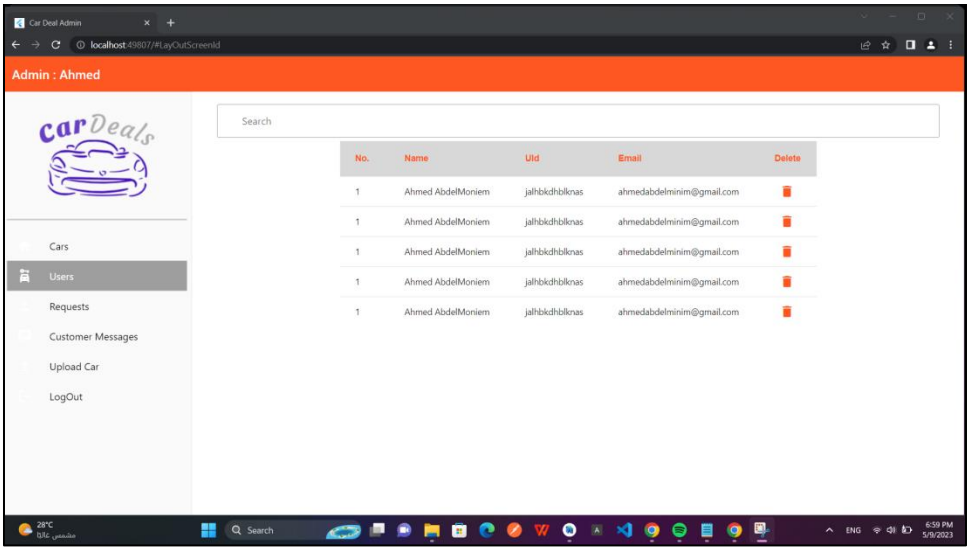
--Admin can upload cars for making auction on it.



Admin Panel 8 Upload Car

9) Users

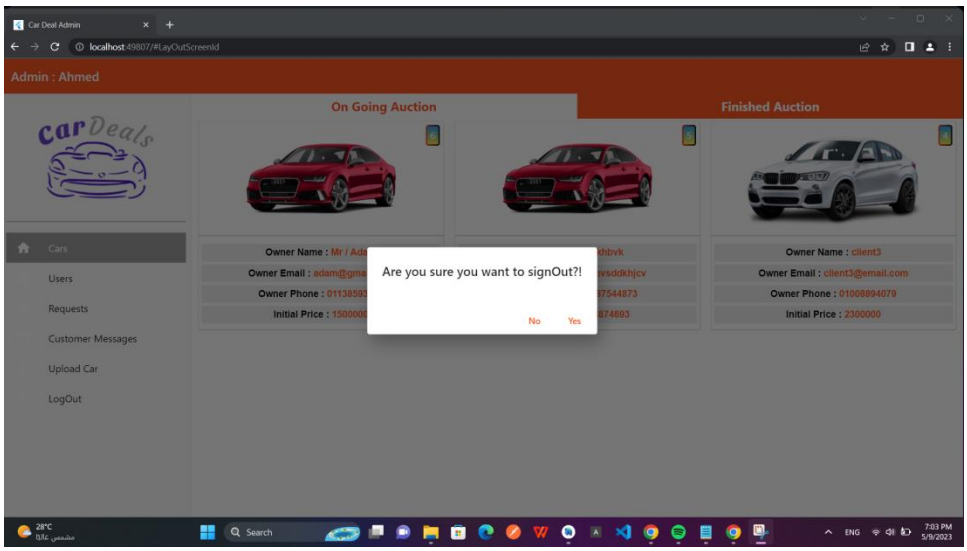
--Admin can see the list of users that using the application.



Admin Panel 9 Users

10) Logout

--Admin can logout from admin panel.

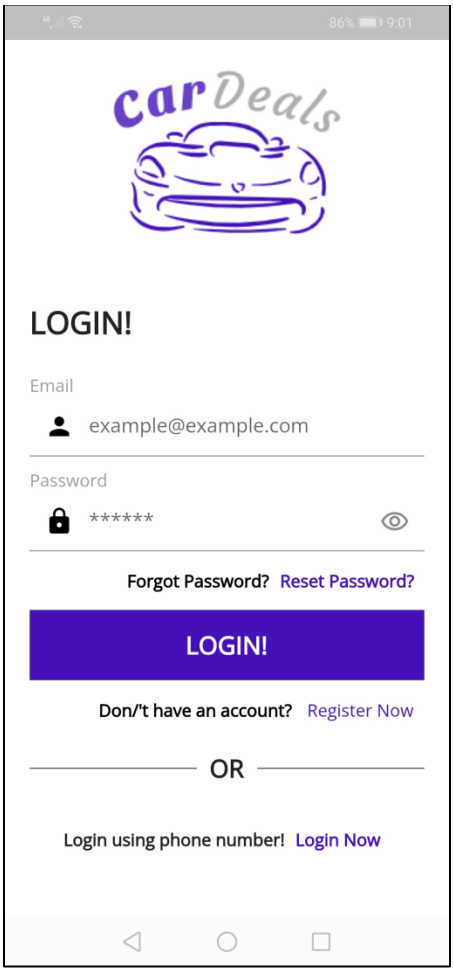


Admin Panel 10 Logout

4.2 Application Screens

1) Login

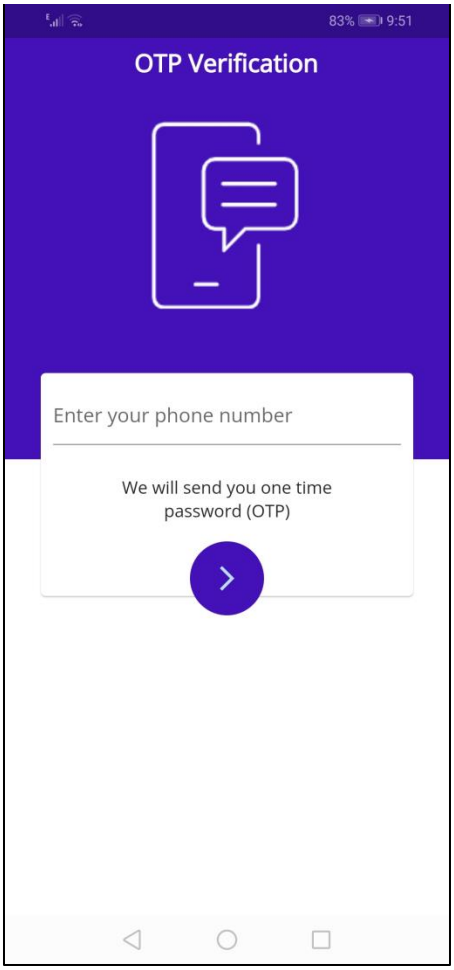
-- first, User should login to the application with username and password.



Application Screens 1 Login

2) Login With Phone

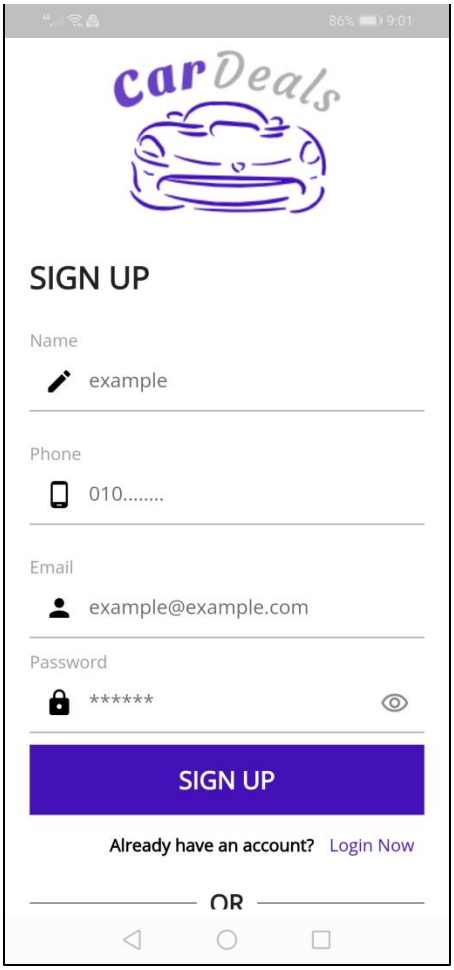
-- another way to login in the application by phone number using OTP.



Application Screens 2 Login With Phone

3) Sign Up

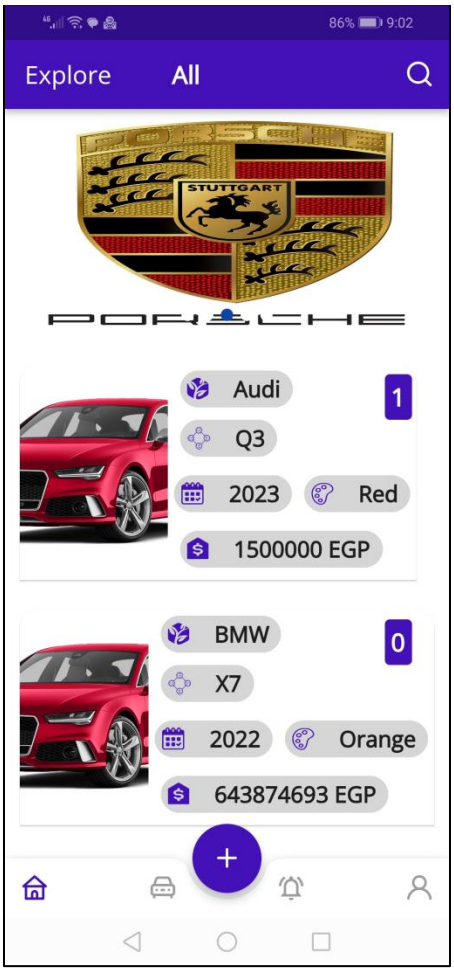
-- User can create an account by name, phone number, email, and password.



Application Screens 3 Sign Up

4) Home Page

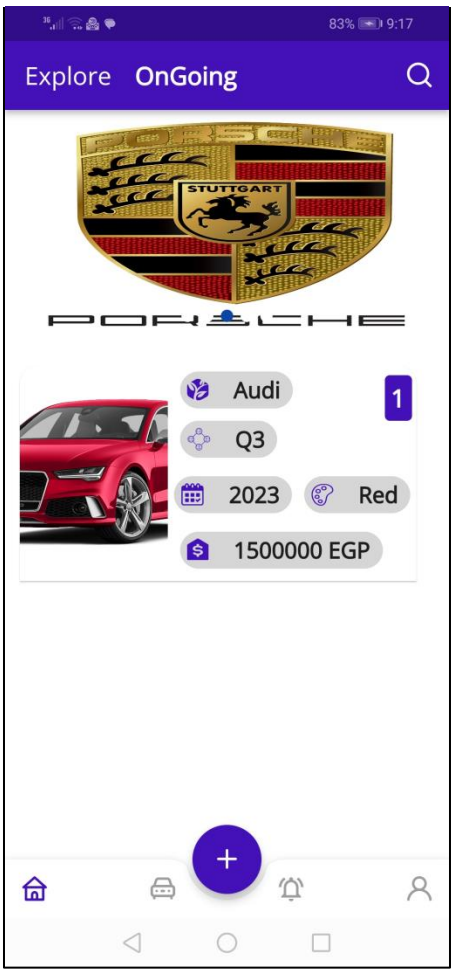
-- in this screen, the home page of application that contains Two Parts , the first part that belong to the advertisements, and the second part show the cars in ongoing auction or in finished auction .



Application Screens 4 Home Page

5) Ongoing Cars

-- in this screen, the User can show the car that in ongoing auction only by making filter.



Application Screens 5 Ongoing Cars

6) Finished Cars

-- in this screen, the User can show the car that in finished auction only by making filter

Application Screens 6 Finished Cars

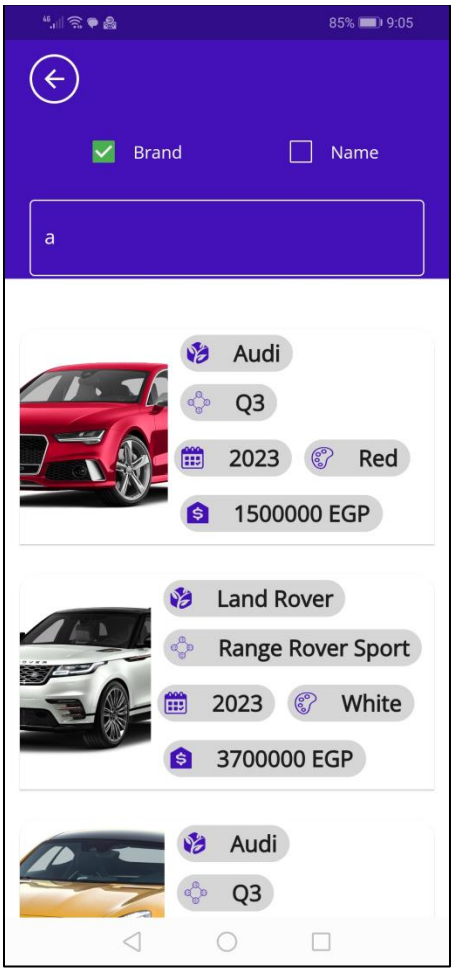
7) Categories

-- in this screen, Classifying the cars depending on brand and shape type .

Application Screens 7 Categories

8) Searching About Cars

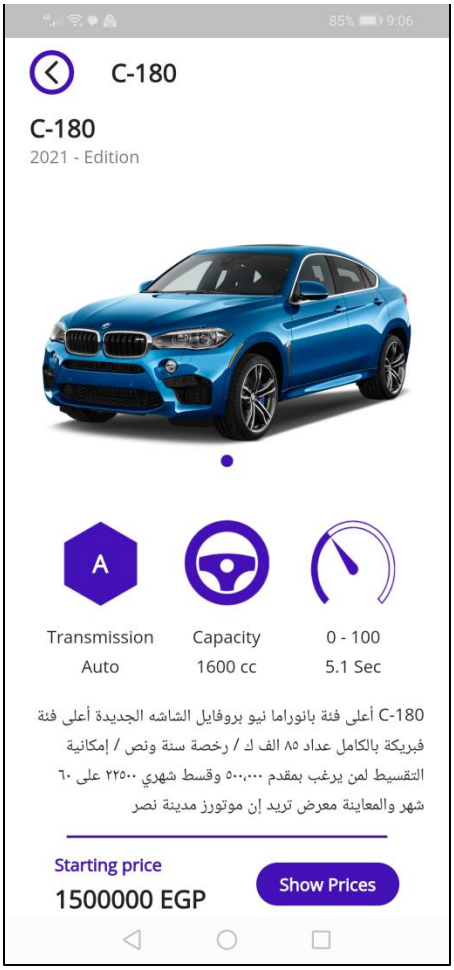
-- in this screen, User can Make search about any car by its brand or name.



Application Screens 8 Searching About Cars

9) Information About Cars

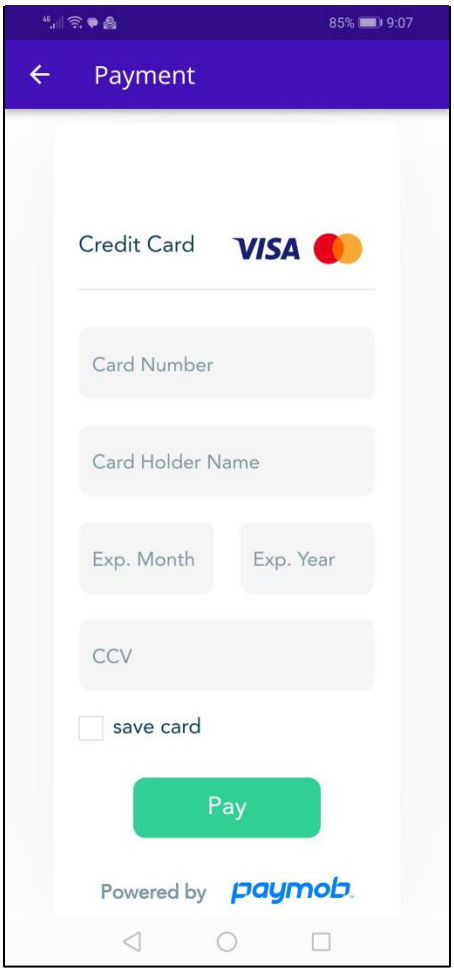
-- in this screen, User can get all information about Specified car after choosing it.



Application Screens 9 Information About Cars

10) Payment Screen

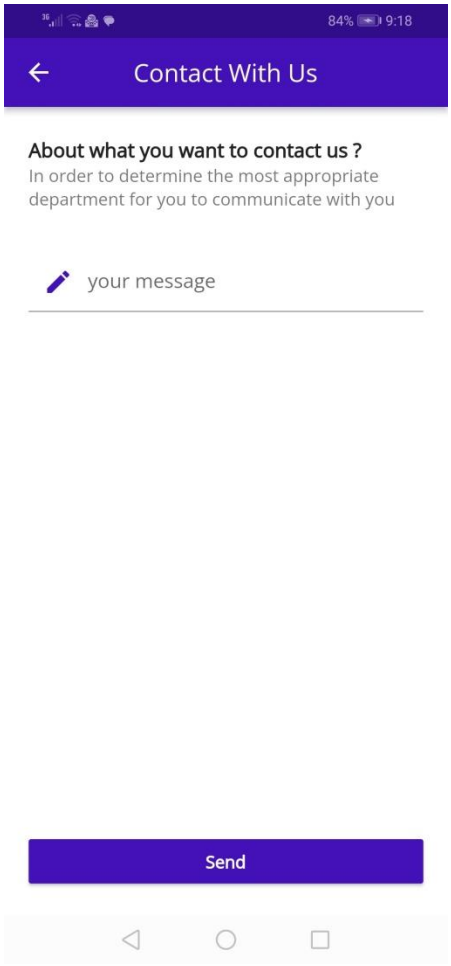
-- in this screen, if the user want to enter the auction, you should enter your visa data to payment the fees of auction.



Application Screens 10 Payment Screen

11) Request Messages

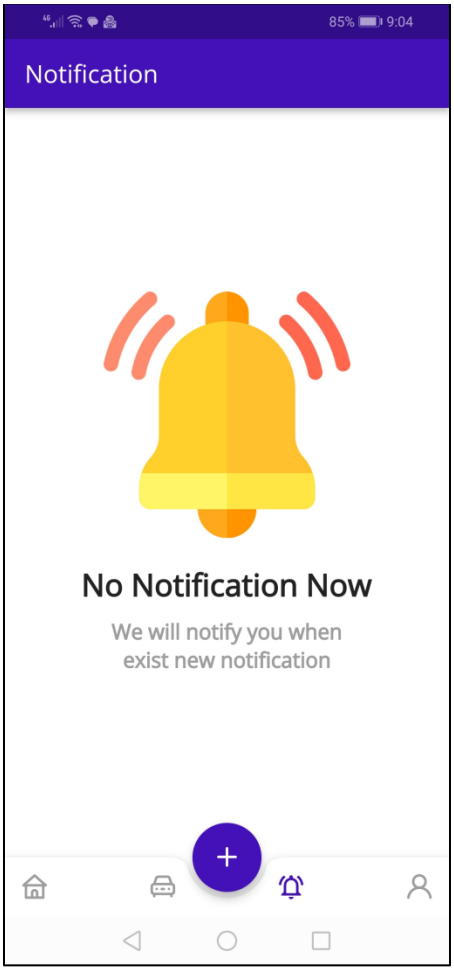
-- in this screen,User can contact with us by sending messages.



Application Screens 11 Request Messages

12) Notifications

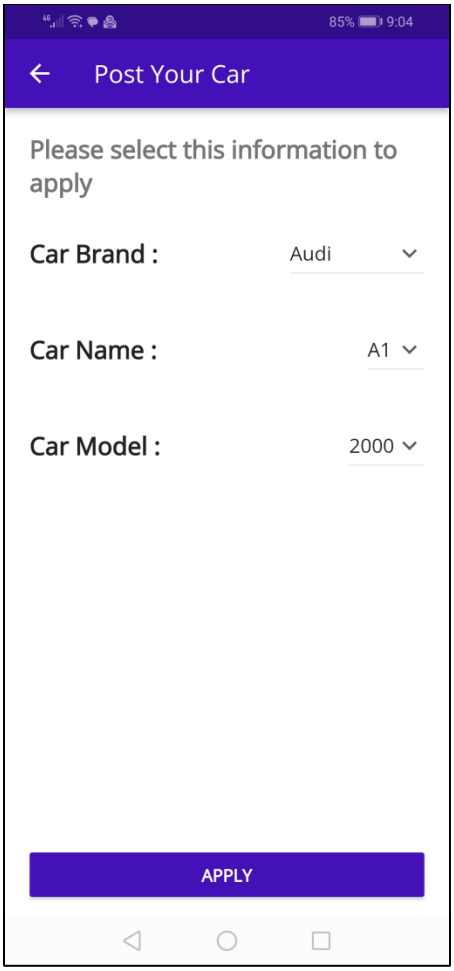
-- in this screen, If the admin want to send message to specified user using the app , you can do it by sending notification to the user.



Application Screens 12 Notifications

13) Upload Cars

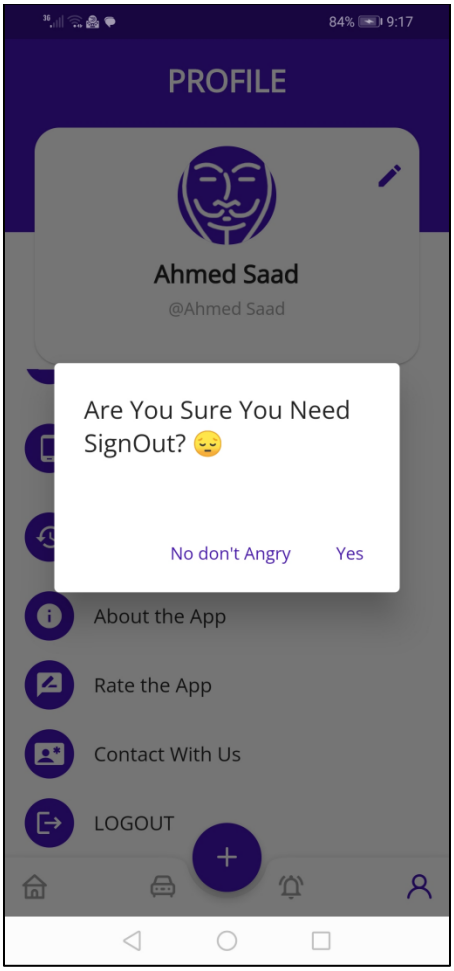
-- in this screen,User can submit a request to check his car to sell it .



Application Screens 13 Upload Cars

14) Logout

-- in this screen, User can logout .

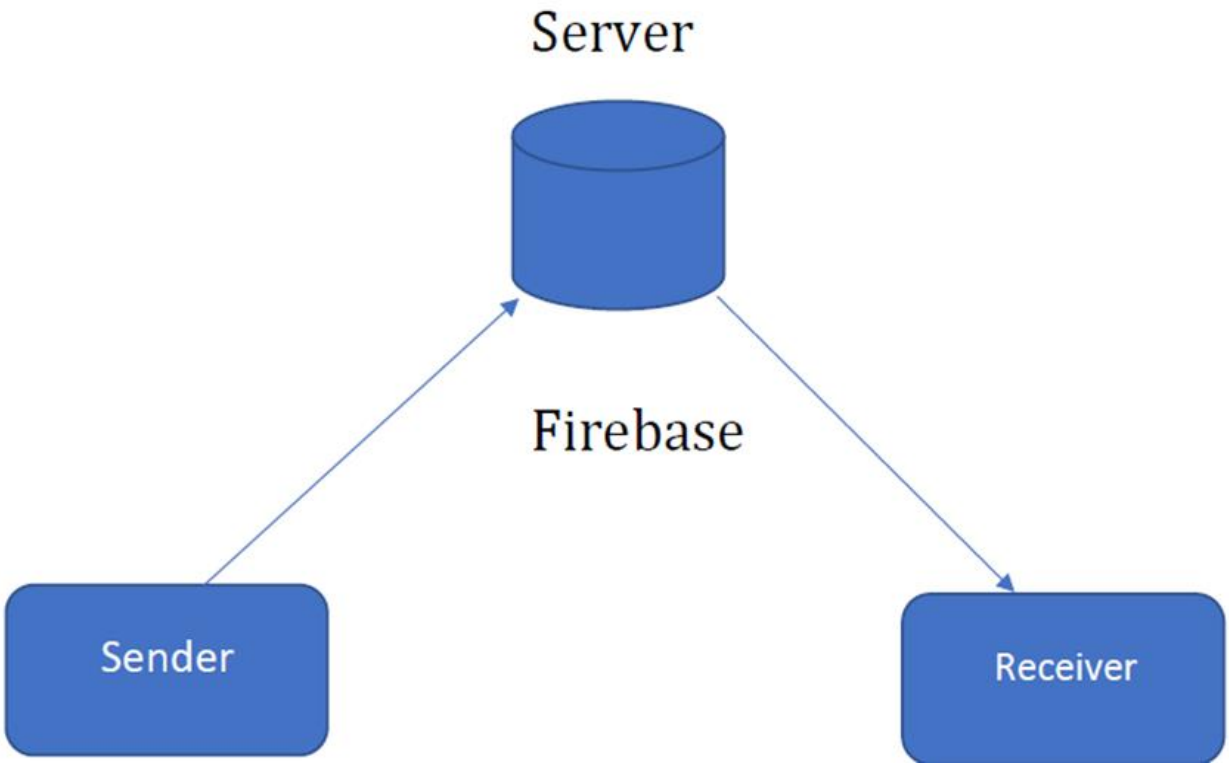


Application Screens 14 Logout

Chapter 5: Implementation

5.1 Project Implementation

1) Firebase



Project Implementation 1 Firebase

5.2 Tools

1) Dart Language

The Dart language is type safe; it uses static type checking to ensure that a variable's value always matches the variable's static type. Sometimes, this is referred to as sound typing. Although types are mandatory, type annotations are optional because of type inference. The Dart typing system is also flexible, allowing the use of a dynamic type combined with runtime checks, which can be useful during experimentation or for code that needs to be especially dynamic. Dart offers sound null safety, meaning that values can't be null unless you say they can be. With sound null safety, Dart can protect you from null exceptions at runtime through static code analysis. Unlike many other null-safe languages, when Dart determines that a variable is non-nullable, that variable is always non-nullable. If you inspect your running code in the debugger, you'll see that non-nullability is retained at runtime (hence sound null safety).

2) Firebase

Firebase Extensions help you reduce time spent on development, maintenance, and growth of your app.

When you find a Firebase Extension that solves a need for your app or project, all you do is install and configure the extension. If you need multiple configurations of the extension, you can install the extension multiple times, with a different configuration for each instance you install.

With extensions, you don't spend time researching, writing, and debugging the code that implements functionality or automates a task for your app or project.

To install or manage extensions, you must be assigned one of these roles: Owner or Editor or Firebase Admin.

To install an extension, your project must be on the **Blaze** (pay as you go) plan. Although there is no charge for installing an extension, you might be charged for your use of Firebase services or Cloud services such as Cloud Secret Manager, if your usage exceeds the services' free tier.

You can also evaluate extensions before installing them on a project using the Extensions emulator, a component of the Firebase Local Emulator Suite.

3) Figma

Figma is a collaborative web application for interface design, with additional offline features enabled by desktop applications for macOS and Windows. The feature set of Figma focuses on user interface and user experience design, with an emphasis on real-time collaboration, utilizing a variety of vector graphics editor and prototyping tools. The Figma mobile app for Android and iOS allows viewing and interacting with Figma prototypes in real-time on mobile and tablet devices.

4) Flutter

Flutter is an open-source UI software development kit (SDK) created by Google. It allows developers to build cross-platform applications for mobile, web, and desktop from single codebase. Flutter uses the dart programming language and provides a rich set of pre-built widgets and tools for building beautiful and responsive user interfaces.

One of the key features of flutter is its “hot reload” capability, which allows developers to see changes of they make in real-time without having to restart the application. This makes the development process faster and more efficient.

Flutter also has a strong focus on performance, with its own rendering engine called Skia that enables smooth animations and high-performance graphics. It also

provides access to native features and Apls through platform-specific plugins, allowing developers to integrate their apps with device capabilities.

Overall, flutter offers a fast and productive way to build high-quality cross-platform applications with a native-like experience. It has gained popularity among developers due to its ease of use, and ability to create visually appealing user interfaces.

Chapter 6: Conclusion

6.1 Conclusion

Online Car Selling Application can be a very good technology to the consumers for checking and buying their sustainable car. People of the modern world are more interested to purchase their products online. It may be very simple to purchase a car also. Gradually people are depended on the online marketing to buy their different

products for instance now-a-days they are buying their cars and many other things by using online marketing. The Online Car Selling application by using PayPal is familiar to the consumer day by day. By using Online Car Selling application customers save their valuable time, it very fast and cheap also. You do not need to visit the company physically just spend a couple of minutes online then you can select your desired product from the shopping cart and pay the bill by using the company's payment system which is totally dependent on PayPal.

6.2 Benefits

As an admin, this application allows you to serve your society by ability to communicate with users.

As a user, this application allows me to search about car and booking an appointment.

Chapter 7: **References**

1) [Ebay Motors, Edmunds]: https://naijaknowhow.net/best-apps-to-sell-cars/

2) [Carvana, TrueCar, CarFax]: https://www.finder.com/best-car-buying-apps

3) [AutoTrader, Hemmings]: https://nexusautotransport.com/best-websites-to-sell-a-car/

4) Dart Documentation: https://dart.dev/overview

5) Flutter Documentation: https://docs.flutter.dev/

6) Figma: https://en.wikipedia.org/wiki/Figma_(software)

7) Firebase: https://firebase.google.com/docs/extensions/overview-use-extensions