

## Functional Requirements:

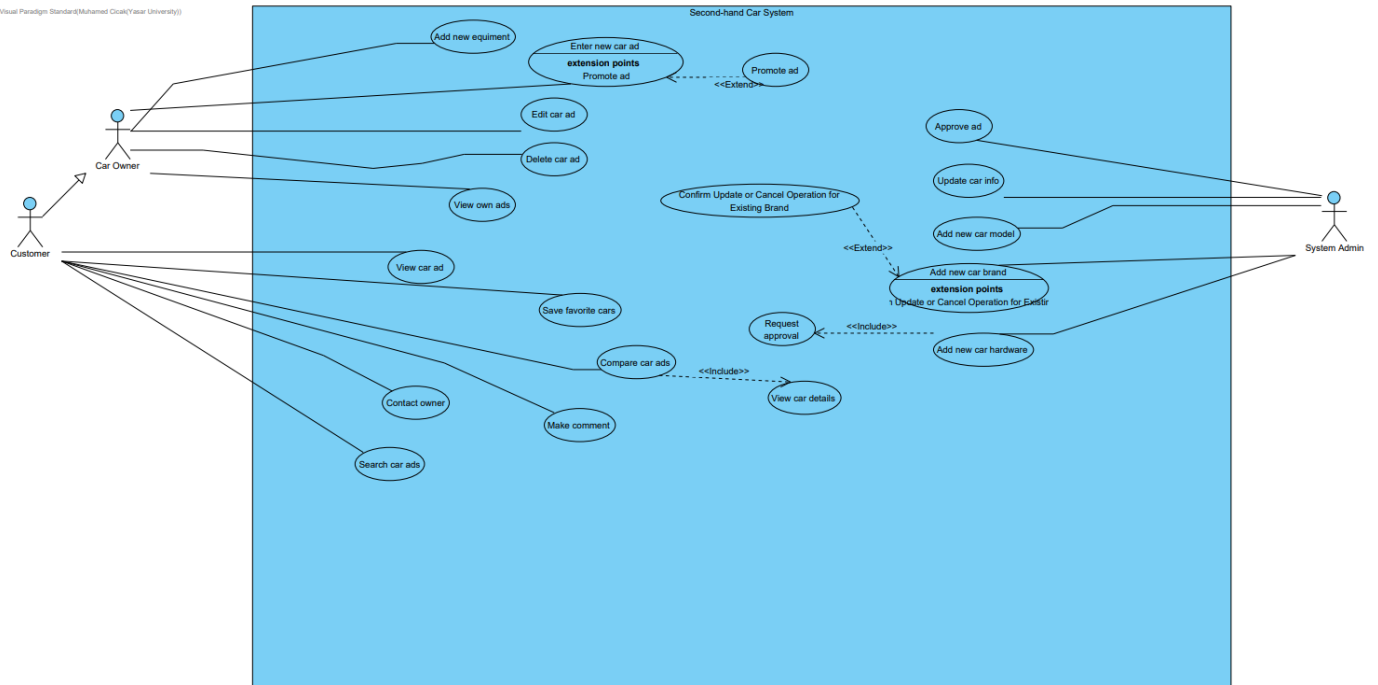
1. **Inventory Management:** The system should allow car dealerships to manage their inventory of used cars, including adding new cars to the system, updating car details, and marking cars as sold.
2. **Sales Management:** Car dealerships should be able to track the sales process of each car, including viewing and updating the status of each sale, adding notes, and generating reports.
3. **Financing Options:** The system should allow customers to apply for financing options for the cars they are interested in, including providing personal and financial information and receiving loan offers.
4. **Insurance Options:** The system should allow customers to compare and purchase insurance options for the cars they are interested in.
5. **Test Drive Scheduling:** The system should allow customers to schedule test drives for the cars they are interested in, including selecting a date and time, and receiving confirmation from the dealership.
6. **Online Purchasing:** The system should allow customers to purchase cars online, including providing payment information and arranging for delivery or pickup of the car.
7. **Vehicle History Reports:** The system should allow customers to view vehicle history reports for the cars they are interested in, including accident history, ownership history, and service records.
8. **Price Comparison:** The system should allow customers to compare the prices of similar cars from different dealerships.
9. **User Ratings and Reviews:** The system should allow customers to rate and review their experience with the dealership and the cars they have purchased.
10. **Social Media Integration:** The system should allow customers to share car listings on social media platforms, such as Facebook or Twitter.
11. **Language Support:** The system should support multiple languages to cater to a diverse range of customers.
12. **Mobile App Integration:** The system should have a mobile app version, allowing customers to browse and interact with the system on their mobile devices.
13. **Email and SMS Notifications:** The system should send email and SMS notifications to customers regarding their test drives, financing options, and purchase status updates.

## Non-functional requirements:

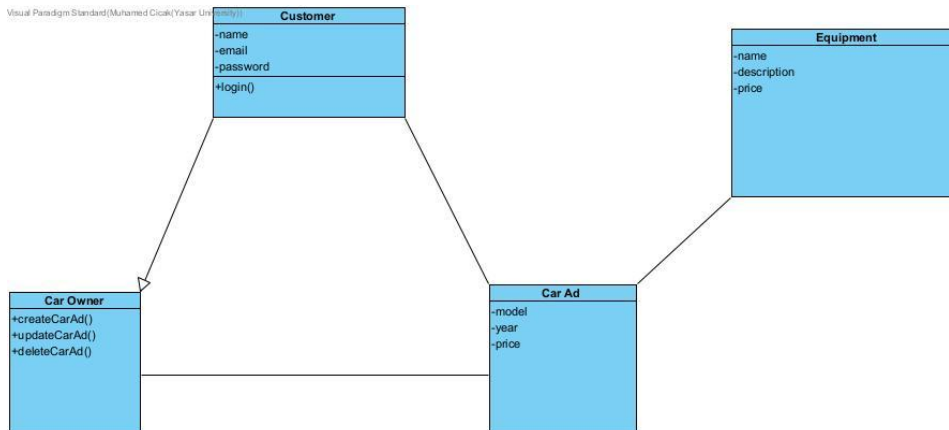
1. **Interoperability:** The system should be able to interact and exchange data with external systems or services, such as payment gateways, shipping companies, or third-party APIs.
2. **Modularity:** The system should be designed with a modular architecture that allows for easy integration of new features or components. Each module should have well-defined interfaces and low coupling.

3. **Flexibility:** The system should be flexible enough to accommodate changes in business requirements, such as new car models, sales promotions, or customer feedback. The system should be configurable, extensible, and customizable.
4. **Performance Efficiency:** The system should be designed to optimize resource usage, minimize response times, and reduce network traffic. Performance should be monitored and optimized regularly.
5. **Fault Tolerance:** The system should be designed to handle errors, failures, or unexpected events without causing data loss or system crashes. The system should have mechanisms for error detection, recovery, and backup.
6. **Portability:** The system should be portable across different environments, such as development, testing, and production. The system should be platform-independent and use standard technologies.
7. **Maintainability:** The system should be easy to maintain, update, and troubleshoot. The system should have clear documentation, version control, and testing procedures.
8. **Privacy:** The system should protect the privacy of users' personal data, such as name, email address, and contact information. The system should comply with data protection regulations, such as GDPR or CCPA.
9. **Internationalization:** The system should be designed to support multiple languages, currencies, and time zones. The system should be easily localizable and customizable for different markets.
10. **User Experience:** The system should provide a seamless and enjoyable user experience for both car owners and customers. The system should be visually appealing, responsive, and easy to use.

## **Use-case Diagram:**



## Class Diagram:



## Sequence Diagram:

## Definitions of Use-cases:

Use-Case Name	Brief Description	Actors	Flow of Realization	Step-by-Step Description
Login	Allows a user to log in to the system	Car Owner, Customer, Administrator	1. The user enters their credentials into the login form. 2. The system verifies the credentials. 3. The system redirects the user to their appropriate landing page.	1. The user navigates to the login page. 2. The user enters their email and password. 3. The system verifies the credentials. 4. If the credentials are correct, the system redirects the user to their appropriate landing page. If the credentials are incorrect, the system displays an error message.
Create Ad	Allows a car owner to create a new advertisement for their car	Car Owner	1. The car owner enters the details of their car and the advertisement into the system. 2. The system validates the information entered. 3. The system sends the advertisement for administrator approval.	1. The car owner navigates to the create ad page. 2. The car owner enters the details of their car and the advertisement. 3. The system validates the information entered. 4. If the information is valid, the system sends the advertisement for administrator approval. If the information is invalid, the system displays an error message.
Edit Ad	Allows a car owner to edit an existing	Car Owner	1. The car owner selects the advertisement	1. The car owner navigates to their advertisements

	advertisement for their car		they wish to edit. 2. The car owner makes the desired changes to the advertisement. 3. The system validates the changes. 4. The system sends the updated advertisement for administrator approval.	page. 2. The car owner selects the advertisement they wish to edit. 3. The car owner makes the desired changes to the advertisement. 4. The system validates the changes. 5. If the changes are valid, the system sends the updated advertisement for administrator approval. If the changes are invalid, the system displays an error message.
Delete Ad	Allows a car owner to delete an existing advertisement for their car	Car Owner	1. The car owner selects the advertisement they wish to delete. 2. The system prompts the car owner to confirm the deletion. 3. The system deletes the advertisement.	1. The car owner navigates to their advertisements page. 2. The car owner selects the advertisement they wish to delete. 3. The system prompts the car owner to confirm the deletion. 4. If the car owner confirms, the system deletes the advertisement.
Search	Allows a customer to search for car advertisements	Customer	1. The customer enters their search criteria into the search form. 2. The system retrieves the relevant advertisements. 3. The system displays the	1. The customer navigates to the search page. 2. The customer enters their search criteria into the search form. 3. The system retrieves the relevant

			advertisements to the customer.	advertisements. 4. The system displays the advertisements to the customer.
Compare	Allows a customer to compare car advertisements	Customer	1. The customer selects two or more advertisements to compare. 2. The system retrieves the details of the selected advertisements. 3. The system displays the details of the selected advertisements side-by-side for comparison.	1. The customer navigates to the compare page. 2. The customer selects two or more advertisements to compare. 3. The system retrieves the details of the selected

## Possible Scenarios:

- Edit car ad: Car owner edits car ad, admin approves or rejects changes
- Delete car ad: Car owner deletes car ad after confirmation prompt
- View own ads: Car owner views list of their own car ads
- Add new equipment: Car owner adds new equipment to car ad, admin approves or rejects changes
- Search car ads: Customer searches for car ads based on criteria and filters
- View car ad: Customer views details of a specific car ad, leaves comment or review
- Compare car ads: Customer selects multiple car ads and compares details
- Contact owner: Customer views contact information for car owner and contacts them
- Make comment: Customer leaves comment or review about a specific car ad
- Save favorite car ads: Customer saves specific car ads as favorites for later viewing.