Software Engineering Assignment 1

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Requirement Document Template: Car Rental System:

1. **Introduction**

   1.1 Purpose

   The purpose of this requirement document is to define the requirements for the development of a **car rental system**. The system should manage the renting of automobiles for a short period of time, allowing users to reserve and return vehicles from different locations. The system should primarily be located near airports or city areas.

   1.2 Scope

   The **car rental system** should have multiple offices located in different areas within

each city. The system should be able to keep a list of all its clients in a **database**. The database should include the name, address, and contact number of each new customer. A member should be able to reserve a car for a certain number of days, hire a car, or return the car that was rented.

1.3 Document Overview

This document will describe the **functional and non-functional requirements** for the **car rental system**. It will include a list of **user stories**, **use cases**, and **system requirements**.

2. **User Stories**

2.1 User Story 1: As a user, I want to be able to reserve a car for a certain number of days.

- The user should be able to select the **date and time** of pickup and drop-off.
- The user should be able to choose the **type of vehicle**, such as compact, mid-size, or SUV.
- The system should display the **availability of vehicles** based on the user's selection.
- The user should be able to view the **total rental cost** before confirming the reservation.
- The system should send a **confirmation email** to the user after the reservation is confirmed.

2.2 User Story 2: As a user, I want to be able to hire a car.

- The user should be able to select the **date and time** of pickup and drop-off.
- The user should be able to choose the **type of vehicle**, such as compact, mid-size, or SUV.
- The system should display the **availability of vehicles** based on the user's selection.
- The user should be able to view the **total rental cost** before confirming the rental.

- The system should prompt the user to provide **payment details**, such as credit card information.
- The system should send a **confirmation email** to the user after the rental is confirmed.

2.3 User Story 3: As a user, I want to be able to return the car that was rented.

- The user should be able to return the car to the **designated location**.
- The system should verify the **condition of the car** and the **fuel level**.
- The system should calculate the **total rental cost** based on the rental period and any additional charges.
- The system should send a **confirmation email** to the user after the return is confirmed.

2.4 User Story 4: As a user, I want to be able to specify the pickup and drop-off locations.

- The user should be able to select the **pickup and drop-off locations** from a list of available locations.
- The system should display the **nearest available location** based on the user's selection.
- The user should be able to view the **address and contact information** of the selected location.

2.5 User Story 5: As a user, I want to be able to choose the type of vehicle.

- The user should be able to select the **type of vehicle** from a list of available vehicles.
- The system should display the **features and specifications** of the selected vehicle, such as passenger capacity, luggage capacity, and fuel efficiency.
- The system should display the **rental cost per day** for the selected vehicle.

3. **Use Cases**

3.1 Use Case 1: Reserve a Car

- **Actors:** User, System

- **Preconditions:** The user is logged in and has selected a pickup and drop-off location.
- **Basic Flow:**
    1. The user selects the pickup and drop-off date and time.
    2. The user selects the type of vehicle.
    3. The system displays the availability of vehicles based on the user's selection.
    4. The user selects a vehicle.
    5. The system calculates the total rental cost and displays it to the user.
    6. The user confirms the reservation.
    7. The system sends a confirmation email to the user.
- **Alternative Flow:**
    1. If there are no vehicles available for the selected pickup and drop-off location, the system displays an error message and prompts the user to select a different location or date.

3.2 Use Case 2: Hire a Car

- **Actors:** User, System
- **Preconditions:** The user is logged in and has selected a pickup and drop-off location.
- **Basic Flow:**
    1. The user selects the pickup and drop-off date and time.
    2. The user selects the type of vehicle.
    3. The system displays the availability of vehicles based on the user's selection.
    4. The user selects a vehicle.
    5. The system calculates the total rental cost and displays it to the user.
    6. The user provides payment details, such as credit card information.

7. The user confirms the rental.
8. The system sends a confirmation email to the user.

- **Alternative Flow:**
  - If there are no vehicles available for the selected pickup and drop-off location, the system displays an error message and prompts the user to select a different location or date.

3.3 Use Case 3: Return a Car

- **Actors:** User, System
- **Preconditions:** The user has rented a car and is returning it to the designated location.
- **Basic Flow:**
  1. The user returns the car to the designated location.
  2. The system verifies the condition of the car and the fuel level.
  3. The system calculates the total rental cost and displays it to the user.
  4. The user confirms the return.
  5. The system sends a confirmation email to the user.
- **Alternative Flow:**
  - If the condition of the car is damaged or the fuel level is below the specified level, the system calculates additional charges and displays them to the user.

4. **System Requirements**

4.1 Functional Requirements

- The system should allow users to create an account and log in.
- The system should allow users to reserve a car for a certain number of days.
- The system should allow users to hire a car.
- The system should allow users to return the car that was rented.

- The system should allow users to specify the pickup and drop-off locations.
- The system should allow users to choose the type of vehicle.
- The system should calculate the total rental cost based on the rental period and any additional charges.
- The system should send a confirmation email to the user after the reservation, rental, or return is confirmed.

4.2 Non-Functional Requirements

- The system should be able to handle a high volume of users and transactions.
- The system should be able to provide real-time updates on the availability of vehicles.
- The system should be able to provide accurate rental cost calculations.
- The system should be secure and protect user data.
- The system should have a user-friendly interface.

5. **Conclusion**

   The **car rental system** should be able to manage the renting of automobiles for a short period of time, allowing users to reserve.