Car Rental System

1. Getting start
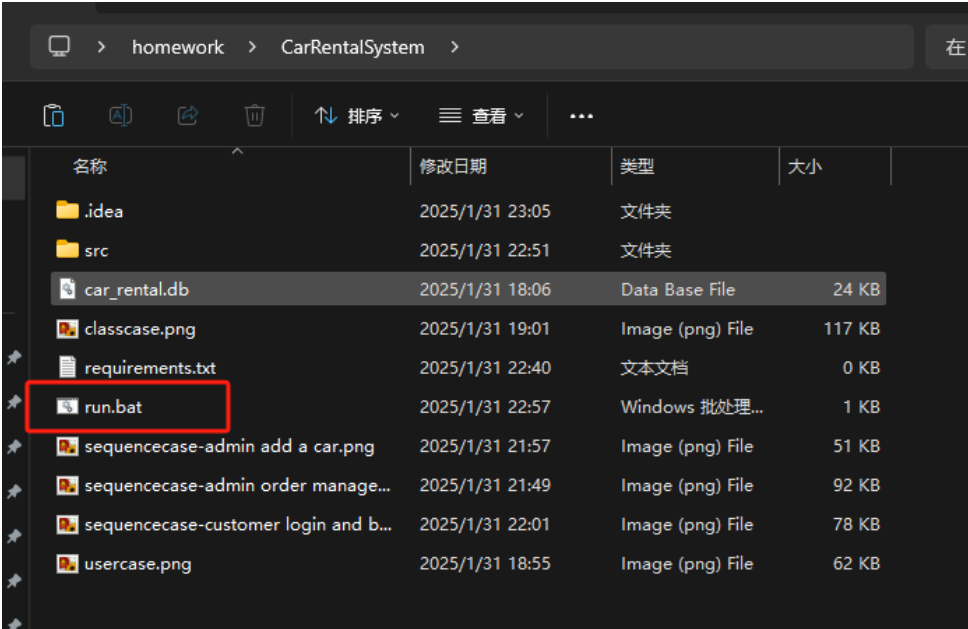
2. Overview

The Car Rental System is a CLI (Command line interface) application to manage car rentals for customers and administrators.

MENU	OPTIONS	DESCRIPTION
Main menu		**Car Rental System**
1	**Login**	Log in with existing credentials. (Already registered users can sign in.)
2	**Register**	Create a new user account. (New users can sign up here.)
3	**Exit**	Exit the application. (Close the program.)
Customer menu		**Customer Menu**
1	**Browse Available Cars**	View a list of available cars with details. (See all cars that are currently available for rental.)
2	**Book a Car**	Select a car and specify the rental period. (Choose a car and set the start and end dates for your rental.)
3	**View Rental Details**	Check booked cars and their status. (View the status of your bookings, including pending, approved, or rejected.)
4	**Logout**	Return to the main menu. (Sign out from the current session and go back to the main menu.)

Admin menu		Admin Menu
1	**Add a Car**	Add a new car to the database. (Enter details of a new car to add it to the inventory.)
2	**Delete a Car**	Delete a car from the database. (Remove a car that is no longer available or needed.)
3	**Update Car Details**	Modify details of an existing car. (Change information such as make, model, year, mileage, availability, or daily rent.)
4	**Browse Orders**	View all orders or unapproved orders. (See a list of all orders or filter to see only pending or unapproved orders.)
5	**Manage Orders**	Approve or reject bookings. (Process pending orders by approving or rejecting them.)
6	**Logout**	Return to the main menu. (Sign out from the admin session and go back to the main menu.)

Usage

Main Menu:

Login: Log in with existing credentials.

Register: Create a new user account.

Exit: Exit the application.

Customer Menu:

Browse Available Cars: View a list of available cars with details.

Book a Car: Select a car and specify the rental period.

View Rental Details: Check booked cars and their status.

Logout: Return to the main menu.

Admin Menu:

Add a Car: Add a new car to the database.

Remove a Car: Delete a car from the database.

Update Car Details: Modify details of an existing car.

Browse Orders: View all orders or unapproved orders.

Manage Orders: Approve or reject bookings.

Logout: Return to the main menu.

3. Architecture

The system is organized into the following modules:

1. CLI (Command Line Interface): Handles user interactions through the command line.

2. Models: Defines data models for users, cars, and bookings.

3. Services: Implements business logic for user, car, and booking operations.

4. Database: Manages database connections and operations.

Project Structure

```
car_rental_system/
|
├── main.py              # Program entry, startup system
├── car_rental.db        # Database for car, order and user information
├── cli/                 # Command Line Interface Modules
|   ├── __init__.py
|   ├── main_menu.py         #  Main Menu
|   ├── customer_menu.py     # Customer Menu
|   ├── admin_menu.py        # Admin Menu
|   └── auth.py              # Authentication logic (login, registration)
├── models/
|   ├── __init__.py
|   └── user.py          # user model
├── services/            #services layer, backend of user menu
|   ├── __init__.py
|   ├── user_service.py
|   ├── car_service.py
|   └── booking_service.py
└──database/             # Database-related modules
   ├── __init__.py
   ├── db_connection.py     # Database Connection and initialization
   └── db_operations.py     # Database operations (add, delete, change, etc.)
```

How to use?

1) Users can select an option by entering a number and pressing the Enter key in the command-line interface.

For example:

Enter 1 and press Enter to log in.

Enter 2 and press Enter to register.

Enter 3 and press Enter to exit the system.

```
=== Car Rental System ===
1. Login
2. Register
3. Exit
Enter your choice number(1-3): 2
```

2) For other operations, follow the system guidelines to enter text and press Enter to confirm.

```
Enter your choice number(1-3): 2
Enter your username: admin1
Enter your password: admin1
Enter phone number: 123
Enter your role (1 for admin, 2 for customer): 1
Registration successful! Welcome, admin1 (admin).
```

4. Features

Register:

Users choose to become administrators or customers by registering.

```
=== Car Rental System ===
1. Login
2. Register
3. Exit
Enter your choice number(1-3): 2
Enter your username: admin1
Enter your password: admin1
Enter phone number: 123
Enter your role (1 for admin, 2 for customer): 1
Registration successful! Welcome, admin1 (admin).
```

User Roles

Customer:

Customer main menu ↓

```
=== Customer Menu ===
1. Browse Available Cars
2. Book a Car
3. View Rental Details
4. Logout

Enter your choice(number 1-4): 4
```

1. Browse available cars.

Output of "1" option

```
Available Cars:
--------------------------------------------------------------------------------
ID    Make          Model         Year      Mileage   Price/Day Availability
--------------------------------------------------------------------------------
2     BMW           1             1         1.0       1.0       Available
--------------------------------------------------------------------------------
```

2. Book a car for a specific period.

Output of "2" option and using process

```
Available Cars:
--------------------------------------------------------------------------------
ID    Make          Model         Year      Mileage   Price/Day Availability
--------------------------------------------------------------------------------
2     BMW           1             1         1.0       1.0       Available
--------------------------------------------------------------------------------
Enter the car ID you want to book: 2
Enter start date (YYYY-MM-DD): 2025-02-01
Enter end date (YYYY-MM-DD): 2025-02-03
Booking successful! Your booking ID is 2.
```

3. View rental details and booking status.

Output of "3" option

```
Enter your choice(number 1-4): 3

Your Rental Details:
----------------------------------------------------------------------------------------------------------------------
Booking ID  Car ID   Make      Model     Year    Mileage  Start Date          End Date            Total Cost  Status
----------------------------------------------------------------------------------------------------------------------
1           1        audi      1         1       1.0      2025-02-01 00:00:00  2025-02-03 00:00:00  3.0        Approved
2           2        BMW       1         1       1.0      2025-02-01 00:00:00  2025-02-03 00:00:00  3.0        pending
----------------------------------------------------------------------------------------------------------------------
```

4. Logout.

Choose "4" → Back to the main menu

```
=== Car Rental System ===
1. Login
2. Register
3. Exit
Enter your choice number(1-3):
```

Administrator:

Administrator main menu ↓

```
=== Admin Menu ===
1. Add a Cars
2. Remove a Car
3. Update car details
4. Browse Orders
5. Manage Orders
6. Logout

Enter your choice(number1-6):
```

1. Add, remove, and update car details.

1) Add a car

the information needed to input in "Add car details"

```
Enter your choice(number1-6): 1
Enter car make: BYD
Enter car model: 1
Enter car manufacture year: 1
Enter car mileage: 1
Enter car daily rent: 1
Car added successfully!
```

2) Remove a car

Enter the car id you want to remove and press "Enter" button to remove

```
Enter car id to remove: 3
Car removed successfully!
```

3) Update car details

the information needed to input in "Update car details"

```
Enter car id to update: 2

Current Car Details:
Make: 2
Model: BMW
Manufacture Year: 1
Mileage: 1
Availability: 1.0
Daily Rent: 1
Enter new make (press enter to keep current): BMW
Enter new model (press enter to keep current): 2
Enter new manufacture year (press enter to keep current): 2
Enter new mileage (press enter to keep current): 2
Enter new availability (Please enter number 1 or 0 for True/False,press enter to keep current): 1
Enter new daily rent (press enter to keep current): 3
Car details updated successfully!
```

2. Browse all orders or Browse unapproved orders.

```
=== Browse Orders ===
1. View All Orders
2. View Unapproved Orders
Enter your choice (1 or 2):
```

Output of "1" option "View all orders":

```
All Orders:
----------------------------------------------------------------------------------------------------------------------
Booking ID  Car ID   Make      Model      Year    Mileage  Start Date           End Date             Total Cost  Status
----------------------------------------------------------------------------------------------------------------------
1           1        audi      1          1       1.0      2025-02-01 00:00:00  2025-02-03 00:00:00  3.0         Approved
2           2        BMW       2          2       2.0      2025-02-01 00:00:00  2025-02-03 00:00:00  3.0         pending
----------------------------------------------------------------------------------------------------------------------
```

Output of "2" option "View unapproved orders":

```
Unapproved Orders:
----------------------------------------------------------------------------------------------------------------------
Booking ID  Car ID   Make      Model      Year    Mileage  Start Date           End Date             Total Cost  Status
----------------------------------------------------------------------------------------------------------------------
2           2        BMW       2          2       2.0      2025-02-01 00:00:00  2025-02-03 00:00:00  3.0         pending
----------------------------------------------------------------------------------------------------------------------
```

3. Approve or reject booking.

Choose option "1" to approve this order or Choose option "2" to reject

```
Enter your choice(number1-6): 5

Unapproved Orders:
-------------------------------------------------------------------------------------------------------------------------------
Booking ID  Car ID   Make        Model        Year      Mileage   Start Date            End Date              Total Cost   Status
-------------------------------------------------------------------------------------------------------------------------------
2           2        BMW         2            2         2.0       2025-02-01 00:00:00   2025-02-03 00:00:00   3.0          pending
-------------------------------------------------------------------------------------------------------------------------------
Enter the booking ID you want to process: 2

1. Approve Booking
2. Reject Booking
Enter your choice (1 or 2): 1
Booking 2 approved successfully.
```

4. Logout.