

Software Engineering Assignment 1



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Car Rental System:

Requirement Document:

Car Rental System:

“We have a given used case of car rental system mentioned below: A **car rental system** is an application that manages the renting of automobiles for a short period of time—a few hours to a few weeks. A car rental system has a number of offices in different locations within each city. It allows the users to reserve and return a vehicle from different locations and is primarily located near airports or city areas. The car rental system keeps a list of all its clients in a database. The database includes the name, address, and contact number of each new customer. A member can reserve a car for a certain number of days, hire a car, or return the car that was rented. A member makes a reservation by supplying the pickup and drop-off locations, the kind of vehicle, and the day and time of the reservation.”

Introduction:

Purpose Of Requirement Document:

The aim of this document is to outline the specifications for creating a car rental system. The system should facilitate the rental of cars for short durations, enabling users to book and return vehicles from various locations. Its primary locations should be in proximity to urban areas or airports.

Scope Of Requirement Document:

The scope of the car rental system includes the establishment of several offices in diverse locations throughout each city. The system should maintain a database of all clients, including their name, address, and contact number upon registration. The system should allow customers to reserve a vehicle for a specific period, rent a car, or return a vehicle they previously rented.

Overview Of Requirement Document:

The following document will provide an overview of the necessary functional and non-functional features required for the car rental system. It will present a comprehensive list of user stories, use cases, and system requirements.

Requirement Documents As User Stories:

First User Story:

Motive: As a user, I want to be able to view my rental history.

- The user should be able to view a list of all past rentals, including the rental dates and the type of vehicle rented.
- The system should display the total cost of each rental and any additional fees that were charged.
- The user should be able to download an invoice for each rental.
- The system should ensure that the user's rental history is secure and only accessible by the user.

Second User Story:

Motive: As a user, I want to be able to hire a car.

- 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 user should be able to choose the type of vehicle, such as compact, mid-size, or SUV.
- The user should be able to select the date and time of pickup and drop-off.
- The system should send a confirmation email to the user after the rental is confirmed.
- The system should prompt the user to provide payment details, such as credit card information.

Third User Story:

Motive: As a member, I want to be able to view the available car models.

- The user should be able to browse the available car models based on the selected pickup and drop-off locations.
- The system should display the car models that are available for the selected dates and locations.
- The user should be able to filter the car models by type, such as compact, mid-size, or SUV.
- The system should display the features and specifications of each car model, such as fuel efficiency, seating capacity, and entertainment system.
- The user should be able to compare the features and specifications of multiple car models before selecting one to rent.

Fourth User Story:

Motive: As a user, I want to be able to return a rented car.

- The user should be able to select the location and time for returning the car.
- The user should be able to view the rental period and total rental cost before returning the car.
- The system should calculate the final rental cost based on the rental period and any additional charges such as fuel or damage fees.
- The user should receive a receipt for the final rental cost after returning the car.

Fifth User Story:

Motive: As a user, I want to choose my preferred pickup and drop-off locations.

- The system should present a list of available locations from which the user can select their desired pickup and drop-off points.
- The system should identify the nearest available locations based on the user's selection and display them to the user.
- The user should be able to view the address and contact information of the selected locations to ensure they are suitable.

Use Cases Provided:

There are few cases provided below which will ensure the quality of our system.

Use Case 1: Hiring A Car

Actors:

- System
- User

Preconditions:

“The user has logged in and provided pickup and drop-off location details.”

Main Flow:

1. The user enters the pickup and drop-off date and time.
 1. The user chooses the type of vehicle from available options.
 2. The system checks for the availability of vehicles based on the user's selection.
 3. The user selects a vehicle from the list of available vehicles.
 4. The system calculates the total rental cost, including any additional charges such as insurance, and displays it to the user.
 5. The user provides payment details, such as credit card information.

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

Alternative Flow:

If no vehicles are available for the selected pickup and drop-off location, the system displays an error message and prompts the user to select an alternative location or date.

Use Case 2: Reserving A Car

Actors:

- System
- User

Preconditions:

"The user is logged in and has selected a pickup and drop-off location."

Main Flow:

1. The user should be able to select the pickup and drop-off locations, date, and time.
2. The user should be able to choose the type of vehicle, such as compact, mid-size, or SUV.
3. The user should be able to select a vehicle and view the total rental cost before confirming the reservation.
4. The user should be able to confirm the reservation and receive a confirmation email from the system.
5. If there are no vehicles available for the selected pickup and drop-off location, the system should display an error message and prompt the user to select a different location or date.
6. The user provides payment details, such as credit card information.

Alternative Flow:

If no vehicles are available for the selected pickup and drop-off location, the system displays an error message and prompts the user to select an alternative location or date.

Use Case 3: Returning A Car

Actors:

- System
- User

Preconditions:

"The user has rented a car and is returning it to the designated location."

Basic Flow:

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.

Requirements:

Two Types:

- **Functional Requirements.**
- **Non-Functional Requirements.**

Functional Requirements:

- Users should be able to create an account and log in.

- Users should be able to reserve a car for a specific number of days.
- Users should be able to hire a car.
- Users should be able to return the rented car.
- Users should be able to specify pickup and drop-off locations.
- Users should be able to select 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.

Non Functional Requirements:

- The system should be capable of handling a high volume of users and transactions.
- The system should be able to provide real-time updates on vehicle availability.
- The system should accurately calculate rental costs.
- The system should ensure data security and protect user information.
- The system should have a user-friendly interface.

Final Conclusion:

“The car rental system will allow users to reserve and rent vehicles for a short period of time.”

FIN.