Title: Rent-a-Car - Car Rental Management System

Introduction

The Rent-a-Car Car Rental Management System offers a complete solution tailored to the needs of car rental businesses, providing efficient management of vehicle fleets, reservations, rentals, customers, and administrative tasks. This system is designed to simplify operations and elevate customer satisfaction through its intuitive interface and comprehensive features.

Functional Requirements

1. Vehicle Management
   - Enable seamless addition, modification, and deletion of vehicles in the rental fleet.
   - Capture and store essential vehicle details such as make, model, year, registration number, current mileage, and condition.
   - Maintain real-time tracking of available vehicles by brand and type within the fleet.

2. Reservation System:
   - Allow customers to effortlessly check vehicle availability based on specified criteria such as date, location, and vehicle type.
   - Facilitate online reservations, empowering users to specify pickup and drop-off locations, dates, and vehicle preferences.
   - Ensure real-time updating of vehicle availability to prevent double bookings and enhance reservation accuracy.

3. Rental Transactions:
   - Provide customers with a seamless borrowing experience, allowing them to pick up and return vehicles at designated rental locations.
   - Implement secure credit card payments for rental transactions, ensuring a smooth and reliable payment process.

4. Customer Management:
   - Support efficient management of customer records, allowing for the addition, removal, updating, and searching of customers based on unique identifiers such as customer number, name, and email address.

5. User Authentication and Authorization:
   - Implement robust user authentication mechanisms to grant secure access to employees, customers, and administrators.
   - Define specific permissions and restrictions for different user roles to ensure data confidentiality and integrity.

6. Rental Pricing and Invoicing:

- o Calculate rental charges dynamically based on factors such as rental duration, vehicle type, and additional services such as insurance.
- o Generate and send invoices to customers post-rental, providing a transparent and convenient billing process.

7. Vehicle Maintenance Tracking:
   - o Monitor vehicle mileage and schedule maintenance alerts to ensure timely servicing and upkeep of the fleet.
   - o Maintain a comprehensive log of all maintenance activities for each vehicle, facilitating efficient tracking and management.

8. Reporting and Analytics:
   - o Offer administrators valuable insights into reservation trends, popular vehicle choices, and overall system performance through comprehensive reporting and analytics features.
   - o Generate detailed reports on financial transactions, customer feedback, and fleet utilization to support informed decision-making and strategic planning.

9. Notifications:
   - o Automatically send timely notifications to customers for reservation confirmations, reminders, and updates on their rental status, enhancing communication and customer engagement.
   - o Notify employees and administrators about critical events such as maintenance alerts and overdue rentals to ensure prompt action and resolution.

Non-functional Requirements:

1. Scalability:
   - o Ensure the system's architecture is scalable to accommodate an increasing number of vehicles, users, and transactions as the business expands.

2. Performance:
   - o Optimize system performance to deliver quick response times for tasks such as checking vehicle availability and processing reservations, enhancing user experience and efficiency.

3. Security:
   - o Implement stringent security measures to safeguard user data, financial transactions, and sensitive information against unauthorized access, breaches, and cyber threats.

4. Reliability:
   - o Ensure high system reliability with 24/7 availability and minimal downtime for maintenance activities, maximizing uptime and business continuity.

5. User-Friendly Interface:
   - Design an intuitive and user-friendly interface for both customers and employees, ensuring ease of use, navigation, and interaction with the system to promote user satisfaction and adoption.