

**Palestine Technical University – Kadoorie**

**College of Engineering and Technology**

**Department of Computer Systems Engineering**

**Course name:**

**Software Engineering**

**Project title:**

**DESIGNING A USER-FRIENDLY CAR RENTAL SERVICE WEBSITE FOR CONVENIENT VEHICLE BOOKING IN PALESTINE**

**By:**

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**Abstract:**

The process of renting a vehicle in Palestine often encounters various difficulties. This project aims to introduce a user-friendly website designed to streamline the booking process, enabling users to easily rent a vehicle through their devices. By merely selecting the rental duration, pick-up date, and desired vehicle, customers can complete their bookings in just a few clicks. The anticipated outcome of this website's development and launch is a notable increase in user engagement, attributed to its simplification of the car rental process, thereby offering a significantly more convenient solution for users.

**Introduction:**

The **'car-rentals.ps'** platform is a Software as a Service (SaaS) solution designed to streamline the vehicle rental process in Palestine. It connects customers with a wide range of vehicle providers, facilitated by a comprehensive relational database. This database meticulously manages details from lessors, vehicles, and rental transactions to customer ratings, all through a user-friendly interface.

Our service transitions the car rental process to a fully online environment, covering every region across Palestine, we offer a comprehensive and accessible car rental service. **'car-rentals.ps'** stands out for its attention to detail in listing vehicles and for the ease it brings to the rental process.

For those wishing to list their personal vehicles, our platform simplifies this process, requiring just the necessary details about the car. Renters can easily select a vehicle, set rental dates, and complete the booking online. By focusing on efficiency and convenience, **'car-rentals.ps'** is dedicated to enhancing the car rental experience for both car owners and renters.

**Objectives:**

The main goal of the project is to transfer the car rental process from its traditional way into an online platform by designing a user-friendly car rental service website in Palestine. Other objectives can be summarized as follows:

1. To offer an around-the-clock online platform enabling users to effortlessly search for, compare, and book vehicles.
2. To implement advanced filtering options, allowing users to refine their searches based on specific criteria such as car type, rental price, and additional features, thus facilitating a tailored rental experience.
3. To integrate a seamless booking and payment system that ensures a secure and efficient transaction process, coupled with immediate confirmation and digital documentation for users.
4. To aspire the contribution of the broader development of digital services in Palestine.

**Services:**

**'car-rentals.ps'** website provides the following services:

1. **Online Car Rental Process:** Offers a fully digital platform for renting cars, covering all steps from selecting the rental duration to booking the desired vehicle.
2. **Nationwide Coverage:** Operates across all cities and regions in Palestine, ensuring accessibility to users no matter their location.
3. **Detailed Car Information:** Displays comprehensive details for each vehicle, including specifications, features, and rental terms.
4. **Simplified Rental Procedure:** Streamlines the rental process to minimize the need for direct communication between renters and car owners, enhancing user convenience.
5. **Personal Car Rental Listings:** Enables individuals to rent out their personal vehicles, providing a platform to list their cars along with detailed descriptions and all necessary information for potential renters.

**System Description:**

The Car Rental Website is an interactive platform designed to connect customers with a wide range of vehicles for rent, provided by various lessors across different locations. The system is built upon a relational database structure that ensures efficient management of data pertaining to customers, vehicles, rentals, lessors, locations, and the associated ratings.

**Customers:** Customers are at the core of the Car Rental Website. Each customer is identified by a unique Customer\_ID and has personal details stored, such as Name, Phone Number, Email, Payment Method, and License Number. The system allows customers to engage in rental transactions through the website.

**Vehicles:** The Vehicle entity stores all relevant data about the cars available for rent. Each vehicle is uniquely identified by a Vehicle\_ID and includes details such as Make, Model, Number of Seats, Mileage, Transmission type, Number of Doors, Fuel Policy, Price Per Day, and whether the car is an Electric Vehicle. The Availability attribute indicates if the vehicle is currently available for rent.

**Renting:** The Renting entity handles the rental transactions. Each rental is uniquely identified by a Renting\_ID. It records the association between a customer and a vehicle, denoting the start and end of the rental period (Pick\_up\_TimeStamp and Drop\_off\_TimeStamp) as well as the Fees for the rental.

**Lessors:** Lessors are the vehicle owners who offer their cars for rent. The Lessor entity contains a Lessor\_ID, Name, Phone, Email, and associated Location\_ID, which links to the physical location where the lessor's vehicles can be picked up.

**Locations:** The Location entity is identified by a Location\_ID and captures the physical location details where vehicles are available for pick-up and return.

**Ratings:** To ensure quality service and customer satisfaction, the Rating entity allows customers to provide feedback on their rental experience. Each rating is linked to a specific rental and includes the Rating\_ID and evaluations on various aspects such as Value for Money, Pick-Up Speed, Drop-Off Speed, Car Condition, Car Cleanliness, and Helpfulness of the service.

**System Functionality:**

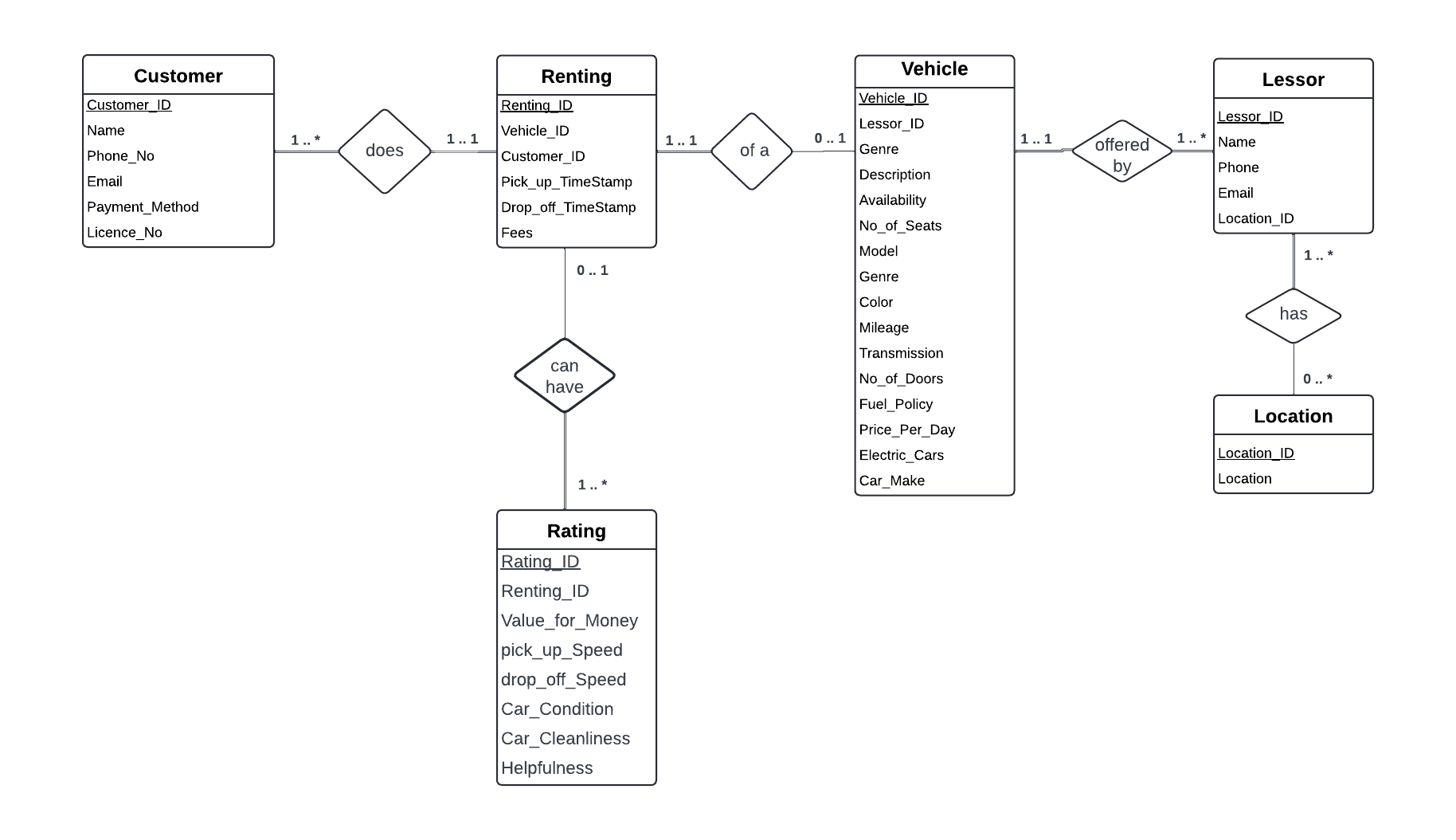
The website's functionality includes:

* Vehicle Searching and Booking: Customers can search for vehicles based on various criteria, view detailed descriptions, and book rentals online.
* Account Management: Customers and lessors can manage their accounts, update their information, and view their rental histories.
* Transaction Handling: The system processes rental transactions, including reservations, payments, and rental agreements.
* Availability Tracking: Real-time updates on vehicle availability to ensure customers have access to current information.
* Rating System: After the rental period, customers can rate their experience, providing valuable feedback for future customers and lessors.

This marketplace is designed to streamline the car rental process, making it user-friendly, efficient, and reliable for both customers and vehicle owners.

**ER Diagram:**

The ER diagram is susceptible to any changes or updates



[Click here to check the ER diagram closely](https://lucid.app/lucidchart/9f1bd0a7-113b-4e68-992c-aa58f51f3c64/edit?viewport_loc=-1125%2C-498%2C3481%2C1404%2C0_0&invitationId=inv_c75e2d48-49d5-496e-a2f0-097d51ad138d)

**Project Timeline:**

We are supposed to start working on this by the beginning of the Spring 2024 semester and finish it by the end of the semester. The proposed project timeline shown in Table 1 serves as a guide to follow during the period of accomplishing this task and who’s responsibility it is to do so. The project timeline is flexible to accommodate for any changes or surprises in the schedule. The suggested timeline of the project will be updated as the further the group progresses in time and the picture becomes clearer.

Table 1: The proposed timeline of the project

|  |  |  |
| --- | --- | --- |
| **Week no.** | **Tasks** | **Task Responsibility** |
| 1 – 6 | System analysis, website designing and implementation research, and gathering data | Cooperative |
| 6 – 11 | Designing and implementing the website | Cooperative but mainly **Layla** |
| 11 – 12 | Testing the system and trouble-shooting process | Cooperative but mainly **Rahaf** |
| 12 – 13 | Writing and proofreading the SRS document | Cooperative but mainly **Afnan** |
| 13 – 14 | Defending | Each with their part |