Software Design Specification

Software Title: CarRentalPro

Team Members:
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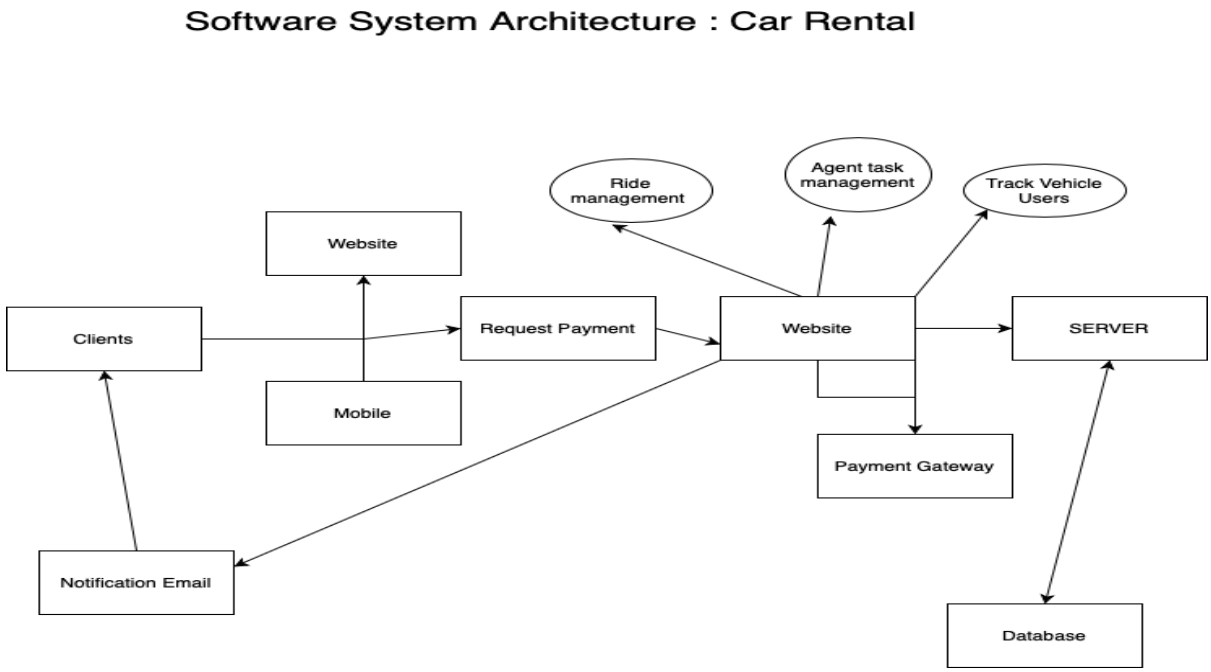
System Description:
Brief Overview of System: CarRentalPro is a comprehensive car rental management system designed to streamline the process of renting vehicles. It provides an intuitive user interface for customers to book and manage reservations while offering robust backend functionality for administrators.

Software Architecture Overview:
Architectural Diagram:

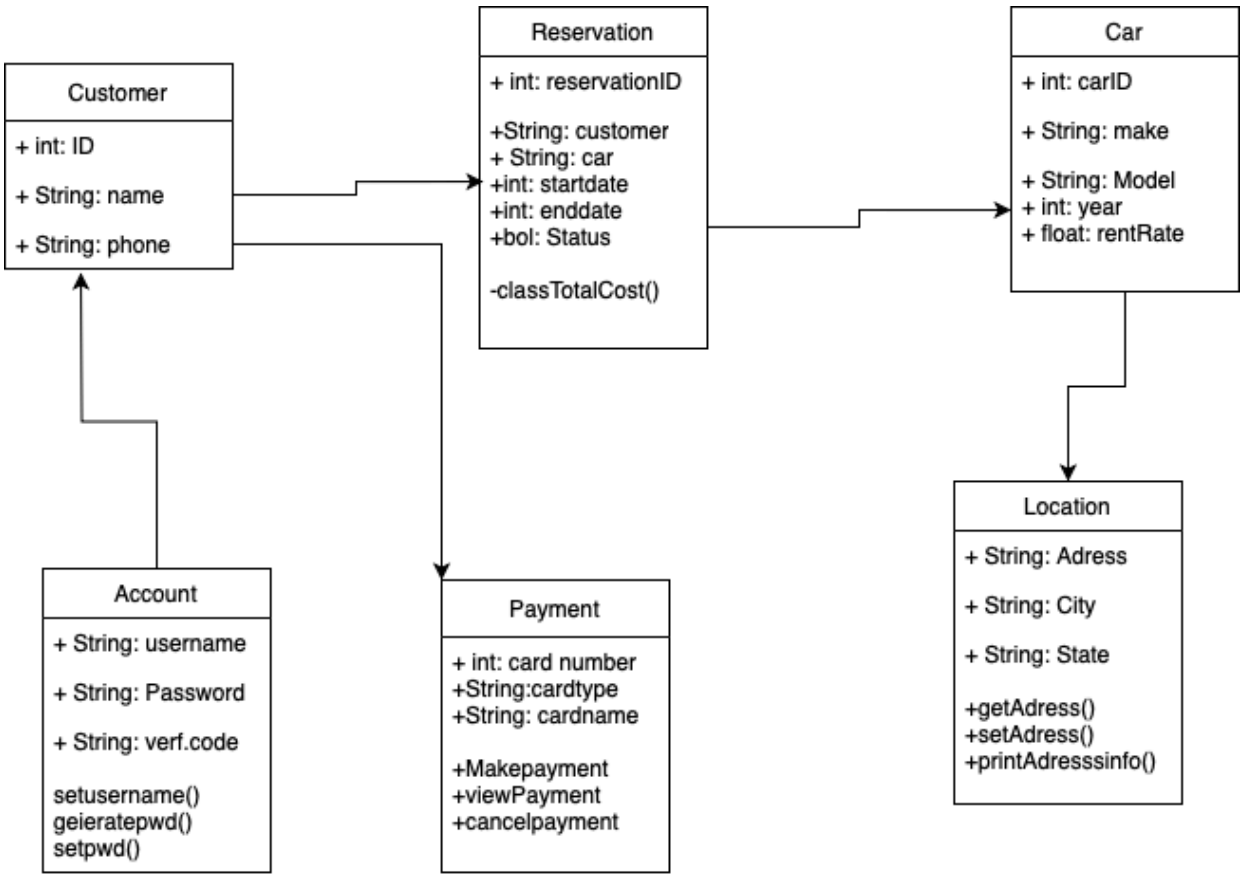


Software System Overview:

1) Mobile and Web Users: represent the interaction through the browser or mobile app which includes registration, vehicle booking and management.
2) Server: The functionality is to act as the central processing unit which handles business communication with a database
3) Database: The functionality is to store and manage data that is relevant related to users.

4) The Website system communicates via accessing specific URL and communicates with the server request, it utilizes HTTP/HTTPS protocols for secure data transfer and uses APIS for data exchange. To store data SQL is use so that it becomes efficient.

UML Class Diagram:



Description of Classes:

1. CarRentalSystem:
   - Attributes:
     - reservationList: List<Reservation>
     - carInventory: List<Car>
   - Operations:

- createReservation(customer: Customer, car: Car, startDate: DateTime, endDate: DateTime): Reservation

2. Reservation:
  - Attributes:
    - reservationID: int
    - customer: Customer
    - car: Car
    - startDate: DateTime
    - endDate: DateTime
    - status: ReservationStatus
  - Operations:
    - calculateTotalCost(): float

3. Car:
  - Attributes:
    - carID: int
    - make: String
    - model: String
    - year: int
    - rentalRate: float

4. Customer:
  - Attributes:
    - customerID: int
    - name: String
    - email: String
    - phone: String

5. Account
- username: string
- password: string
- verificationCode: string
- twoStepEnabled: bool

6. Location
- address: string
- city: string
- state: string
- zipCode: string

7. PaymentMethod
- cardNumber:

Description of Attributes:
- ReservationStatus (enum): {Pending, Confirmed, Completed, Canceled}
- DateTime: Standard date and time representation

Description of Operations:
- `reateReservation`: Creates a reservation with specified details.
- `calculateTotalCost`: Calculates the total cost of a reservation based on the rental rate and duration.

This architecture ensures a modular and scalable design for CarRentalPro, allowing for efficient management of car rentals.

Development plan and timeline

- Partitioning of tasks:
    - Define Project roles and responsibilities
    - Gather requirements by conducting interviews and documentation
    - System Design finalization including Software architecture, UML diagrams and database schema
    - Development by implementing the logic, setting up database and develop APIs, for frontend implement customer and admin interfaces.
    - Test by doing unit testing, integration testing, UAT and fix bugs for optimization and document.
    - Finalize product and deploy.

- Team member responsibilities: Team members will share all software system duties equality.