MINOR-PROJECT BATCH-3

VEHICLE PARKING MANAGEMENT SYSTEM

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Project Overview:

This project is a console application made using Python and SQLite. This project contains functionalities to simplify the booking process of vehicle parking and helps in effective management of customer data. Customers can book a parking slot based on their vehicle type by getting the help of an attendant. Staff or attendant acts as an intermediator between customer and the management system.

Key Features:

This project offers below mentioned functionalities and features:

1. User authentication and role-based access as admin or attendant.
2. Interactive interface.
3. Maintaining confidentiality of user credentials through hashing.
4. Logging and monitoring.
5. Input validations using Regex.
6. Exception Handling.
7. Clean code with proper folder structure.
8. Classes following single responsibility principles.
9. Maintained different files for prompts and input statements showing uniformity.

Major Modules of Project:

1. **User Module:**

   User will be the one interacting with the system.

   Users can be 2 types:

   (i) Admin:

   - The very first user to login into the system will be admin.

- This system assumes that there will be only one active admin in the system.
- Admin will be the one responsible for adding other users or employees that will be assigned attendant role.
- Admin will have different functionalities than other staff.
- Admin will be responsible for registering parking slot details and managing them.
- Admins will also be responsible for managing employee details.

(ii) Attendant:

- Attendant will be responsible for registering customers and managing them.
- Customers will be interacting with the attendant to book a parking slot.
- Attendants will have all the rights to manage customer data and booking or vacating parking slots.

**** Important Points:**

- All the users will have a default-password during their first login. This password will be provided by the admin to the user and will be known to the user.
- After entering the default password, the user will have to change their password and this password will be stored as a hash and thus will be unknown to admin, maintaining **confidentiality** of credentials.
- Also, this password will follow all the rules of strong password generation.
- Also, every user will have only 3 login attempts, on failure of which user will be restricted from interaction with the system for some duration.

2. Vehicle Type:

- Admin will be responsible for adding vehicle types and managing the price per hour of the vehicles.
- Based upon this price, the customer will have to pay the amount according to the number of hours spent in parking slot.

3. **Parking Slot:**
    - Admin will be responsible for managing the parking slot details about which slot is for which vehicle type.
    - Attendant will be responsible for assigning and vacating of parking slots to customers.

Tech Stack:

Language: Python

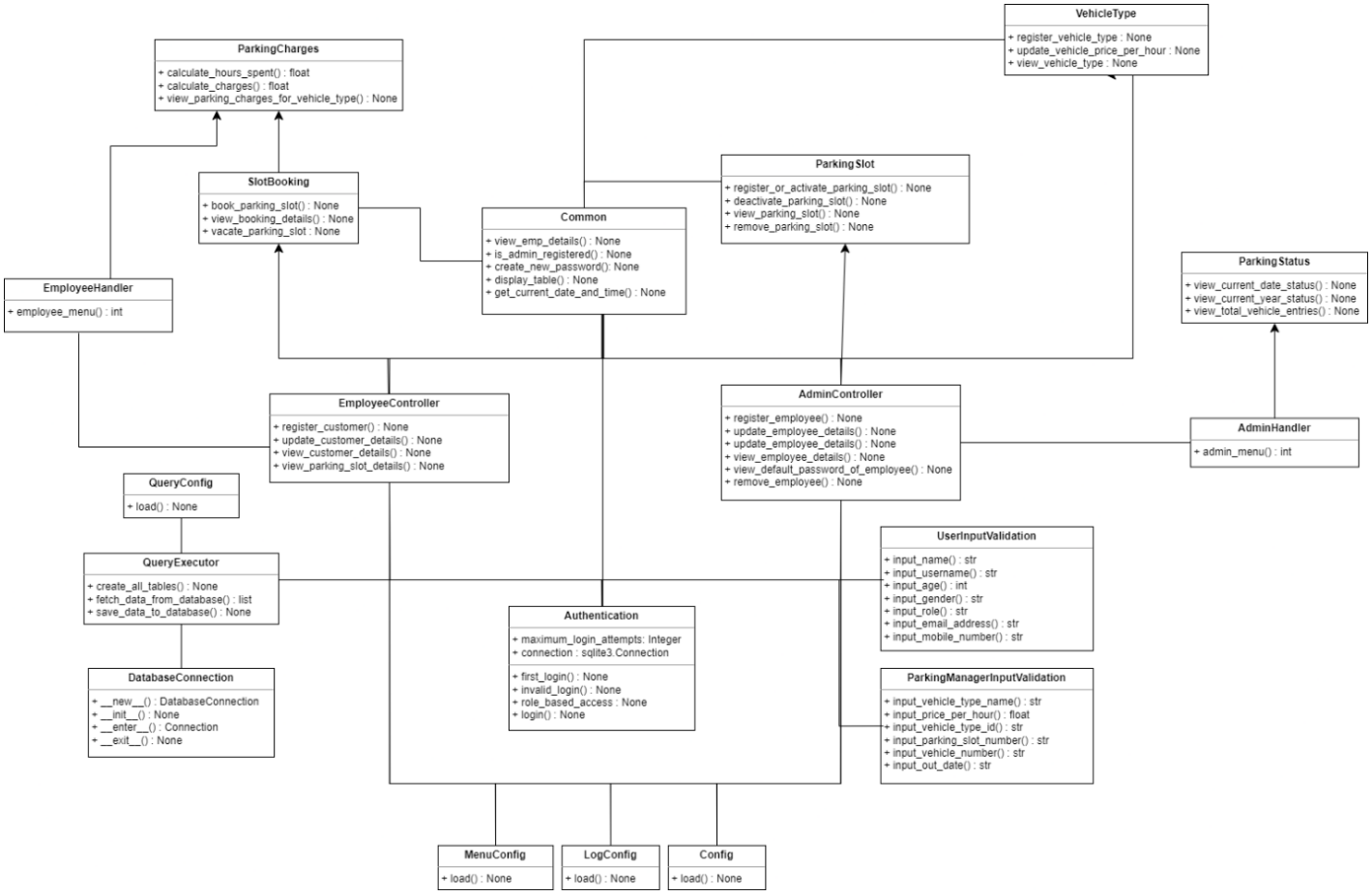
Database: SQLite

Integrated Development Environment: Visual Studio Code

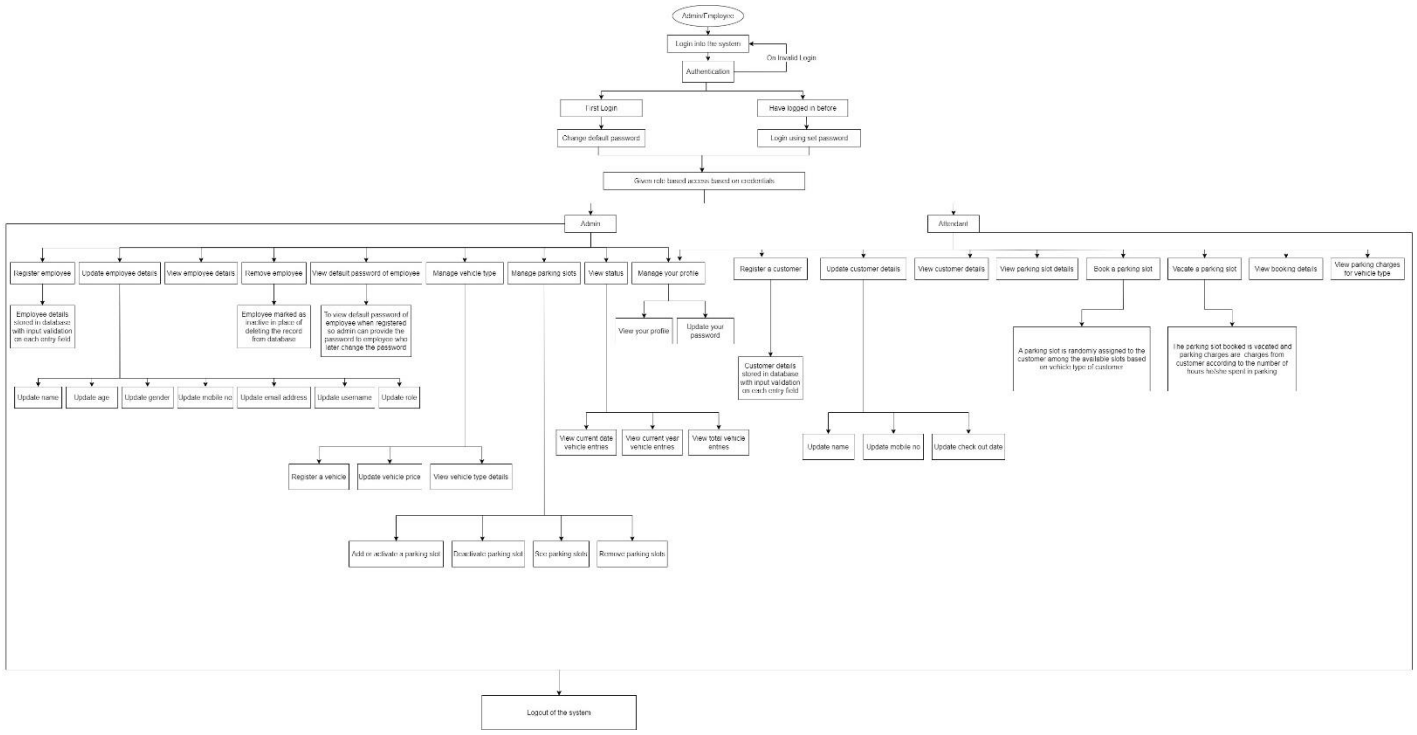
UML Diagrams:

1. Database Schema

2. Class Diagram



3. Flow Diagram



4. Use Case Diagram