**1. Introduction**

The Car Rental Application is an API-based platform designed to facilitate the seamless booking, management, and rental of vehicles for customers. The primary goal of this application is to provide an efficient and user-friendly interface for both car rental providers and customers to manage vehicle reservations and transactions. The application aims to streamline the rental process and enhance customer satisfaction by offering a range of features and functionalities.

**2. Scope**

The Car Rental Application will allow users to perform the following tasks:

* Register and log in as customers or car rental providers.
* Browse and search available vehicles based on different criteria (e.g., location, price, car type).
* View vehicle details, including images, specifications, and rental terms.
* Make vehicle reservations, specifying rental duration and additional preferences.
* Manage reservations, including modifications and cancellations.
* Process rental payments securely through various payment methods.
* Provide feedback and ratings for rental experiences.
* Car rental providers can list their available vehicles and manage their fleet.
* Admin panel for system administrators to manage users, vehicles, and oversee application operations.

**3. Functional Requirements**

**3.1 User Registration and Authentication**

* Users shall be able to register by providing necessary information, including name, email, and password.
* The system shall verify user credentials during login to ensure secure access to user accounts.
* The application shall support authentication mechanisms like email verification and password reset.

**3.2 Vehicle Listing**

* Car rental providers shall have the ability to add, edit, and remove vehicles from their inventory.
* Each vehicle listing must include details like make, model, year, photos, rental price, and availability status.

**3.3 Vehicle Search and Filtering**

* Customers shall be able to search for available vehicles based on location, rental price, car type, and other filters.
* The application shall provide a list of matching vehicles based on the user's search criteria.

**3.4 Vehicle Reservation**

* Customers shall be able to select a vehicle and make a reservation by specifying the rental dates and preferences.
* The application shall confirm vehicle availability before accepting reservations.
* Multiple customers should not be able to reserve the same vehicle for the same time period.

**3.5 Reservation Management**

* Customers and car rental providers shall have access to a dashboard to manage their reservations.
* Customers can view, modify, and cancel their existing reservations.
* Car rental providers can approve or reject reservation requests based on vehicle availability.

**3.7 Feedback and Ratings**

* Customers shall be able to leave feedback and ratings for their rental experiences.
* Car rental providers should be able to respond to customer feedback.

**3.8 Reporting and Analytics**

* The system shall generate reports for car rental providers to track vehicle utilization, earnings, and performance.
* System administrators shall have access to analytics and statistics for monitoring API performance.

**4. Non-Functional Requirements**

**4.1 Usability**

* All user interactions should be accompanied by appropriate feedback to enhance user experience.

**4.2 Performance**

* The application shall be capable of handling concurrent users without significant performance degradation.
* Response times for critical operations, such as vehicle search and reservation, should be minimal.

**4.3 Security**

* User data, including personal information and payment details, shall be encrypted and stored securely.
* Access controls and user permissions shall be implemented to prevent unauthorized actions.

**4.4 Reliability**

* The application shall be highly available and maintain data integrity even during system failures.
* Regular data backups and disaster recovery mechanisms should be in place.

**5. Technical Requirements**

* The application shall be developed as a API-based platform using modern technologies and frameworks like Springboot using Java.
* The backend shall be built using a scalable and robust server-side technology.
* The database shall be designed to handle large volumes of data efficiently.

**6. Constraints**

* The application shall comply with all legal and regulatory requirements regarding user data, privacy.

**7.Links**

**GitHub Link:**

[**https://github.com/LaithNassar93/CarRentalProject**](https://github.com/LaithNassar93/CarRentalProject)