

README File

Car Rental System

Thanushka Praveen Wickramarachchchi
Student ID: 270599091

Yoobee College
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An object-oriented, Python-based application designed to streamline the car rental process for customers and administrators. This project implements industry-standard software engineering principles to ensure a robust and user-friendly experience.

1 Project Overview

The Car Rental System automates the rental process for a fictional car rental company. By eliminating manual paperwork, it reduces errors and enhances customer satisfaction with a seamless digital experience.

1.1 Key Objectives

- Streamline rental management
 - Enhance interaction between customers and administrators
 - Provide innovative features to offer a competitive edge:

1.2 System Workflow

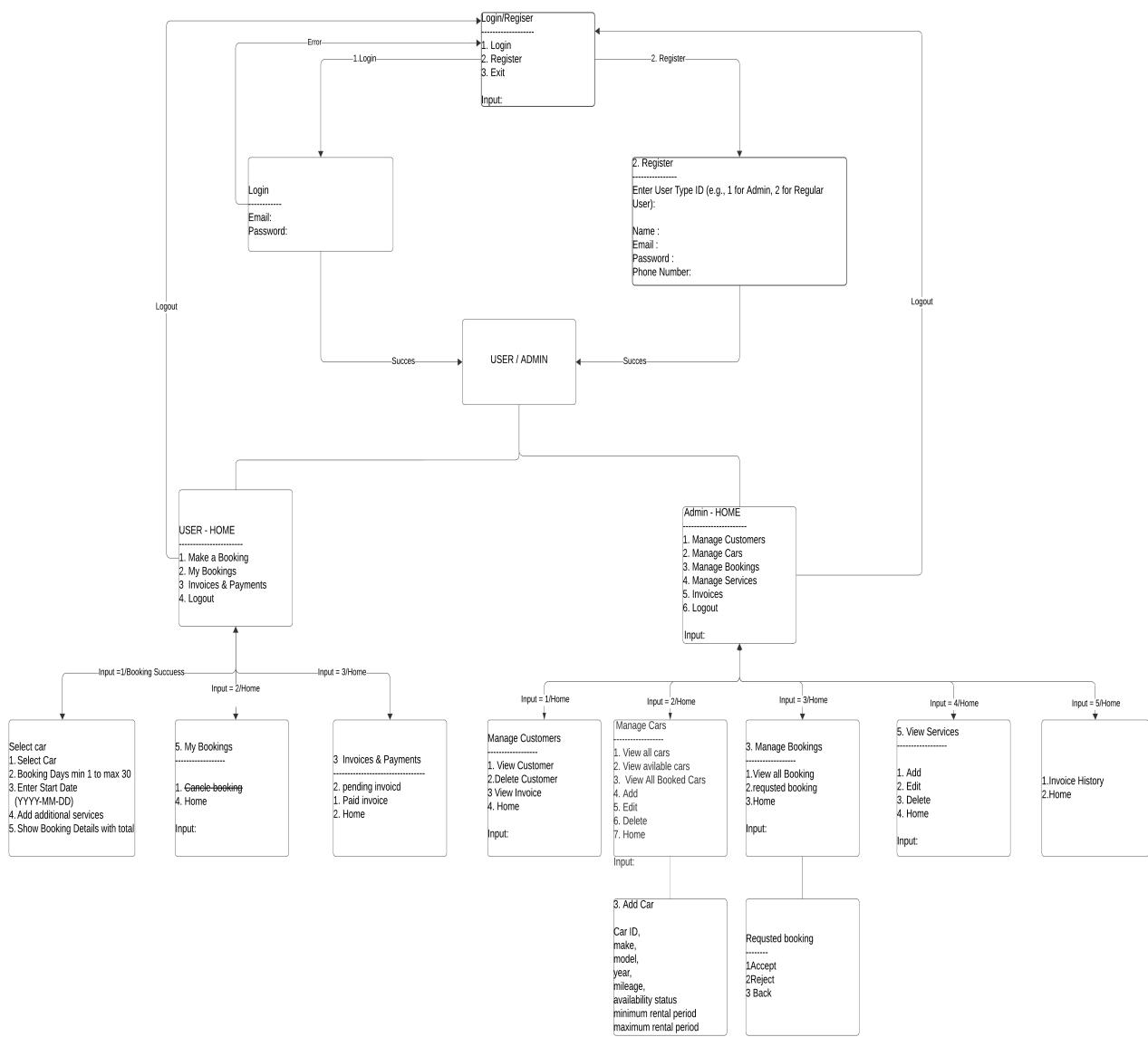


Figure 1: System Workflow

2 Features

2.1 Admin Features

2.1.1 Manage Customers

- **View Customers:** Display details of all registered users.
- **Delete Customers:** Remove customer records from the system. (**In Progress**)
- **View Invoices:** Access invoice history for specific customers.

2.1.2 Manage Cars

- **View All Cars:** Display a list of all cars in the system.
- **View Available Cars:** Filter and display cars currently available for rent.
- **View Booked Cars:** Filter and display cars that are already booked.
- **Add Car:** Add a new car to the inventory with details (e.g., make, model, mileage, year, etc.).
- **Edit Car:** Update details of existing cars.
- **Delete Car:** Remove a car from the inventory.

2.1.3 Manage Bookings

- **View All Bookings:** Display a list of all customer bookings.
- **Approve/Reject Bookings:** Process pending booking requests.
- **Return to Home:** Navigate back to the main admin dashboard.

2.1.4 Manage Services

- **Add, Edit, Delete, View Services:** (**In Progress**)

2.1.5 Invoices and Payments

- **View Invoices:** Access all generated invoices (both pending and paid).
- **Return to Home:** Navigate back to the main admin dashboard.

2.1.6 Logout

- **Secure Logout:** Safely log out of the system and navigate to the first page.

2.2 User Features

2.2.1 User Login/Register

- Users can create an account or log in to access the system.

2.2.2 Make a Booking

- **View Cars:** Users can view all available cars.
- **Select Car:** Choose a car for booking.
- **Specify Rental Duration:** Enter a rental period within the admin-set date range (minimum 1 day, maximum 30 days).
- **Input Start Date:** Provide the booking start date (format: YYYY-MM-DD).
- **Add Services:** Include additional services to the booking.
- **Review Booking:** Confirm booking details and total cost before proceeding.

2.2.3 Booking History

- Users can access and review their previous bookings.

2.2.4 Manage Invoices

- **View Invoices:** Access pending invoices and complete payments.
- **Access Paid Invoices:** View past invoices for reference.

2.2.5 Logout

- **Secure Logout:** Safely log out of the system and navigate to the first page.

3 Technologies Used

3.1 Programming Language

Python

3.2 Database

MySQL

3.3 Integrated Development Environment (IDE)

PyCharm CE

3.4 Libraries and Frameworks

- `mysql-connector-python` - For database operations
- `bcrypt` - For secure password hashing
- `datetime` - For managing date and time fields
- `tabulate` - For tabular data display in CLI
- `Flask` - For web application development
- `requests` - For handling API calls
- `openai` - For AI-powered features
- `httpx` - For asynchronous HTTP requests
- `aiohttp` - For efficient networking operations
- `Jinja2` - For templating support
- `Werkzeug` - For secure application handling
- `twilio` - For SMS notifications
- `yagmail` - For email automation

4 System Requirements

- **Python:** Version 3.8 or higher
- **MySQL:** Version 8.0 or higher
- **IDE:** PyCharm CE or an equivalent editor
- **Internet connection:** Required for downloading dependencies

5 Project Structure

Below is the directory structure of the Car Rental System, with explanations for each file and

```
Project: Car Rental System

+-- LICENSE
+-- README.md
+-- init.py
+-- build
| +-- Main
| +-- localpycs
+-- carrentalsystem-frontend
| +-- chatbot
| | +-- index.php
| | +-- styles.css
| +-- payment
| | +-- index.php
+-- config
+-- config.ini
+-- constants.py
+-- controllers
| +-- init.py
| +-- admin_controller.py
| +-- base_controller.py
| +-- customer_controller.py
| +-- invoice_payment_controller.py
| +-- manage_bookings_controller.py
| +-- manage_cars_controller.py
| +-- manage_customers_controller.py
| +-- manage_services_controller.py
| +-- my_bookings_controller.py
| +-- user_controller.py
+-- database
| +-- init.py
| +-- connection.py
| +-- sql_statement.py
+-- dist
| +-- Main.app
| +-- Contents
| +-- Frameworks
+-- docs
| +-- init.py
| +-- images
| +-- entity_relationship_diagram.png
| +-- work_flow.png
+-- folder_structure.txt
+-- main.py
+-- mining
| +-- data_processing.py
| +-- feature_extraction.py
| +-- model_training.py
| +-- results_analysis.py
```

```
+-- models
| +-+ init.py
| +-+ additional_services.py
| +-+ booking.py
| +-+ booking_additional_services.py
| +-+ booking_status.py
| +-+ car.py
| +-+ car_brand_model.py
| +-+ car_status.py
| +-+ car_type.py
| +-+ invoice.py
| +-+ user.py
| +-+ user_type.py
+-- presenter
| +-+ user_interface.py
+-- qrcode.png
+-- requirements.txt
+-- res
| +-+ init.py
| +-+ string_resources.py
| +-+ strings.json
+-- services
| +-+ init.py
| +-+ chatbot.py
| +-+ email_service.py
| +-+ sms.py
| +-+ web_server.py
+-- test_proj
| +-+ config.py
| +-+ sql_statement_help.py
+-- tests
| +-+ init.py
+-- utils
| +-+ init.py
| +-+ datetime_utils.py
| +-+ input_validation.py
| +-+ populate_db.py
+-- views
+-- init.py
```

Summary:

LICENSE: License file for the project.

README.md: Documentation overview.

config.ini: Configuration settings.

controllers: Business logic controllers for managing system processes.

database: Handles database connections and queries.

docs: Contains documentation and related images.

```

mining: Data mining and machine learning scripts.

models: Defines system data models.

services: Backend services like email, chatbot, and web server.

utils: Helper functions for validation, date management, and DB population.

test_proj: Testing configurations and helper scripts.

views: UI-related components.

folder_structure.txt: Contains the latest directory structure of the project.

```

Main Project Files

- **main.py**: Handles system execution, user interaction, and controls the overall system flow.
- **config.py**: Stores essential configuration parameters such as database connection details and system-wide constants.

Dependency Management

- **requirements.txt**: Lists all required Python libraries and their versions for easy installation and environment setup.

Documentation

- **README.md**: A comprehensive guide containing setup instructions, usage details, and system information.
- **README.pdf**: A detailed guide with complete information, including screenshots, setup instructions, usage details, and system specifications.
- **System Document**: This document provides a detailed explanation of the system's design and architecture using UML diagrams. It includes a **Class Diagram** to illustrate system structure and relationships, a **Use Case Diagram** to define user interactions, and a **Sequence Diagram** to depict the flow of operations. These diagrams ensure a clear understanding of system functionality and interactions.
- **Maintenance and Support**: This document outlines a structured approach to software maintenance, versioning, and backward compatibility, ensuring software stability, updates, and long-term support.

Note: All PDF-related files for this project are maintained using the LaTeX Overleaf tool.

Assets

- **images/**: A directory to store screenshots, diagrams, or other visuals referenced in the documentation (e.g., README.md).

6 Installation Guide

6.1 Clone the Repository

To download the project, run the following commands:

```

git clone https://github.com/thanushkaPraveen/car_rental_system.git
cd car_rental_system

```

6.2 Create a Virtual Environment (Recommended)

To create and activate a virtual environment, use:

```
python -m venv venv
source venv/bin/activate # On macOS/Linux
venv\Scripts\activate # On Windows
```

6.3 Install Dependencies

All dependencies are listed in `requirements.txt`. Install them using:

```
pip install -r requirements.txt
```

6.4 Set Up the Database

First, install MySQL and create a new database.

Set up your configuration file `config.ini` with the following settings:

```
[mysql]
host = localhost
user = root
password = password
```

6.5 Set Up Payment Front-end Implementation

- Install Apache by using Apache. - Install PHP by using `php.net`. - Place your PHP files inside `/usr/local/var/www/` (macOS), `/var/www/html/` (Linux), or `/htdocs` (Windows/XAMPP). - Copy the folder `carrentalsystem-frontend` and its contents to your host at `./htdocs/carrentalsystem-frontend`.

6.6 Run the Application

To start the application, use:

```
python main.py
```

7 Package List

The complete list of dependencies used in this project is shown below:

```
aiohappyeyeballs==2.4.4
aiohttp==3.11.11
aiohttp-retry==2.9.1
aio... (rest of the package list remains unchanged)

aiohappyeyeballs==2.4.4
aiohttp==3.11.11
aiohttp-retry==2.9.1
aiosignal==1.3.2
altgraph==0.17.4
annotated-types==0.7.0
anyio==4.8.0
attrs==25.1.0
bcrypt==4.2.1
blinker==1.9.0
cachetools==5.5.1
certifi==2024.12.14
```

```
charset-normalizer==3.4.1
click==8.1.8
colorama==0.4.6
cssselect==1.2.0
cssutils==2.11.1
distro==1.9.0
Flask==3.1.0
frozenlist==1.5.0
h11==0.14.0
httpcore==1.0.7
httpx==0.28.1
idna==3.10
itsdangerous==2.2.0
Jinja2==3.1.5
jiter==0.8.2
lxml==5.3.0
macholib==1.16.3
MarkupSafe==3.0.2
more-itertools==10.6.0
multidict==6.1.0
mysql-connector-python==9.1.0
openai==1.60.2
packaging==24.2
pillow==11.1.0
premailer==3.10.0
propcache==0.2.1
pydantic==2.10.6
pydantic_core==2.27.2
pyinstaller==6.11.1
pyinstaller-hooks-contrib==2025.0
PyJWT==2.10.1
qrcode==8.0
requests==2.32.3
setuptools==75.8.0
sniffio==1.3.1
svgwrite==1.4.3
tabulate==0.9.0
tqdm==4.67.1
Tree==0.2.4
twilio==9.4.4
typing_extensions==4.12.2
urllib3==2.3.0
Werkzeug==3.1.3
yagmail==0.15.293
yarl==1.18.3
```

8 Usage Instructions

8.1 Admin Usage

8.1.1 Login

Enter admin credentials to access the **Admin - HOME**

```
Welcome to the Car Rental System!
1. Login
2. Register
3. Exit
Enter your choice: 1
Enter your email address: admin@admin.com
Enter your password: admin
 Login successful!
```

```
Welcome to the Admin - HOME
```

```
Admin - HOME
-----
```

- 1. Manage Customers
 - 2. Manage Cars
 - 3. Manage Bookings
 - 4. Manage Services
 - 5. Invoices
 - 6. Logout
- ```

```

```
Enter your choice (1-6):
```

#### 8.1.2 Manage Customers

View customer records, [delete customers](#), or view their invoices.

**View customer**

```

Manage Customers

1. View Customer
2. Delete Customer
3. View Invoice
4. Home

Enter your choice (1-4): 1
Viewing customer details...

User Details

User ID	User Name	User Email	User Phone Number
2	Bob Johnson	user@user.com	0987654321
3	Charlie Brown	charlie@brown.com	1122334455
4	Diana Prince	diana@prince.com	9988776655
5	Evan Parker	evan@parker.com	6677889900


```

### View customer

```

Manage Customers

1. View Customer
2. Delete Customer
3. View Invoice
4. Home

Enter your choice (1-4): 1
Viewing customer details...

User Details

User ID	User Name	User Email	User Phone Number
2	Bob Johnson	user@user.com	0987654321
3	Charlie Brown	charlie@brown.com	1122334455
4	Diana Prince	diana@prince.com	9988776655
5	Evan Parker	evan@parker.com	6677889900


```

#### 8.1.3 Manage Cars

View All Cars, View Available Cars, View All Booked Cars, Add Car, Edit Car, Delete Car

##### Manage Cars First Screen

## Manage Cars

---

1. View All Cars
  2. View Available Cars
  3. View All Booked Cars
  4. Add Car
  5. Edit Car
  6. Delete Car
  7. Home
- 

Enter your choice (1-7):

### 1. View All Cars

| Index | Number Plate | Model Name          | Brand           | Brand Model | Car Type   | Status      | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
|-------|--------------|---------------------|-----------------|-------------|------------|-------------|------------|------|---------|-------------------|-------------------|-----------|
| 1     | ABC-1234     | Toyota RAV4         | Toyota          | RAV4        | Car        | Available   | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2     | XYZ-5678     | Toyota Corolla      | Toyota          | Corolla     | Car        | Available   | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3     | LMN-3456     | Honda Civic         | Honda           | Civic       | Car        | Unavailable | 110        | 2019 | 20000   | 2                 | 30                | Active    |
| 4     | DEF-7890     | Ford Explorer       | Harley-Davidson | Sportster   | Motorcycle | Available   | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 5     | GHI-2345     | Jeep Grand Cherokee | Yamaha          | MT-07       | Motorcycle | Unavailable | 140        | 2021 | 8000    | 3                 | 30                | Active    |
| 6     | ACD-3242     | Rave - MZ           | Toyota          | RAV4        | Car        | Available   | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 7     | ZZZ-1494     | NISMA-56            | Ford            | Explorer    | SUV        | Available   | 20093      | 2020 | 7772    | 1                 | 30                | Active    |

### 2. View Available Cars

| Index | Number Plate | Model Name     | Brand           | Brand Model | Car Type   | Status    | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
|-------|--------------|----------------|-----------------|-------------|------------|-----------|------------|------|---------|-------------------|-------------------|-----------|
| 1     | ABC-1234     | Toyota RAV4    | Toyota          | RAV4        | Car        | Available | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2     | XYZ-5678     | Toyota Corolla | Toyota          | Corolla     | Car        | Available | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3     | DEF-7890     | Ford Explorer  | Harley-Davidson | Sportster   | Motorcycle | Available | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 4     | ACD-3242     | Rave - MZ      | Toyota          | RAV4        | Car        | Available | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 5     | ZZZ-1494     | NISMA-56       | Ford            | Explorer    | SUV        | Available | 20093      | 2020 | 7772    | 1                 | 30                | Active    |

### 3. View All Booked Cars

Manage Cars

- 1. View All Cars  
2. View Available Cars  
3. View All Booked Cars  
4. Add Car  
5. Edit Car  
6. Delete Car  
7. Home

-----  
Enter your choice (1-7): 2

Viewing available cars...

| Index | Number Plate | Model Name     | Brand           | Brand Model | Car Type   | Status    | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
|-------|--------------|----------------|-----------------|-------------|------------|-----------|------------|------|---------|-------------------|-------------------|-----------|
| 1     | ABC-1234     | Toyota RAV4    | Toyota          | RAV4        | Car        | Available | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2     | XYZ-5678     | Toyota Corolla | Toyota          | Corolla     | Car        | Available | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3     | DEF-7890     | Ford Explorer  | Harley-Davidson | Sportster   | Motorcycle | Available | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 4     | ACD-3242     | Rave - MZ      | Toyota          | RAV4        | Car        | Available | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 5     | ZZZ-1494     | NISA-56        | Ford            | Explorer    | SUV        | Available | 20093      | 2020 | 7772    | 1                 | 30                | Active    |

#### 4. Add Car

```

Enter your choice (1-7): 4
```

```
Adding a new car...
```

| Index | Car Type   | Brand Name      | Model Name     |
|-------|------------|-----------------|----------------|
| 1     | Car        | Toyota          | RAV4           |
| 2     | Car        | Toyota          | Corolla        |
| 3     | Car        | Honda           | Civic          |
| 4     | Motorcycle | Harley-Davidson | Sportster      |
| 5     | Motorcycle | Yamaha          | MT-07          |
| 6     | Truck      | Volvo           | FH16           |
| 7     | Truck      | Mercedes-Benz   | Actros         |
| 8     | Bus        | Volvo           | 9400           |
| 9     | Bus        | Scania          | Touring        |
| 10    | Van        | Ford            | Transit        |
| 11    | Van        | Mercedes-Benz   | Sprinter       |
| 12    | SUV        | Jeep            | Grand Cherokee |
| 13    | SUV        | Ford            | Explorer       |

```
Enter Car Brand Model ID (1-13): 5
```

```
Enter Number Plate (e.g., ABC-1234): ALM-1234
```

```
Enter Model Name (e.g., Toyota RAV4): Yamaha - LXR
```

```
Enter Daily Rate (e.g., 120.50): 98
```

```
Enter Year (e.g., 2021): 2022
```

```
Enter Mileage (e.g., 10000): 50050
```

```
Enter Minimum Rental Period (e.g., 1): 5
```

```
Enter Maximum Rental Period (e.g., 30): 20
```

```
Is the car active? (1 for Yes, 0 for No): 1
```

```
Is the car status? (1 for Available, 2 for Unavailable): 1
```

```
Do you want to proceed? (1 for Yes, 0 for No): 1
```

```
The car has been added to the database successfully.
```

```
Press Enter to go back to the previous screen...
```

Viewing all cars...

| Index | Number Plate | Model Name          | Brand           | Brand Model | Car Type   | Status      | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
|-------|--------------|---------------------|-----------------|-------------|------------|-------------|------------|------|---------|-------------------|-------------------|-----------|
| 1     | ABC-1234     | Toyota RAV4         | Toyota          | RAV4        | Car        | Available   | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2     | XYZ-5678     | Toyota Corolla      | Toyota          | Corolla     | Car        | Available   | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3     | LMN-3456     | Honda Civic         | Honda           | Civic       | Car        | Unavailable | 110        | 2019 | 20000   | 2                 | 30                | Active    |
| 4     | DEF-7890     | Ford Explorer       | Harley-Davidson | Sportster   | Motorcycle | Available   | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 5     | GHI-2345     | Jeep Grand Cherokee | Yamaha          | MT-07       | Motorcycle | Unavailable | 140        | 2021 | 8000    | 3                 | 30                | Active    |
| 6     | ACD-3242     | Rave - MZ           | Toyota          | RAV4        | Car        | Available   | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 7     | ZZZ-1496     | NISA-56             | Ford            | Explorer    | SUV        | Available   | 20093      | 2020 | 7772    | 1                 | 30                | Active    |
| 8     | ALM-1234     | Yamaha - LXR        | Yamaha          | MT-07       | Motorcycle | Available   | 98         | 2022 | 50058   | 5                 | 20                | Active    |

You can see added file in **View Available Cars** area

```
Enter Car Brand Model ID (1-13): 15
Please enter a number between 1 and 13.
Enter Car Brand Model ID (1-13): 3
Enter Number Plate (e.g., ABC-1234):
Invalid number plate format. Please try again.
Enter Number Plate (e.g., ABC-1234): ABC-1221
Enter Model Name (e.g., Toyota RAV4):
This field cannot be empty. Please try again.
Enter Model Name (e.g., Toyota RAV4): Civic - FD2 RS
Enter Daily Rate (e.g., 120.50): sasa
Invalid input. Please enter a valid number.
Enter Daily Rate (e.g., 120.50): 200
Enter Year (e.g., 2021):
Invalid input. Please enter a valid year.
Enter Year (e.g., 2021): 22222222
Please enter a year between 1900 and 2025.
Enter Year (e.g., 2021): 2022
Enter Mileage (e.g., 10000): deea
Invalid input. Please enter a valid integer.
Enter Mileage (e.g., 10000): 20000
Enter Minimum Rental Period (e.g., 1): 10
Enter Maximum Rental Period (e.g., 30): 2
Maximum rental period must be greater than or equal to the minimum rental period.
Enter Maximum Rental Period (e.g., 30): 5
Maximum rental period must be greater than or equal to the minimum rental period.
Enter Maximum Rental Period (e.g., 30): 30
Is the car active? (1 for Yes, 0 for No): 4
Invalid input. Please enter 1 (Yes) or 0 (No).
Is the car active? (1 for Yes, 0 for No): 1
Is the car status? (1 for Available, 2 for Unavailable): 4
Invalid input. Please enter 1 (Yes) or 0 (No).
Is the car status? (1 for Available, 2 for Unavailable): 1
Do you want to proceed? (1 for Yes, 0 for No): 4
Invalid input. Please enter 1 (Yes) to confirm or 0 (No) to cancel.
Do you want to proceed? (1 for Yes, 0 for No): 1
```

NOTE: All the fields are validated accordingly.

## 5. Edit Car

Enter your choice (1-7): 5

Editing car details...

| Index | Number Plate | Model Name          | Brand           | Brand Model | Car Type   | Status      | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
|-------|--------------|---------------------|-----------------|-------------|------------|-------------|------------|------|---------|-------------------|-------------------|-----------|
| 1     | ABC-1234     | Toyota RAV4         | Toyota          | RAV4        | Car        | Available   | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2     | XYZ-5678     | Toyota Corolla      | Toyota          | Corolla     | Car        | Available   | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3     | LNN-3456     | Honda Civic         | Honda           | Civic       | Car        | Unavailable | 110        | 2019 | 20000   | 2                 | 30                | Active    |
| 4     | DEF-7890     | Ford Explorer       | Harley-Davidson | Sportster   | Motorcycle | Available   | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 5     | GHI-2345     | Jeep Grand Cherokee | Yamaha          | MT-07       | Motorcycle | Unavailable | 140        | 2021 | 8000    | 3                 | 30                | Active    |
| 6     | ACD-3242     | Rave - KZ           | Toyota          | RAV4        | Car        | Available   | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 7     | ABC-1221     | Civic - FD2 RS      | Honda           | Civic       | Car        | Available   | 200        | 2022 | 20000   | 10                | 30                | Active    |
| 8     | ALM-1234     | Yamaha - LXR        | Yamaha          | MT-07       | Motorcycle | Available   | 98         | 2022 | 5000    | 5                 | 20                | Active    |

Enter Car Index Edit (1-8): 5

```
Enter Car Index Edit (1-8): 5
```

| Index   Car Type   Brand Name   Model Name   |
|----------------------------------------------|
| 1   Car   Toyota   RAV4                      |
| 2   Car   Toyota   Corolla                   |
| 3   Car   Honda   Civic                      |
| 4   Motorcycle   Harley-Davidson   Sportster |
| 5   Motorcycle   Yamaha   MT-07              |
| 6   Truck   Volvo   FH16                     |
| 7   Truck   Mercedes-Benz   Actros           |
| 8   Bus   Volvo   9400                       |
| 9   Bus   Scania   Touring                   |
| 10   Van   Ford   Transit                    |
| 11   Van   Mercedes-Benz   Sprinter          |
| 12   SUV   Jeep   Grand Cherokee             |
| 13   SUV   Ford   Explorer                   |

```
Enter Car Brand Model ID (1-13): 5
```

```
Enter Number Plate (e.g., ABC-1234): ABB-1212
```

```
Enter Model Name (e.g., Toyota RAV4): Yamaha - 1111
```

```
Enter Daily Rate (e.g., 120.50): 99
```

```
Enter Year (e.g., 2021): 2023
```

```
Enter Mileage (e.g., 10000): 1222
```

```
Enter Minimum Rental Period (e.g., 1): 5
```

```
Enter Maximum Rental Period (e.g., 30): 25
```

```
Is the car active? (1 for Yes, 0 for No): 1
```

```
Is the car status? (1 for Available, 2 for Unavailable): 1
```

```
Do you want to proceed? (1 for Yes, 0 for No): 1
```

```
Car with ID 5 updated.
```

| Car with ID 5 updated.<br>The car has been updated to the database successfully. |              |                |                 |             |            |             |            |      |         |                   |                   |           |
|----------------------------------------------------------------------------------|--------------|----------------|-----------------|-------------|------------|-------------|------------|------|---------|-------------------|-------------------|-----------|
| Index                                                                            | Number Plate | Model Name     | Brand           | Brand Model | Car Type   | Status      | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
| 1                                                                                | ABC-1234     | Toyota RAV4    | Toyota          | RAV4        | Car        | Available   | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2                                                                                | XYZ-5678     | Toyota Corolla | Toyota          | Corolla     | Car        | Available   | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3                                                                                | LMN-3456     | Honda Civic    | Honda           | Civic       | Car        | Unavailable | 110        | 2019 | 20000   | 2                 | 30                | Active    |
| 4                                                                                | DEF-7890     | Ford Explorer  | Harley-Davidson | Sportster   | Motorcycle | Available   | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 5                                                                                | ABB-1212     | Yamaha - 1111  | Yamaha          | MT-07       | Motorcycle | Available   | 99         | 2023 | 1222    | 5                 | 25                | Active    |
| 6                                                                                | ACD-3242     | Rave - MZ      | Toyota          | RAV4        | Car        | Available   | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 7                                                                                | ABC-1221     | Civic - FD2 RS | Honda           | Civic       | Car        | Available   | 200        | 2022 | 20000   | 10                | 30                | Active    |
| 8                                                                                | ALM-1234     | Yamaha - LXR   | Yamaha          | MT-07       | Motorcycle | Available   | 98         | 2022 | 50050   | 5                 | 20                | Active    |

Checked updated car details from the table...  
Press Enter to go back to the previous screen...

## 6. Delete Car

| Enter your choice (1-7): 6<br>Deleting a car... |              |                |                 |             |            |             |            |      |         |                   |                   |           |
|-------------------------------------------------|--------------|----------------|-----------------|-------------|------------|-------------|------------|------|---------|-------------------|-------------------|-----------|
| Index                                           | Number Plate | Model Name     | Brand           | Brand Model | Car Type   | Status      | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
| 1                                               | ABC-1234     | Toyota RAV4    | Toyota          | RAV4        | Car        | Available   | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2                                               | XYZ-5678     | Toyota Corolla | Toyota          | Corolla     | Car        | Available   | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3                                               | LMN-3456     | Honda Civic    | Honda           | Civic       | Car        | Unavailable | 110        | 2019 | 20000   | 2                 | 30                | Active    |
| 4                                               | DEF-7890     | Ford Explorer  | Harley-Davidson | Sportster   | Motorcycle | Available   | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 5                                               | ABB-1212     | Yamaha - 1111  | Yamaha          | MT-07       | Motorcycle | Available   | 99         | 2023 | 1222    | 5                 | 25                | Active    |
| 6                                               | ACD-3242     | Rave - MZ      | Toyota          | RAV4        | Car        | Available   | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 7                                               | ABC-1221     | Civic - FD2 RS | Honda           | Civic       | Car        | Available   | 200        | 2022 | 20000   | 10                | 30                | Active    |
| 8                                               | ALM-1234     | Yamaha - LXR   | Yamaha          | MT-07       | Motorcycle | Available   | 98         | 2022 | 50050   | 5                 | 20                | Active    |

Enter Car Index to Delete (1-8): 3  
Do you want to proceed? (1 for Yes, 0 for No): 1  
Car with ID 3 updated.  
The car has been deleted successfully.

|   |          |                |                 |           |            |           |        |      |       |    |    |        |
|---|----------|----------------|-----------------|-----------|------------|-----------|--------|------|-------|----|----|--------|
| 1 | ABC-1234 | Toyota RAV4    | Toyota          | RAV4      | Car        | Available | 120.5  | 2021 | 10000 | 1  | 30 | Active |
| 2 | XYZ-5678 | Toyota Corolla | Toyota          | Corolla   | Car        | Available | 100    | 2020 | 15000 | 1  | 30 | Active |
| 3 | DEF-7890 | Ford Explorer  | Harley-Davidson | Sportster | Motorcycle | Available | 130.75 | 2022 | 5000  | 1  | 30 | Active |
| 4 | ABB-1212 | Yamaha - 1111  | Yamaha          | MT-07     | Motorcycle | Available | 99     | 2023 | 1222  | 5  | 25 | Active |
| 5 | ACD-3242 | Rave - MZ      | Toyota          | RAV4      | Car        | Available | 139    | 2004 | 19388 | 4  | 30 | Active |
| 6 | ABC-1221 | Civic - FD2 RS | Honda           | Civic     | Car        | Available | 200    | 2022 | 20000 | 10 | 30 | Active |
| 7 | ALM-1234 | Yamaha - LXR   | Yamaha          | MT-07     | Motorcycle | Available | 98     | 2022 | 50050 | 5  | 20 | Active |

Current available cars ...  
Press Enter to go back to the previous screen...|

### 8.1.4 Manage Bookings

View All Bookings, Requested Bookings (Approve or reject booking requests)

#### 1. View All Bookings

| Manage Bookings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|--------------|-----------|--------------|----------------|------------|------|-------------------|------------------------------------|----------------|-------|------------|------------|----------|--------------|--------|--------------|------------|------------|------|-----------|------------|------|---|---|------------|------------|-------|-----------|----------|----------------|-----|------|-------------|---------------|---------------|---|---|------------|------------|-----|---------|----------|-------------|-------|------|---------------|-------------------|----------------|---|---|------------|------------|-----|-----------|----------|-------------|-----|------|---------------|-------------------|---------------|---|---|------------|------------|--------|---------|----------|---------------|--------|------|-------------------|------------------------------------|---------------|---|---|------------|------------|---------|---------|----------|---------------|--------|------|-------------------|------------------------------------|--|
| -----                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 1. View All Bookings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 2. Requested Bookings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 3. Home                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| -----                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| Enter your choice (1-3): 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| Viewing all bookings...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |            |            |              |           |              |                |            |      |                   |                                    |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| <table border="1"><thead><tr><th>Index</th><th>Booking ID</th><th>Start Date</th><th>End Date</th><th>Total Amount</th><th>Status</th><th>Number Plate</th><th>Model Name</th><th>Daily Rate</th><th>Year</th><th>User Name</th><th>User Email</th><th>Note</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>2025-02-02</td><td>2025-02-03</td><td>120.5</td><td>Confirmed</td><td>XYZ-5678</td><td>Toyota Corolla</td><td>100</td><td>2020</td><td>Bob Johnson</td><td>user@user.com</td><td>First booking</td></tr><tr><td>2</td><td>2</td><td>2025-02-03</td><td>2025-02-04</td><td>240</td><td>Pending</td><td>ABC-1234</td><td>Toyota RAV4</td><td>120.5</td><td>2021</td><td>Charlie Brown</td><td>charlie@brown.com</td><td>Second booking</td></tr><tr><td>3</td><td>3</td><td>2025-02-04</td><td>2025-02-05</td><td>340</td><td>Cancelled</td><td>LMN-3456</td><td>Honda Civic</td><td>110</td><td>2019</td><td>Charlie Brown</td><td>charlie@brown.com</td><td>Third booking</td></tr><tr><td>4</td><td>4</td><td>2025-02-05</td><td>2025-02-15</td><td>1352.5</td><td>Pending</td><td>DEF-7890</td><td>Ford Explorer</td><td>130.75</td><td>2022</td><td>Thanushka Pravens</td><td>thanushkawickranarachchi@gmail.com</td><td>First Booking</td></tr><tr><td>5</td><td>5</td><td>2025-02-08</td><td>2025-02-23</td><td>1986.25</td><td>Pending</td><td>DEF-7890</td><td>Ford Explorer</td><td>130.75</td><td>2022</td><td>Thanushka Pravens</td><td>thanushkawickranarachchi@gmail.com</td><td></td></tr></tbody></table> |            |            |            |              |           |              |                |            |      |                   |                                    |                | Index | Booking ID | Start Date | End Date | Total Amount | Status | Number Plate | Model Name | Daily Rate | Year | User Name | User Email | Note | 1 | 1 | 2025-02-02 | 2025-02-03 | 120.5 | Confirmed | XYZ-5678 | Toyota Corolla | 100 | 2020 | Bob Johnson | user@user.com | First booking | 2 | 2 | 2025-02-03 | 2025-02-04 | 240 | Pending | ABC-1234 | Toyota RAV4 | 120.5 | 2021 | Charlie Brown | charlie@brown.com | Second booking | 3 | 3 | 2025-02-04 | 2025-02-05 | 340 | Cancelled | LMN-3456 | Honda Civic | 110 | 2019 | Charlie Brown | charlie@brown.com | Third booking | 4 | 4 | 2025-02-05 | 2025-02-15 | 1352.5 | Pending | DEF-7890 | Ford Explorer | 130.75 | 2022 | Thanushka Pravens | thanushkawickranarachchi@gmail.com | First Booking | 5 | 5 | 2025-02-08 | 2025-02-23 | 1986.25 | Pending | DEF-7890 | Ford Explorer | 130.75 | 2022 | Thanushka Pravens | thanushkawickranarachchi@gmail.com |  |
| Index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Booking ID | Start Date | End Date   | Total Amount | Status    | Number Plate | Model Name     | Daily Rate | Year | User Name         | User Email                         | Note           |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1          | 2025-02-02 | 2025-02-03 | 120.5        | Confirmed | XYZ-5678     | Toyota Corolla | 100        | 2020 | Bob Johnson       | user@user.com                      | First booking  |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2          | 2025-02-03 | 2025-02-04 | 240          | Pending   | ABC-1234     | Toyota RAV4    | 120.5      | 2021 | Charlie Brown     | charlie@brown.com                  | Second booking |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3          | 2025-02-04 | 2025-02-05 | 340          | Cancelled | LMN-3456     | Honda Civic    | 110        | 2019 | Charlie Brown     | charlie@brown.com                  | Third booking  |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4          | 2025-02-05 | 2025-02-15 | 1352.5       | Pending   | DEF-7890     | Ford Explorer  | 130.75     | 2022 | Thanushka Pravens | thanushkawickranarachchi@gmail.com | First Booking  |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5          | 2025-02-08 | 2025-02-23 | 1986.25      | Pending   | DEF-7890     | Ford Explorer  | 130.75     | 2022 | Thanushka Pravens | thanushkawickranarachchi@gmail.com |                |       |            |            |          |              |        |              |            |            |      |           |            |      |   |   |            |            |       |           |          |                |     |      |             |               |               |   |   |            |            |     |         |          |             |       |      |               |                   |                |   |   |            |            |     |           |          |             |     |      |               |                   |               |   |   |            |            |        |         |          |               |        |      |                   |                                    |               |   |   |            |            |         |         |          |               |        |      |                   |                                    |  |

#### 2. Requested Bookings

- If the booking dates overlap, the overlapping dates are shown in red. The admin can approve only one booking, and the other booking should be rejected.
- Once the booking is approved, the customer receives an email with the booking invoice.

Manage Bookings

- 1. View All Bookings  
2. Requested Bookings  
3. Home

Enter your choice (1-3): 2

Viewing all requested bookings...

| Index | Booking ID | Start Date | End Date   | Total Amount | Status  | Number Plate | Model Name    | Daily Rate | Year | User Name         | User Email                         | Note           |
|-------|------------|------------|------------|--------------|---------|--------------|---------------|------------|------|-------------------|------------------------------------|----------------|
| 2     | 2          | 2025-02-03 | 2025-02-04 | 240          | Pending | ABC-1234     | Toyota RAV4   | 128.5      | 2021 | Charlie Brown     | charlie@brown.com                  | Second booking |
| 4     | 4          | 2025-02-05 | 2025-02-15 | 1352.5       | Pending | DEF-7890     | Ford Explorer | 130.75     | 2022 | Thanushka Praveen | thanushkawickramarachchi@gmail.com | First Booking  |
| 5     | 5          | 2025-02-08 | 2025-02-23 | 1986.25      | Pending | DEF-7890     | Ford Explorer | 130.75     | 2022 | Thanushka Praveen | thanushkawickramarachchi@gmail.com |                |

Enter Booking ID to see the Booking Details: 4

Viewing booking details...

Booking Details

-----

| Index | Booking ID | Start Date | End Date   | Total Amount | Status  | Number Plate | Model Name    | Daily Rate | Year | User Name         | User Email                         | Note          |
|-------|------------|------------|------------|--------------|---------|--------------|---------------|------------|------|-------------------|------------------------------------|---------------|
| 1     | 4          | 1738666800 | 1739530800 | 1352.5       | Pending | DEF-7890     | Ford Explorer | 130.75     | 2022 | Thanushka Praveen | thanushkawickramarachchi@gmail.com | First Booking |

Additional Service Details

-----

| Index | Additional Service ID | Service Description | Amount |
|-------|-----------------------|---------------------|--------|
| 1     | 1                     | GPS Navigation      | 15     |
| 2     | 2                     | Child Seat          | 10     |
| 3     | 3                     | Additional Driver   | 20     |

Enter your choice (1 - Confirm, 2 - Reject, 3 - Back): 1

Sending invoice details...

[praveen.tpw@gmail.com](mailto:praveen.tpw@gmail.com)

to me ▾

Dear Thanushka Praveen,

Please find the invoice for your booking details:

=====

**INVOICE**

=====

**Invoice Number: 2**

**Invoice Date: 2025-02-02**

-----

**Itemized Details:**

-----

**Booking ID: 4**

**Pickup Date: 2025-02-05**

**Return Date: 2025-02-15**

**Total Price: 1352.5**

**Additional Services Booked:**

- GPS Navigation 15.0
- Child Seat 10.0
- Additional Driver 20.0

-----

**Total Amount: 1352.5**

**Amount Paid: \$0.00**

**Balance Due: 1352.5**

### 8.1.5 View Invoices

Track pending and paid invoices.

| Admin - HOME                 |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
|------------------------------|----------------|--------------------|--------------------|------------------------------------|------------------|------------|------------|-----------|----------------|---------------------|---------|--|--|--|--|--|--|
| -----                        |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
| 1. Manage Customers          | 2. Manage Cars | 3. Manage Bookings | 4. Manage Services | 5. Invoices                        | 6. Logout        |            |            |           |                |                     |         |  |  |  |  |  |  |
| -----                        |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
| Enter your choice (1-6): 5   |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
| -----                        |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
| Invoice Details              |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
| -----                        |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |
| Invoice ID                   | Booking ID     | User ID            | User Name          | User Email                         | Car Number Plate | Start Date | End Date   | Amount    | Payment Method | Payment Date        | Is Paid |  |  |  |  |  |  |
| 1                            | 1              | 2                  | Bob Johnson        | user@user.com                      | XYZ-5478         | 2025-02-02 | 2025-02-03 | \$135.50  | Credit Card    | 2025-02-02 16:47:12 | Yes     |  |  |  |  |  |  |
| 2                            | 4              | 6                  | Thanushka Praveen  | thanushkawickramarachchi@gmail.com | DEF-7890         | 2025-02-05 | 2025-02-15 | \$1352.50 | N/A            | N/A                 | No      |  |  |  |  |  |  |
| Press any key to continue... |                |                    |                    |                                    |                  |            |            |           |                |                     |         |  |  |  |  |  |  |

## 8.2 Customer Usage

### 8.2.1 Register/Login

New customers can register, while returning customers can log in to their accounts.

```
Welcome to the Car Rental System!
1. Login
2. Register
3. Exit
Enter your choice: 2

-- Register --
Enter User Type ID (e.g., 1 for Admin, 2 for Regular User):2
Enter your name: thanushka
Enter your email address: thanushkawickramarachchi@gmail.com
Enter your phone number: +64204489222
Enter your password: thanu
```

Passwords are encrypted before being stored in the database using a secure hashing algorithm. When a user logs in, the entered password is hashed and compared with the stored hash to verify authentication without decrypting the password. This ensures security and prevents unauthorized access.

### 8.2.2 Book a Car

Browse available cars, select the rental duration, and add additional services.

```
USER - HOME

Name: thanushka
Email: thanushkawickramarachchi@gmail.com

1. Booking a car
2. My Bookings
3. Invoices & Payments
4. Logout

Enter your choice (1-4): 1
Selecting a car...

```

| Index | Number Plate | Model Name     | Brand           | Brand Model | Car Type   | Status    | Daily Rate | Year | Mileage | Min Rental Period | Max Rental Period | Is Active |
|-------|--------------|----------------|-----------------|-------------|------------|-----------|------------|------|---------|-------------------|-------------------|-----------|
| 1     | ABC-1234     | Toyota RAV4    | Toyota          | RAV4        | Car        | Available | 120.5      | 2021 | 10000   | 1                 | 30                | Active    |
| 2     | XYZ-5678     | Toyota Corolla | Toyota          | Corolla     | Car        | Available | 100        | 2020 | 15000   | 1                 | 30                | Active    |
| 3     | DEF-7890     | Ford Explorer  | Harley-Davidson | Sportster   | Motorcycle | Available | 130.75     | 2022 | 5000    | 1                 | 30                | Active    |
| 4     | ABB-1212     | Yamaha - 1111  | Yamaha          | MT-07       | Motorcycle | Available | 99         | 2023 | 1222    | 5                 | 25                | Active    |
| 5     | ACD-3242     | Rave - MZ      | Toyota          | RAV4        | Car        | Available | 139        | 2004 | 19388   | 4                 | 30                | Active    |
| 6     | ABC-1221     | Civic - FD2 RS | Honda           | Civic       | Car        | Available | 200        | 2022 | 20000   | 10                | 30                | Active    |
| 7     | ALM-1234     | Yamaha - LXR   | Yamaha          | MT-07       | Motorcycle | Available | 98         | 2022 | 50050   | 5                 | 20                | Active    |

```
Enter Selected Car Index (1-7): 3
How many days would you like to book? (Choose between 1 and 30 days):10
Enter Start Date (YYYY-MM-DD): 2025-02-05
Valid future date entered: 2025-02-05
Do you want to add additional services? (1 for Yes, 0 for No): 3
Invalid input. Please enter 1 (Yes) or 0 (No).
Do you want to add additional services? (1 for Yes, 0 for No): 1,2,3
Invalid input. Please enter 1 (Yes) or 0 (No).
Do you want to add additional services? (1 for Yes, 0 for No): 1

Available Additional Services:
ID Description Amount Status
1 GPS Navigation 15.0 Active
2 Child Seat 10.0 Active
3 Additional Driver 20.0 Active

Enter the IDs of the services you want to select (comma-separated): 1,2,3
```

Booking Details:  
Start Date: 2025-02-05  
End Date: 2025-02-15  
Number of Days: 10  
Car Number Plate: DEF-7890  
Car Brand: Harley-Davidson  
Car Model: Sportster

Daily rate(130.75) x booking\_days(10) = 1307.5  
GPS Navigation = 15.00  
Child Seat = 10.00  
Additional Driver = 20.00  
Total = 1352.50  
Do you want to confirm your booking? (1 for Yes, 0 for No): 1  
Enter a note for the booking (optional, press Enter to skip): *First Booking*  
Please check your email regarding the booking details.  
Press any key to continue...|

## Your Car Booking Details - 4 Inbox x

[praveen\(tpw@gmail.com](#)

to me ▾

Dear thanushka,

Thank you for booking with us! Here are your booking details:

Booking ID: 4  
Car Model: Sportster  
Car Brand: Harley-Davidson  
Pickup Date: 2025-02-05  
Return Date: 2025-02-15  
Total Price: 1352.5

### Additional Services Booked:

- GPS Navigation
- Child Seat

...

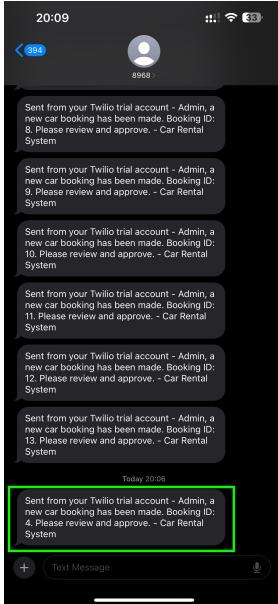
- Additional Driver

Please ensure to carry your valid driving license and ID during pickup.

If you have any questions, feel free to contact our support team.

Safe travels!  
Best Regards,  
Car Rental Team

*The customer receives an email regarding the booking details.*



The admin receives an SMS regarding the booking request.

```

Enter Selected Car Index (1-7): 29
Please enter a number between 1 and 7.
Enter Selected Car Index (1-7): 3
How many days would you like to book? (Choose between 1 and 30 days):31
Please enter a number between 1 and 30.
How many days would you like to book? (Choose between 1 and 30 days):15
Enter Start Date (YYYY-MM-DD): 22222
Invalid format! Please enter the date in 'YYYY-MM-DD' format.
Enter Start Date (YYYY-MM-DD): 2025-02-08
Valid future date entered: 2025-02-08
Do you want to add additional services? (1 for Yes, 0 for No): 21
Invalid input. Please enter 1 (Yes) or 0 (No).
Do you want to add additional services? (1 for Yes, 0 for No): 1

Available Additional Services:
ID Description Amount Status

1 GPS Navigation 15.0 Active
2 Child Seat 10.0 Active
3 Additional Driver 20.0 Active

Enter the IDs of the services you want to select (comma-separated): 1,2,3,4,5
No valid services selected. Please try again.

Enter the IDs of the services you want to select (comma-separated): 1,5
No valid services selected. Please try again.

Enter the IDs of the services you want to select (comma-separated): ed
Invalid input. Please enter numeric IDs separated by commas.

```

*NOTE: All the fields are validated accordingly.*

### 8.2.3 View Booking History

Access previous booking details, including car information, dates, and rental history.

#### 8.2.4 Invoices & Payments

Settle pending invoices securely through the payment interface.

- Once the admin approves a booking request, the customer can proceed with the payment through the invoice and payment section.
- The customer can make the payment by clicking on the payment link, which redirects them to a PHP web page where they can complete the transaction.
- After completing the payment, a success message is displayed on the console, and the database is updated according to the customer's selected payment type.
- Customers will also have the option to make payments through a QR code. This feature is currently in progress.

```
USER - HOME

Name: Thanushka Praveen
Email: thanushkawickramarachchi@gmail.com

1. Booking a car
2. My Bookings
3. Invoices & Payments
4. Logout

Enter your choice (1-4): 3
Viewing invoice...

Invoice & Payments

1. Pay Invoice
2. Home

Enter your choice (1 or 2): 1
+-----+
| Invoice ID | Booking ID | Amount | Payment Method | Payment Date | Is Paid | Car Number Plate | Start Date | End Date |
+-----+
| 2 | 4 | $1352.50 | N/A | N/A | No | DEF-7890 | 2025-02-05 | 2025-02-15 |
+-----+
```

### Viewing invoice details...

Entered Invoice ID is not match. Please retry: 2

### Viewing invoice details...

| Index | Additional Service ID | Service Description | Amount |
|-------|-----------------------|---------------------|--------|
| 1     | 1                     | GPS Navigation      | 15     |
| 2     | 2                     | Child Seat          | 10     |
| 3     | 3                     | Additional Driver   | 20     |

### Invoice Details

**INVOICE**

Invoice Number: 2  
Invoice Date: 2025-02-02

Booking ID: 4  
Pickup Date: 2025-02-05  
Return Date: 2025-02-15  
Total Price: 1352.5

Additional Services Booked:

- GPS Navigation: 15.0
- Child Seat: 10.0
- Additional Driver: 20.0

Total Amount: 1352.5  
Amount Paid: \$0.00  
Balance Due: 1352.5

Press any key to continue...

# Payment Page

**Invoice ID:** 2

**Username:** Thanushka Praveen

**User Email:**  
thanushkawickramarachchi@gmail.com

**Total Price:** 1352.5

**Payment Method:**

Visa

**Card Number:**

53523029i4902

**Expiry Date:**

12/23

**CVV:**

321

**Done**



## 9 Database Structure

### 9.1 Key Tables Details

### 9.2 Database Schema

#### 9.2.1 UserType

**Purpose:** Defines roles for users, such as Admin and Customer.

**Columns:**

- `user_type_id` (Primary Key): Unique identifier for user types.
- `user_type`: Name of the user type.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.2 User

**Purpose:** Stores information about system users.

**Columns:**

- `user_id` (Primary Key): Unique identifier for users.
- `user_type_id` (Foreign Key): Links to `UserType(user_type_id)`.
- `user_name, user_email, user_phone_number, user_password`: User details.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.3 CarType

**Purpose:** Maintains categories of cars (e.g., Sedan, SUV).

**Columns:**

- `car_type_id` (Primary Key): Unique identifier for car types.
- `car_type`: Name of the car type.
- `is_active`: Indicates if the record is active.

- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.4 CarBrandModel

**Purpose:** Stores brand and model details of cars.

**Columns:**

- `car_brand_model_id` (Primary Key): Unique identifier for brand and model entries.
- `car_type_id` (Foreign Key): Links to `CarType(car_type_id)`.
- `brand_name, model_name`: Details of car brands and models.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.5 CarStatus

**Purpose:** Tracks the status of cars (e.g., Available, Rented).

**Columns:**

- `car_status_id` (Primary Key): Unique identifier for car statuses.
- `car_status_type`: Status type.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.6 Car

**Purpose:** Stores car inventory information.

**Columns:**

- `car_id` (Primary Key): Unique identifier for cars.
- `car_brand_model_id` (Foreign Key): Links to `CarBrandModel(car_brand_model_id)`.
- `car_status_id` (Foreign Key): Links to `CarStatus(car_status_id)`.
- Other details: `number_plate, model_name, daily_rate, year, mileage, min_rental_period, max_rental_period`.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.7 BookingStatus

**Purpose:** Tracks the status of bookings (e.g., Pending, Confirmed).

**Columns:**

- `booking_status_id` (Primary Key): Unique identifier for booking statuses.
- `booking_status_type`: Status type.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

#### 9.2.8 Booking

**Purpose:** Manages customer bookings.

**Columns:**

- `booking_id` (Primary Key): Unique identifier for bookings.
- `user_id` (Foreign Key): Links to `User(user_id)`.

- `car_id` (Foreign Key): Links to `Car(car_id)`.
- `booking_status_id` (Foreign Key): Links to `BookingStatus(booking_status_id)`.
- Other details: `start_date`, `end_date`, `total_amount`, `note`.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

### 9.2.9 AdditionalServices

**Purpose:** Tracks optional services for bookings (e.g., GPS, child seat).

**Columns:**

- `additional_services_id` (Primary Key): Unique identifier for additional services.
- `services_description`, `services_amount`: Service details.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

### 9.2.10 BookingAdditionalServices

**Purpose:** Links additional services to bookings.

**Columns:**

- `booking_additional_charge_id` (Primary Key): Unique identifier for booking additional charges.
- `booking_id` (Foreign Key): Links to `Booking(booking_id)`.
- `additional_services_id` (Foreign Key): Links to `AdditionalServices(additional_services_id)`.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

### 9.2.11 Invoice

**Purpose:** Manages payment records.

**Columns:**

- `invoice_id` (Primary Key): Unique identifier for invoices.
- `booking_id` (Foreign Key): Links to `Booking(booking_id)`.
- `user_id` (Foreign Key): Links to `User(user_id)`.
- Other details: `amount`, `payment_method`, `payment_date`, `is_paid`.
- `is_active`: Indicates if the record is active.
- `create_at` and `updated_at`: Timestamps for record creation and modification.

### 9.2.12 Entity Relationship Diagram

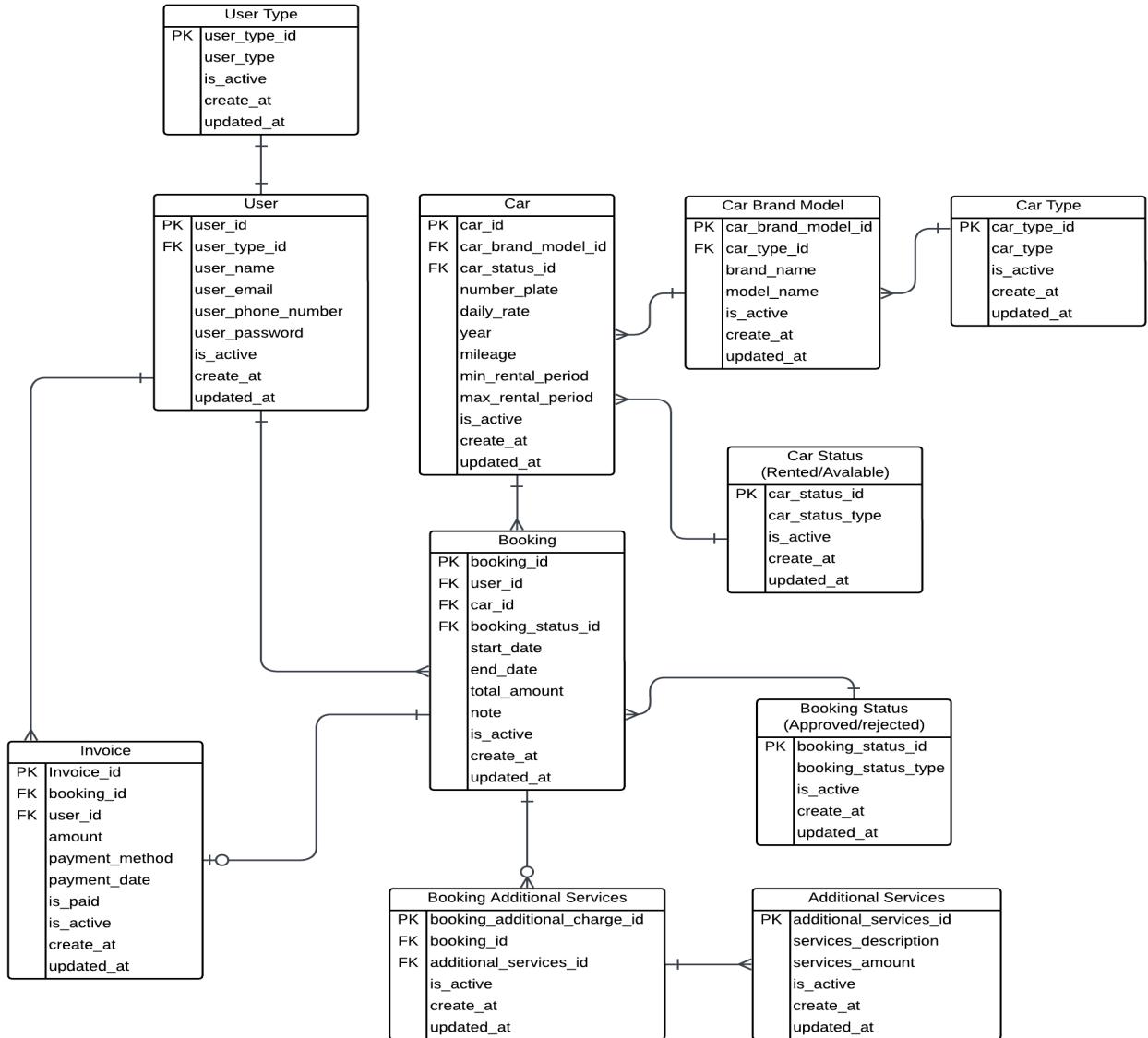


Figure 2: ERD Diagram

## 9.3 Relationships Between Tables

### 9.3.1 User Management

- **UserType → User:** UserType(user\_type\_id) is referenced in User(user\_type\_id) to define user roles.

### 9.3.2 Car Management

- **CarType → CarBrandModel:** CarType(car\_type\_id) is referenced in CarBrandModel(car\_type\_id) to associate car brands/models with types.
- **CarBrandModel → Car:** CarBrandModel(car\_brand\_model\_id) is referenced in Car(car\_brand\_model\_id) to link cars to their brand/model.
- **CarStatus → Car:** CarStatus(car\_status\_id) is referenced in Car(car\_status\_id) to track car availability.

### 9.3.3 Booking System

- **User → Booking:** User(user\_id) is referenced in Booking(user\_id) to associate bookings with customers.
- **Car → Booking:** Car(car\_id) is referenced in Booking(car\_id) to track the booked car.
- **BookingStatus → Booking:** BookingStatus(booking\_status\_id) is referenced in Booking(booking\_status\_id) to manage booking progress.

### 9.3.4 Additional Services

- **Booking → BookingAdditionalServices:** Booking(booking\_id) is referenced in BookingAdditionalServices(booking\_id) to link additional services to bookings.
- **AdditionalServices → BookingAdditionalServices:** AdditionalServices(additional\_services\_id) is referenced in BookingAdditionalServices(additional\_services\_id).

### 9.3.5 Invoices

- **Booking → Invoice:** Booking(booking\_id) is referenced in Invoice(booking\_id) for payment tracking.
- **User → Invoice:** User(user\_id) is referenced in Invoice(user\_id) to track customer payments.

### 9.3.6 Table Relationships Summary

- **Users ↔ Booking:** One user can have many bookings.
- **Cars ↔ Booking:** One car can have multiple bookings.
- **Booking ↔ Invoice:** Each booking can have one associated invoice.
- **Users ↔ Invoice:** One user can have multiple invoices.
- **UserType ↔ Users:** One user type can be associated with multiple users.
- **CarType ↔ CarBrandModel:** One car type can be associated with multiple car brands and models.
- **CarBrandModel ↔ Cars:** One car brand/model can have multiple cars.
- **CarStatus ↔ Cars:** One car status can be associated with multiple cars.
- **BookingStatus ↔ Booking:** One booking status can be associated with multiple bookings.
- **Booking ↔ BookingAdditionalServices:** One booking can have multiple additional services.
- **AdditionalServices ↔ BookingAdditionalServices:** One additional service can be associated with multiple bookings.

## 9.4 Database Screenshots

### 9.4.1 UserType Table

| user_type_id | user_type | is_active | create_at  | updated_at |
|--------------|-----------|-----------|------------|------------|
| 2            | User      | 1         | 1738468031 | 1738468031 |
| 1            | Admin     | 1         | 1738468031 | 1738468031 |
| NULL         | NULL      | NULL      | NULL       | NULL       |

Figure 3: serType Table

#### 9.4.2 User Table

| user_id | user_type | user_name         | user_email                         | user_phone_number | user_password                                               | is_active | create_at  | updated_at |
|---------|-----------|-------------------|------------------------------------|-------------------|-------------------------------------------------------------|-----------|------------|------------|
| 1       | 2         | Alice Smith       | admin@admin.com                    | 1234567890        | \$2b\$12\$wvMlUOZxVaP3064Xt2.R.mnP85dIIhCFrx.vJXTTgxI6DZ.2C | 1         | 1738468031 | 1738468031 |
| 2       | 2         | Bob Johnson       | user@user.com                      | 0987654321        | \$2b\$12\$uLCKGEAXNG6oedcgfro.y7NgbDnmn0XyYngkZzBYX         | 1         | 1738468031 | 1738468031 |
| 3       | 2         | Charlie Brown     | charlie@brown.com                  | 1123456789        | \$2b\$12\$ns6sIrwTNqnpA2x4oCgWzv5URVsasJlfmgm8lxKs          | 1         | 1738468031 | 1738468031 |
| 4       | 2         | Diana Prince      | diana@prince.com                   | 9876543210        | \$2b\$12\$uLCKGEAXNG6oedcgfro.y7NgbDnmn0XyYngkZzBYX         | 1         | 1738468031 | 1738468031 |
| 5       | 2         | Dean Parker       | dean@parker.com                    | 6677889900        | \$2b\$12\$eFz2xLX51RfPiadQmOsQmVhVzY9ReE7Uy8tMaLRLMexy      | 1         | 1738468031 | 1738468031 |
| 6       | 2         | Thanushka Pravens | thanushkawickramarachchi@gmail.com | 64204489222       | \$2b\$12\$U.QhlcovD2jppOb6sGeht7BawAnzuGpoNLJpaAIS3F7rn0.   | 1         | 1738479339 | 1738479339 |

Figure 4: User Table

#### 9.4.3 CarType Table

| car_type_id | car_type   | is_active | create_at  | updated_at |
|-------------|------------|-----------|------------|------------|
| 1           | Car        | 1         | 1738468031 | 1738468031 |
| 2           | Motorcycle | 1         | 1738468031 | 1738468031 |
| 3           | Truck      | 1         | 1738468031 | 1738468031 |
| 4           | Bus        | 1         | 1738468032 | 1738468032 |
| 5           | Van        | 1         | 1738468032 | 1738468032 |
| 6           | SUV        | 1         | 1738468032 | 1738468032 |
| HULL        | HULL       | HULL      | HULL       | HULL       |

Figure 5: CarType Table

#### 9.4.4 CarBrandModel Table

| car_brand_model_id | car_type_id | brand_name      | model_name    | is_active | create_at  | updated_at |
|--------------------|-------------|-----------------|---------------|-----------|------------|------------|
| 1                  | 1           | Toyota          | RAV4          | 1         | 1738468032 | 1738468032 |
| 2                  | 1           | Toyota          | Corolla       | 1         | 1738468032 | 1738468032 |
| 3                  | 1           | Honda           | Civic         | 1         | 1738468032 | 1738468032 |
| 4                  | 2           | Harley-Davidson | Sportster     | 1         | 1738468032 | 1738468032 |
| 5                  | 2           | Yamaha          | MT-07         | 1         | 1738468032 | 1738468032 |
| 6                  | 3           | Volvo           | FH16          | 1         | 1738468032 | 1738468032 |
| 7                  | 3           | Mercedes-Benz   | Actros        | 1         | 1738468032 | 1738468032 |
| 8                  | 4           | Volvo           | 9400          | 1         | 1738468032 | 1738468032 |
| 9                  | 4           | Scania          | Touring       | 1         | 1738468032 | 1738468032 |
| 10                 | 5           | Ford            | Transit       | 1         | 1738468032 | 1738468032 |
| 11                 | 5           | Mercedes-Benz   | Sprinter      | 1         | 1738468032 | 1738468032 |
| 12                 | 6           | Jeep            | Grand Cher... | 1         | 1738468032 | 1738468032 |
| 13                 | 6           | Ford            | Explorer      | 1         | 1738468032 | 1738468032 |
| HULL               | HULL        | HULL            | HULL          | HULL      | HULL       | HULL       |

Figure 6: CarBrandModel Table

#### 9.4.5 CarStatus Table

| car_status_id | car_status_type | is_active | create_at  | updated_at |
|---------------|-----------------|-----------|------------|------------|
| 1             | Available       | 1         | 1738468032 | 1738468032 |
| 2             | Unavailable     | 1         | 1738468032 | 1738468032 |
| HULL          | HULL            | HULL      | HULL       | HULL       |

Figure 7: CarStatus Table

#### 9.4.6 Car Table

| car_id | car_brand_model_id | car_status_id | number_plate | model_name     | daily_rate | year | mileage | min_rental_per... | max_rental_per... | is_active | create_at  | updated_at |
|--------|--------------------|---------------|--------------|----------------|------------|------|---------|-------------------|-------------------|-----------|------------|------------|
| 1      | 1                  | 1             | ABC-1234     | Toyota RAV4    | 120.50     | 2021 | 10000   | 1                 | 30                | 1         | 1738468032 | 1738468032 |
| 2      | 2                  | 1             | XYZ-5678     | Toyota Corolla | 100.00     | 2020 | 15000   | 1                 | 30                | 1         | 1738468032 | 1738468032 |
| 3      | 3                  | 2             | LNM-3456     | Honda Civic    | 110.00     | 2019 | 20000   | 2                 | 30                | 0         | 1738468032 | 1738478338 |
| 4      | 4                  | 1             | DEF-7890     | Ford Explorer  | 130.75     | 2022 | 5000    | 1                 | 30                | 1         | 1738468032 | 1738468032 |
| 5      | 5                  | 1             | ABB-1212     | Yamaha - 1111  | 99.0       | 2023 | 1222    | 5                 | 25                | 1         | 1738468032 | 1738477568 |
| 6      | 1                  | 1             | AOD-3242     | Huve - M2      | 139.0      | 2004 | 19388   | 4                 | 30                | 1         | 1738469412 | 1738469412 |
| 7      | 3                  | 1             | ABC-1221     | Civic - FD2 RS | 200.0      | 2022 | 20000   | 10                | 30                | 1         | 1738469638 | 1738476290 |
| 8      | 5                  | 1             | ALM-1234     | Yamaha - LXr   | 98.0       | 2022 | 50050   | 5                 | 20                | 1         | 1738475408 | 1738475408 |
| HULL   | HULL               | HULL          | HULL         | HULL           | HULL       | HULL | HULL    | HULL              | HULL              | HULL      | HULL       | HULL       |

Figure 8: Car Table

#### 9.4.7 BookingStatus Table

| booking_status... | booking_status_t... | is_active | create_at  | updated_at |
|-------------------|---------------------|-----------|------------|------------|
| 1                 | Confirmed           | 1         | 1738468032 | 1738468032 |
| 2                 | Pending             | 1         | 1738468032 | 1738468032 |
| 3                 | Cancelled           | 1         | 1738468032 | 1738468032 |
| HULL              | HULL                | HULL      | HULL       | HULL       |

Figure 9: BookingStatus Table

#### 9.4.8 Booking Table

| booking_id | user_id | car_id | booking_status... | start_date | end_date   | total_amount | note           | is_active | create_at  | updated_at |
|------------|---------|--------|-------------------|------------|------------|--------------|----------------|-----------|------------|------------|
| 1          | 2       | 2      | 1                 | 1738468032 | 1738554432 | 120.5        | First booking  | 1         | 1738468032 | 1738468032 |
| 2          | 3       | 1      | 2                 | 1738554432 | 1738640832 | 240          | Second booking | 1         | 1738468032 | 1738468032 |
| 3          | 3       | 3      | 3                 | 1738640832 | 1738727232 | 360          | Third booking  | 1         | 1738468032 | 1738468032 |
| 4          | 6       | 4      | 1                 | 1738666800 | 1739530800 | 1352.5       | First Booking  | 1         | 1738479961 | 1738486794 |
| 5          | 6       | 4      | 2                 | 1738926000 | 1740222000 | 1988.25      |                | 1         | 1738483548 | 1738483548 |
| HULL       | HULL    | HULL   | HULL              | HULL       | HULL       | HULL         | HULL           | HULL      | HULL       | HULL       |

Figure 10: Booking Table

#### 9.4.9 AdditionalServices Table

| additional_services_id | services_description | services_amount | is_active | create_at  | updated_at |
|------------------------|----------------------|-----------------|-----------|------------|------------|
| 1                      | GPS Navigation       | 15              | 1         | 1738468032 | 1738468032 |
| 2                      | Child Seat           | 10              | 1         | 1738468032 | 1738468032 |
| 3                      | Additional Driver    | 20              | 1         | 1738468032 | 1738468032 |
| HULL                   | HULL                 | HULL            | HULL      | HULL       | HULL       |

Figure 11: AdditionalServices Table

#### 9.4.10 BookingAdditionalServices Table

| booking_additional_charge_id | booking_id | additional_services_id | is_active | create_at  | updated_at |
|------------------------------|------------|------------------------|-----------|------------|------------|
| 1                            | 1          | 1                      | 1         | 1738468032 | 1738468032 |
| 2                            | 1          | 3                      | 1         | 1738468032 | 1738468032 |
| 3                            | 2          | 1                      | 1         | 1738468032 | 1738468032 |
| 4                            | 2          | 2                      | 1         | 1738468032 | 1738468032 |
| 5                            | 2          | 3                      | 1         | 1738468032 | 1738468032 |
| 6                            | 4          | 1                      | 1         | 1738479961 | 1738479961 |
| 7                            | 4          | 2                      | 1         | 1738479961 | 1738479961 |
| 8                            | 4          | 3                      | 1         | 1738479961 | 1738479961 |
| 9                            | 5          | 1                      | 1         | 1738483548 | 1738483548 |
| 10                           | 5          | 2                      | 1         | 1738483548 | 1738483548 |
| HULL                         | HULL       | HULL                   | HULL      | HULL       | HULL       |

Figure 12: BookingAdditionalServices Table

#### 9.4.11 Invoice Table

| invoice_id | booking_id | user_id | amount | payment_meth... | payment_date | is_paid | is_active | create_at  | updated_at |
|------------|------------|---------|--------|-----------------|--------------|---------|-----------|------------|------------|
| 1          | 1          | 2       | 135.5  | Credit Card     | 1738468032   | 1       | 1         | 1738468032 | 1738468032 |
| 2          | 4          | 6       | 1352.5 | HULL            | HULL         | 0       | 1         | 1738486794 | 1738486794 |
| HULL       | HULL       | HULL    | HULL   | HULL            | HULL         | HULL    | HULL      | HULL       | HULL       |

Figure 13: Invoice Table

**NOTE:** All database-related queries can be checked in the `sql_statement` file.

## 10 Architecture Patterns

- **MVC: Model-View-Controller (MVC)** Architecture.
- **Model:** Data & Business Logic - The Model represents the data, business logic, and rules of the application. It communicates with the database and processes the data.
- **View:** User Interface (UI) - The View is responsible for displaying data and rendering the user interface. It interacts with the Model indirectly through the Controller.
- **Controller:** Controller (C) - Handles User Interaction - The Controller acts as a mediator between the Model and the View. It processes user input, retrieves data from the Model, and updates the View accordingly.

## 11 Design Patterns

- **Singleton Pattern:** Ensures that only one database connection instance exists at any given time, maintaining consistency and preventing redundant connections.

## 12 Future Enhancements

- **AI-Powered Recommendations:** Suggest cars to users based on their preferences and rental history, improving user experience with personalized suggestions.
- **Mobile Integration:** Develop a Flutter-based mobile application to provide users with better accessibility and a seamless experience.
- **Dynamic Pricing:** Implement surge pricing during high-demand periods to optimize revenue while balancing user needs.
- **Real-Time Notifications:** Use APIs to send SMS or email updates, ensuring users are informed about booking status, reminders, and other important information.
- **Dynamic Search:** Add filters for price range, car type, mileage, and availability to provide a seamless car selection process.
- **Multi-language Support:** Offer a language selector to support non-English-speaking users globally.
- **Multi-currency Support:** Enable payments in different currencies with live exchange rate updates.

## 13 Testing and Debugging

### 13.1 Testing

- **Integration Testing:** Ensures end-to-end workflows, such as booking approval, function correctly.
- **Manual Testing:** Verifies CLI functionality for various inputs to ensure the application handles edge cases appropriately.

### 13.2 Debugging

- **Logging:** Use logging for database operations and exception handling to identify and resolve issues efficiently.
- **Configuration Validation:** Validate configurations before deployment to avoid runtime errors or misconfigurations.

## 14 Known Issues

- Booking approval may encounter delays under heavy traffic.
- Compatibility with Python versions below 3.8 is not guaranteed.

## 15 Contributing

We welcome contributions to improve this project. Follow these steps to contribute:

1. Fork the repository.
2. Create a feature branch:

```
git checkout -b feature-name
```

3. Commit your changes:

```
git commit -m "Add feature-name"
```

4. Push to the branch:

```
git push origin feature-name
```

5. Open a Pull Request.

## 16 License

This project is licensed under the [MIT License](#). For more information, refer to the LICENSE file included in the project.

## 17 Credits

- **Developer:** Thansushka Praveen Wickramarachchi
- **Contact:** your.email@example.com
- **GitHub:** <https://github.com/thanushkaPraveen>

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