

# **CAR RENTAL PORTAL ONLINE CAR RENTAL SYSTEM**

**A PROJECT REPORT SUBMITTED IN PARTIAL  
FULFILMENT OF REQUIREMENT  
FOR THE AWARD OF THE DEGREE**

**MASTER OF COMPUTER APPLICATIONS (MCA)**

**OF**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

**BY**

**AMALA ROSE SEBASTIAN  
Reg No: 22PMC109**



**MARIAN COLLEGE  
KUTTIKKANAM**

(AUTONOMOUS)

MAKING COMPLETE

**Marian College Kuttikkanam Autonomous**

**Peermade, Kerala – 685 531**

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**Under the guidance of**

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PG Department of Computer Applications  
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**2023**

# **PG DEPARTMENT OF COMPUTER APPLICATIONS**

## **Marian College Kuttikkanam Autonomous**

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**

**KUTTIKKANAM – 685 531, KERALA.**

### **CERTIFICATE**

This is to certify that the project work entitled

**CAR RENTAL PORTAL**

is a bonafide record of work done by

**AMALA ROSE SEBASTIAN**

**Reg. No. 22PMC109**

In partial fulfillment of the requirements for the award of Degree of

**MASTER OF COMPUTER APPLICATIONS [MCA]**

During the academic year 2022-2023

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Assistant Professor

PG Department of Computer Applications

Marian College Kuttikkanam Autonomous

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Head of the Department

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**Examiner**

## **ACKNOWLEDGEMENT**

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Finally, I express my deep appreciation to all my friends and family members for the moral support and encouragement they have given to complete this project work successfully.

AMALA ROSE SEBASTIAN

## **ABSTRACT OF CAR RENTAL PORTAL**

This project is designed so as to be used by Car Rental Company specializing in renting cars to customers. It is an online system through which customers can view available cars, register, view profile and book car. The advancement in Information Technology and internet penetration has greatly enhanced various business processes and communication between companies and their customers of which car rental industry is not left out.

Customers will be able to reserve their vehicles from anywhere in the world due to the Car Rental System. Consumers provide information to this application by filling in their personal information. When a consumer creates an account on the website, he or she can reserve a car. The proposed system is an online system that is fully integrated. It effectively and efficiently automates manual procedures. Customers are aided by this automated method, which allows them to fill in the specifics according to their needs. It contains information on the sort of car they want to hire as well as the location. The goal of this system is to create a website where customers can book their automobiles and request services from anywhere in the world. The system is made by using python with the framework Django.

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# **1. INTRODUCTION**



## 1.1 Problem Statements

The Manual car rental system provides services only during office hours. So customers have limited time to make any transactions or reservation of the cars. The existence of online car rental systems nowadays has overcome the limitation of the business operation hour. However there is still a few numbers of these online car rental systems in Malaysia and most of the systems offered reservation service for tourists or traveler. Besides that, there are some customers who faced a problem in choosing car to be rented which suitable with some of the important requirements.

1. To rent a car a prospective renter must first go to the nearest office to register as a client.
2. Cars that provide difficulties to rent out are normally advertised in local or national newspaper. It involves a lot of paper work and consumes time.

## 1.2 Proposed System

Online Car Rental System project is designed to aid the car rental company to enable renting of cars through an online system. It helps the users to search for available cars view profile and book the cars for the time period. It has a user-friendly interface which helps the user to check for cars and rent them for the period specified. They could also make payment online. The rental cars shall be categorized into economy, premium etc. Based on the type of car required by the customer, the user shall be able to make bookings. The use of internet technology has made it easy for the customers to rent a car any time. This Car Rental System makes the bookings easy. It saves time and labor. The tool shall ask the user for information such as the date and time of journey, type of car etc. Also, it will need an identification number. Using these details, the tool shall help the customer to book a car for the journey.

### **1.3 Features of the Project**

1. The car rental system is simple, user-friendly, and can be easily integrated with the existing system.
2. Highly Secure, Scalable & Reliable.
3. Provides high level of security with different level of authentication
4. Time for appoints and booking will be reduced.

## **2. FUNCTIONAL REQUIREMENTS**

## FUNCTIONAL REQUIREMENTS

Car rental system is divided into two modules:

1. User Module
2. Admin Module

User Module details:

### ***1. View and book Available Cars***

It is a system design especially for large, premium and small car rental business. The user can view available cars and book the car for rent according to their wish. All the features of the car along with rent per day is provided.

### ***2. View car Booking details***

The user can view available cars and can book the car desired from the list of available cars.

### ***3. Give query***

The customer could give feedback and necessary queries to the admin.

Admin Module details:

### ***1. Dashboard***

In this section, admin can view the overview of the car rental(Like total vehicles, total booking, brands enquiry)

### ***2. Vehicle brand***

Admin can add/edit/delete vehicle brands

### ***3. Vehicle***

Admin can add the car so that the user could see the available cars and book them. Admin can also edit and delete the car.

### ***4. Bookings***

Admin can manage the bookings(confirm and cancel the booking)

### ***5. Manage query***

Admin could view, solve and delete the contact query sent by the customers

### ***6. Registered users***

Admin can view the registered users.

### **3. NON-FUNCTIONAL REQUIREMENTS**

## NON-FUNCTIONAL REQUIREMENTS

### *a. Reliability*

The reliability of the overall project depends on the reliability of the separate components. The main pillar of reliability of the system is the backup of the database which is continuously maintained and updated to reflect the most recent changes, Also the system will be functioning inside a container. Thus, the overall stability of the system depends on the stability of container and its underlying operating system.

### *b. Availability*

The system should be available at all times, meaning the user can access it using a web browser, only restricted by the down time of the server on which the system runs. A customer friendly system which is accessible for people around the world should work 24 hours. In case of a hardware failure or database corruption, a replacement page will be shown. Also, in case of a hardware failure or database corruption, backup of the database should be retrieved from the server and saved by the Organizer. Then the services will be restarted. It means 24 X 7 availability.

### *c. Maintainability*

A commercial database is used for maintaining the database and the application server takes care of the site. In case of a failure, a re-initialization of the project will be done. Also, the software design is being done with modularity in mind so that maintainability can be done efficiently.

### *d. Supportability*

The code and supporting modules of the system will be well-documented and easy to understand. Online documentation can in help system requirements.

## **4. FEATURES AND HIGHLIGHTS**



## Features

### 1. Easy Booking

This is, obviously, the most basic and the most important of the core requirements. The booking system is the heart and soul of the car rental website; that it should have a user-friendly booking interface is a given. This includes a clear descriptions of various car types available, separate pricing plans for members, special offers, the corresponding fare, easy date and time picking options.

### 2. Recommendations and User Feedback

Adding a personal touch over and above the dry, factual content of the available cars and fares can be done using recommendations. Set up templates and featured displays for first-time and recurring users that highlight recommended travel booking plans. This can be generalized for newbies based on their requirements, such as long distance journeys, local attractions, and so on.

### 3. Communication and Updates

As a part of the service industry, ensuring regular communication and vehicle updates on the car rental website is necessary. Customers appreciate being kept in the loop from the moment they book the cab to the final drop-off. Auto-responders can be set up to this end that inform users about the status of their car and provide tracking options for the same. Alternatively, personalized emails can also be sent, as and when necessary.

### 4. Reservations Management

One of the top functions of vehicle booking software is that it helps you manage all your reservations. There is nothing worse than renting a car to a customer and finding out that you don't have a vehicle when that person arrives at your shop. If a customer makes a reservation and you cannot honor it, that individual will likely never take a chance on you again. You also risk that customer writing negative reviews about your company online, which can keep other customers from booking with you.

There is always a need of a system that will provide a way to getting a rental car that can be used temporarily for a specified period.

Getting a rental car helps people get around despite the fact they do not have access to their own personal vehicle or don't own a vehicle at all. The individual who needs a car must contact a rental car company and contract out for a vehicle. This system increases customer retention and simplify vehicle and staff management.

Thus, there is a big need of developing online car rental system is to computerized the traditional way of getting car on rent. Another need for developing this application is to generate the report automatically.

- The new system is totally computerized system.
- A new system provides features like time efficiency to show car details, user profiles and whatever the customer will give the feedback to the admin.
- An inquiry is easily done by user in the system.
- It is the most software application for managing online car rental business.

The advancement in Information Technology and internet penetration has greatly enhanced various business processes and communication between companies (services provider) and their customers of which car rental industry is not left out. This Car Rental System is developed to provide the following services:

- Enhance Business Processes: To be able to use internet technology to project the rental company to the global world instead of limiting their services to their local domain alone, thus increase their return on investment (ROI).
- Online Vehicle Reservation: A tools through which customers can reserve available cars online prior to their expected pick-up date or time.
- Customer's registration: A registration portal to hold customer's details, monitor their transaction and used same to offer better and improve services to them.

Car Rental System project is developed as a web application and it will work over web. The project has a wide scope, as it is not intended to a particular organization. This project is going to develop generic software, which can be applied by any businesses organization. More over it provides facility to its users. Also the software is going to provide a huge amount of summary data.

## **5. TECHNICAL ASPECTS**

## Architecture of Project

### ***1. Presentation Layer***

Templates: HTML templates are used to define the structure and layout of the user interface. Django's template engine allows you to dynamically populate the templates with data.

### ***2. Application Layer***

Controllers: In Django, controllers are implemented as views, which handle the request/response flow and control the overall behavior of the application.

### ***3. Business Logic Layer***

Models: Django's models define the data structure and business logic of the application. Models represent entities like users, bookings, flights, hotels, etc. They handle database operations, such as querying, inserting, updating, and deleting data. Models can also include methods to perform complex business logic.

### ***4. Jazmin***

Django Jazmin is a customizable and modern admin interface for Django applications. It provides an alternative user interface for the Django admin site with a more visually appealing design and additional features. Jazmin aims to enhance the user experience and improve the productivity of developers working with Django.

By installing and configuring django-jazzmin in your Django project, you can customize the admin interface by changing themes, layouts, icons, and other visual elements. It offers features such as responsive design, drag-and-drop sorting, inline editing, and support for various third-party Django packages. To use Django Jazzmin, you typically need to install it using a package manager like pip, add it to your Django project's settings, and configure it according to your preferences.

Here's a basic example of how to install Django Jazzmin using pip:

**pip install django-jazzmin**

Once installed, you would need to add 'jazzmin' to the INSTALLED\_APPS list in your Django project's settings.py file:

```
INSTALLED_APPS = [
```

```
...
```

```
'jazzmin',
```

```
...
```

```
]
```

Afterwards you can customize Django Jazzmin by modifying the settings in your Django project's settings.py file.

### ***5. Data Access Layer***

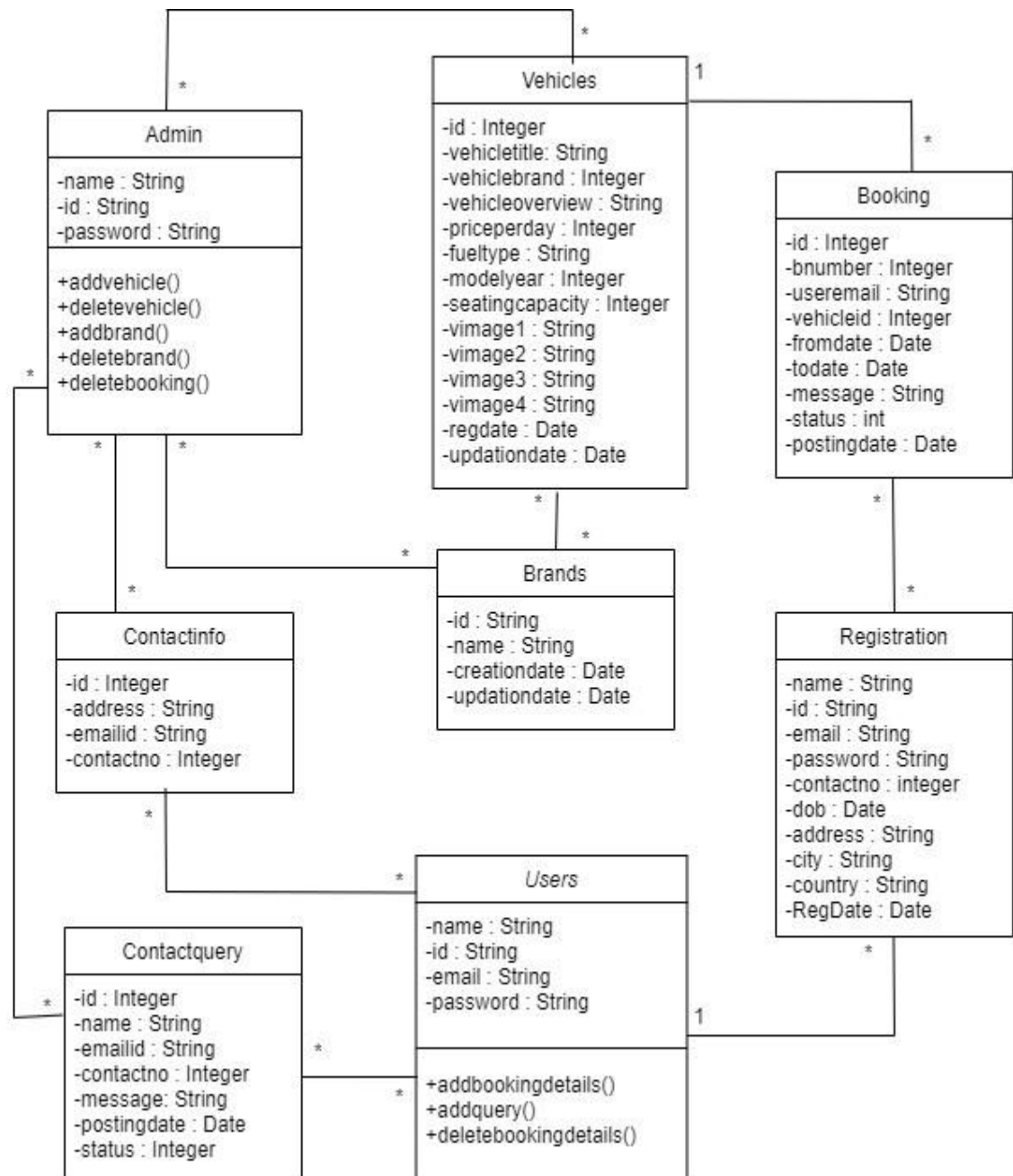
Database: Django integrates with various databases, allowing you to define and manage the application's data schema. You can use Django's Object-Relational Mapping(ORM) to interact with the database and perform CRUD operations.

### ***6. Database Models***

Django's models serve as both business logic entities and database models. They define the structure of the database tables and provide an abstraction layer for interacting with the database .

## Database

### Class Diagram



## **6. CHALLENGES**



### ***1. User Experience and Design***

Designing an intuitive and user-friendly interface for users and administrators is crucial. Ensuring a smooth user experience, from search and booking to manage details and submitting expenses, can be challenging, particularly dealing with complex workflows and large data sets.

### ***2. Real-time Availability and Pricing***

Fetching real-time availability and pricing information for rental services from external providers can be challenging. Dealing with rate limits, handling concurrency, and caching strategies are considerations for ensuring timely and accurate information.

### ***3. User Authentication and Authorization***

Car Rental Management software typically requires user registration, login, and role-based access control. Implementing secure authentication and authorization mechanisms can be complex, especially when dealing with user roles and permissions.

### ***4. Validation Mechanisms***

Implementing validation mechanisms helps ensure that user input is accurate and consistent. You need to validate user data at various stages, such as during registration, booking, or updating information. Validation can include for checking validation in email, phone number, password, pin number etc.

### ***5. Database Management***

Designing an efficient database schema and managing the database operations can be complex. You need to carefully plan the structure of your database, define relationships between entities handle data integrity, and optimize queries for performance.

## **7.FUTURE ENHANCEMENTS**

### 1. Quick and Secure Payments

The website needs integrated, secure payment gateways that let users complete transactions quickly, in a hassle-free manner. For aggregator models, it is possible to offer optional cash collections, where the user pays the cab driver directly upon fulfilment of the journey; the company takes its cut as part of the commission from the driver.

### 2. Social Media Integration

The social media sites are one of the most popular means of sharing experiences for users; Facebook, Twitter, Instagram are literally global marketing platforms. Taking advantage of this, you can integrate your website with these social networking sites, which lets the users post their opinions here.

### 3. Location-based Rentals

A good quality software will allow the bookings based on the location of the fleet. This will help you save resources, time as well as maintain the vehicle.

### 4. Report Generation

Admin could generate report based on the number of cars sold.

## **8.CONCLUSION**

The project is designed to help people utilize transport effectively. In recent times cars have become the most convenient modes of transportation. Our Car rental System helps in making this an easier, hassle-free and enjoyable experience to acquire and use a car as per ones needs. A person can book a car specifically for his travel time, co-travellers and the nature of travel. The rental system traverses from designing a database to understanding business concept and above all to make this an easy to adapt system for various travelling needs.

Car rental is a vehicle that can be used temporarily for a fee during a specified period. Getting a rental car helps people get around despite the fact they do not have access to their own personal vehicle or don't own a vehicle at all. The individual who needs a car must contact a rental car company and contract out for a vehicle. This system increases customer retention and simplify vehicle and staff management.

Github repository of the project : [https://github.com/amalarozz/car\\_rental](https://github.com/amalarozz/car_rental)

## **9. REFERENCES**

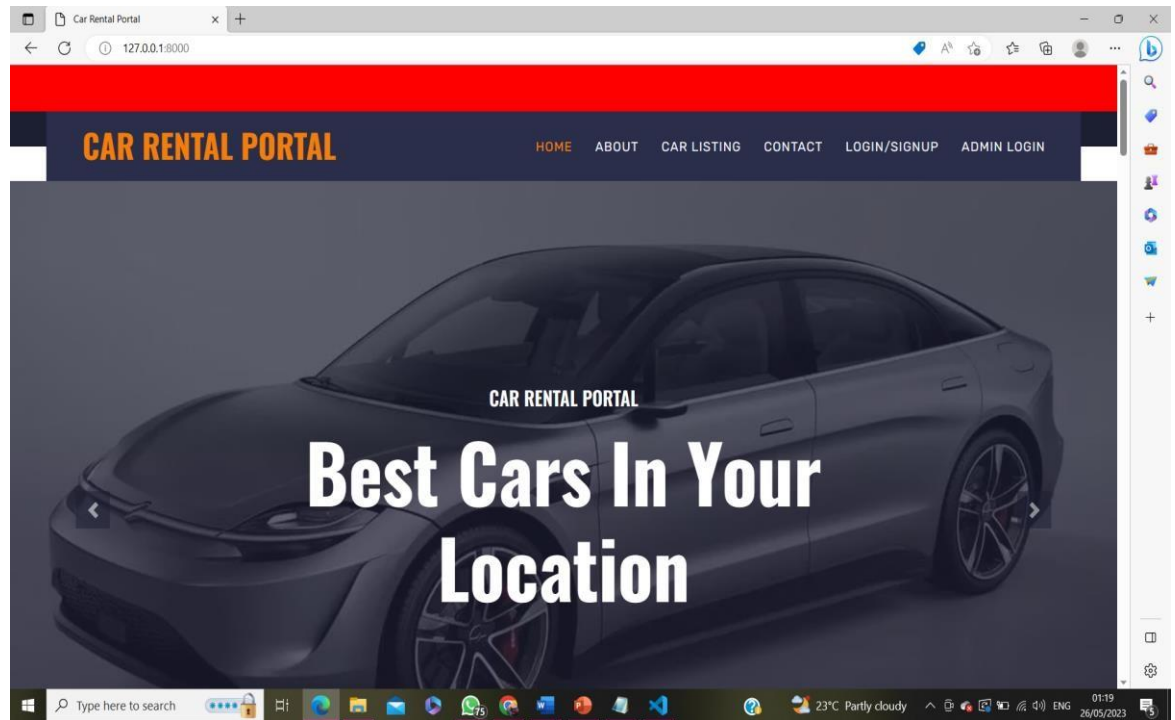
- <https://docs.djangoproject.com/en/4.1/intro/tutorial01/>
- <https://www.planyo.com/car-rental-reservation-system.php>
- [getbootstrap.com](https://getbootstrap.com)

## **ANNEXURE**

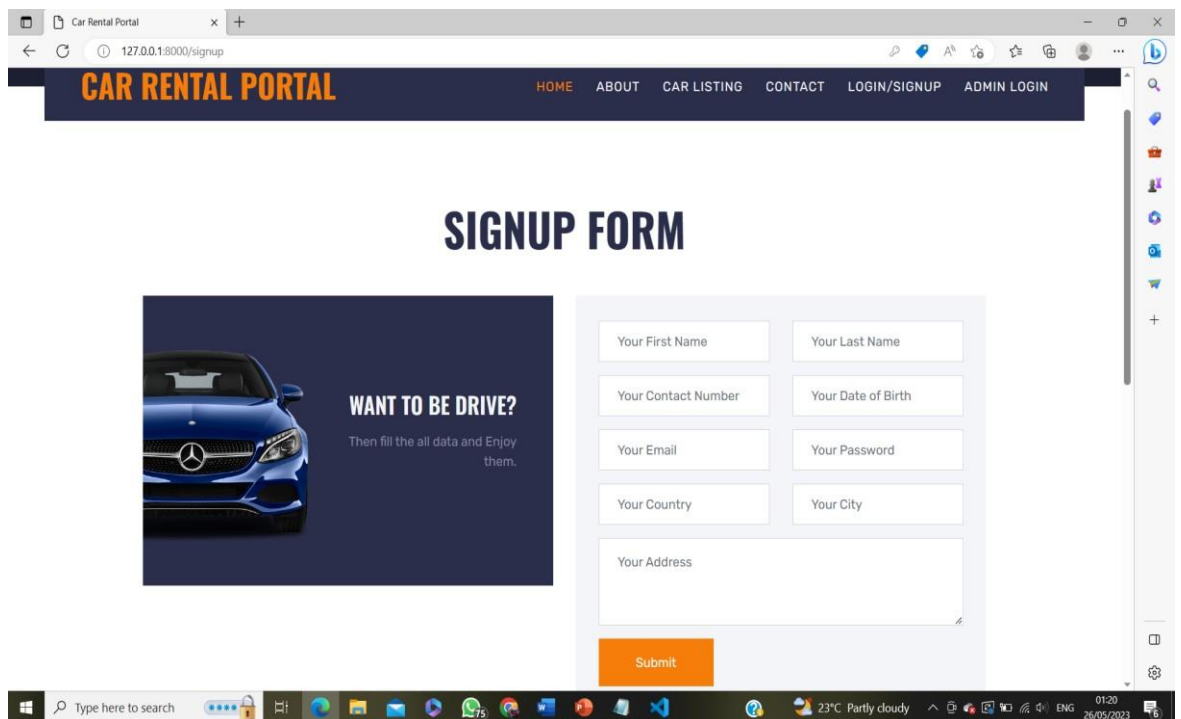
# **A. SCREENSHOTS**



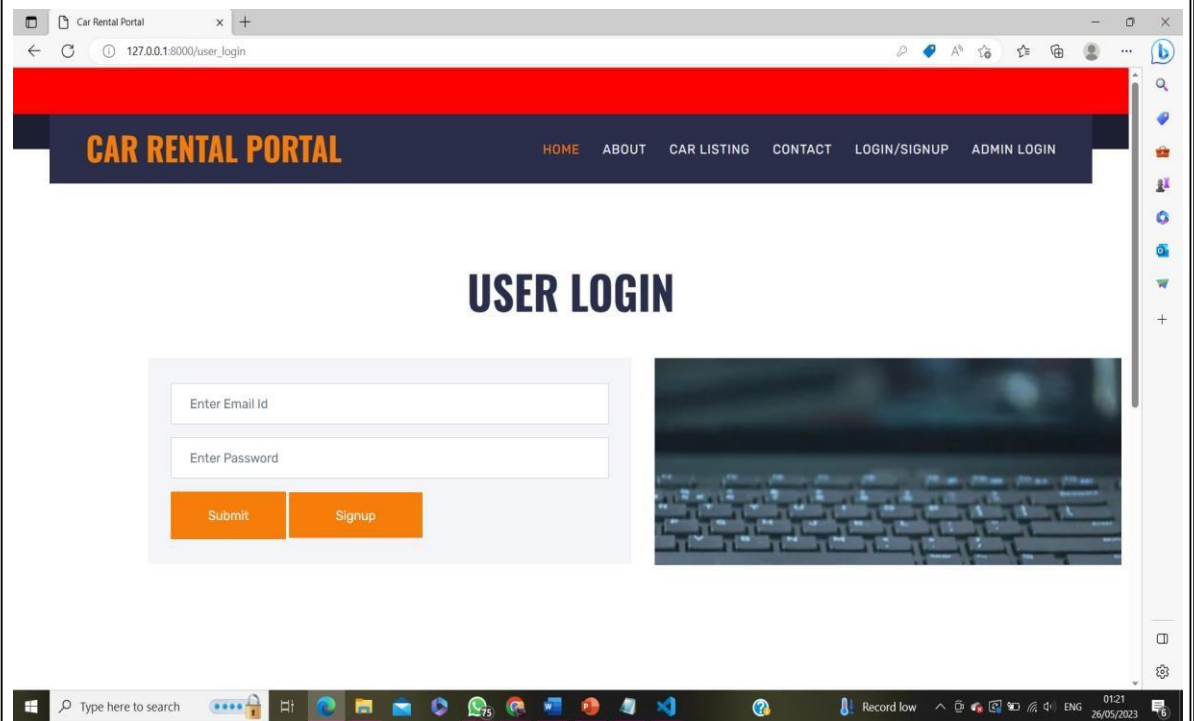
## 1. Home Page



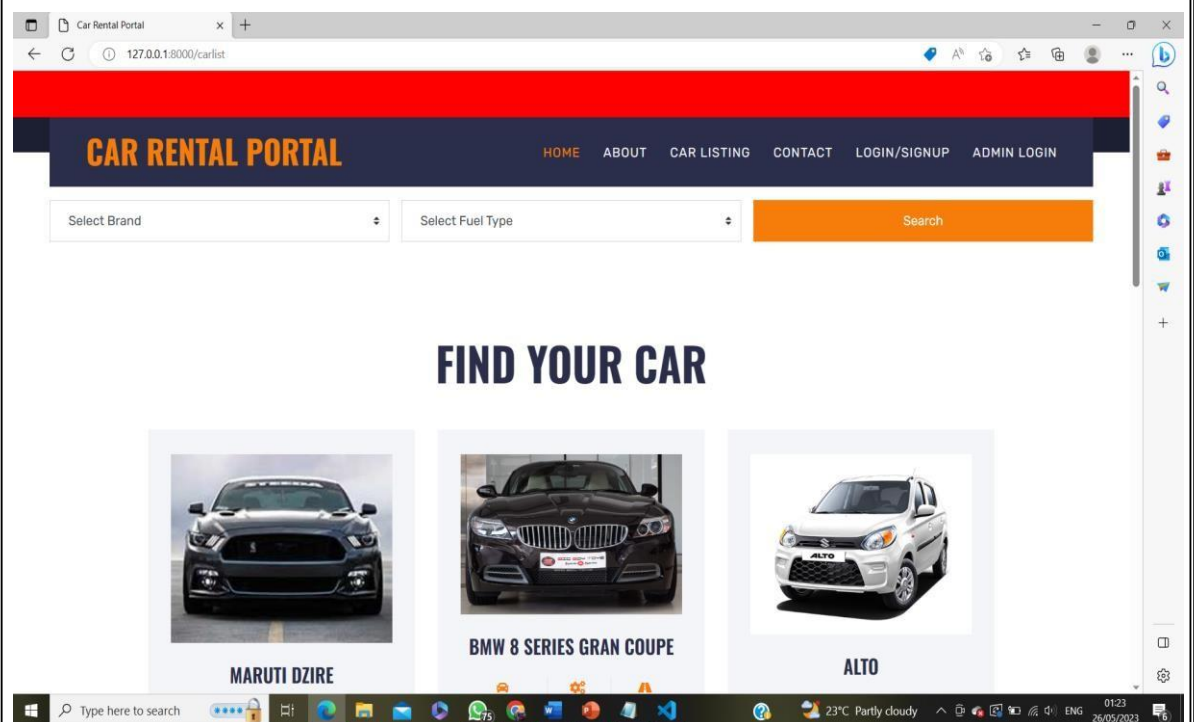
## 2. User Registration



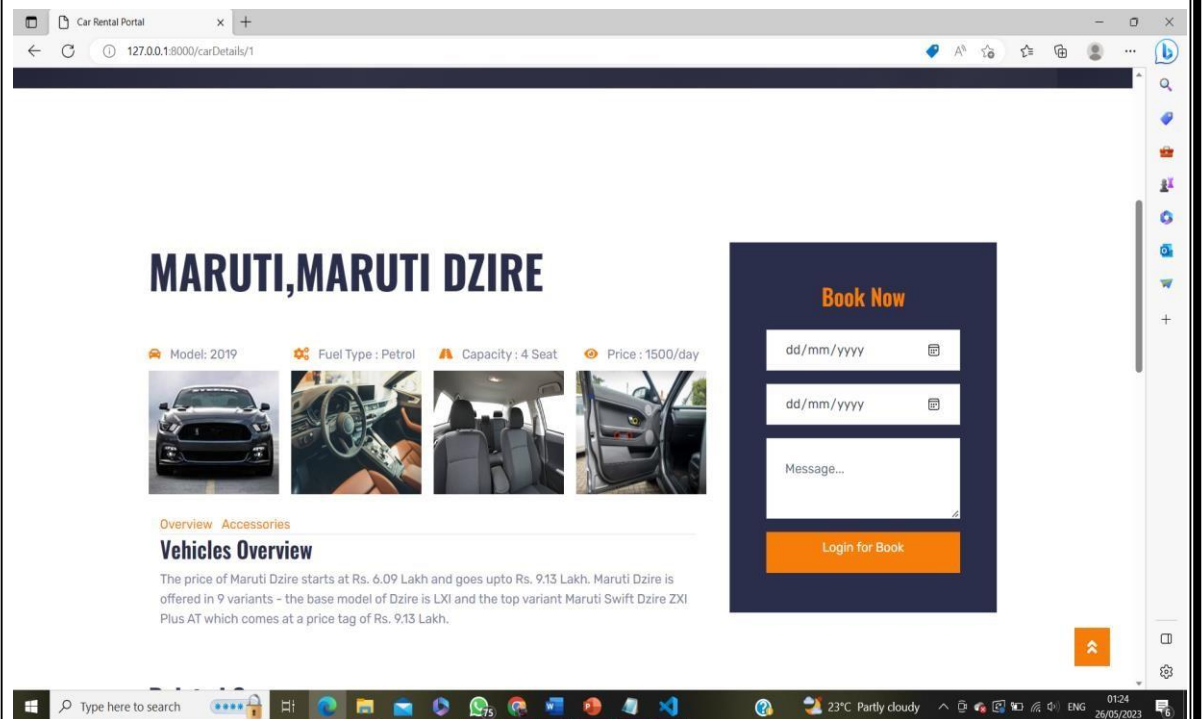
### 3. User login



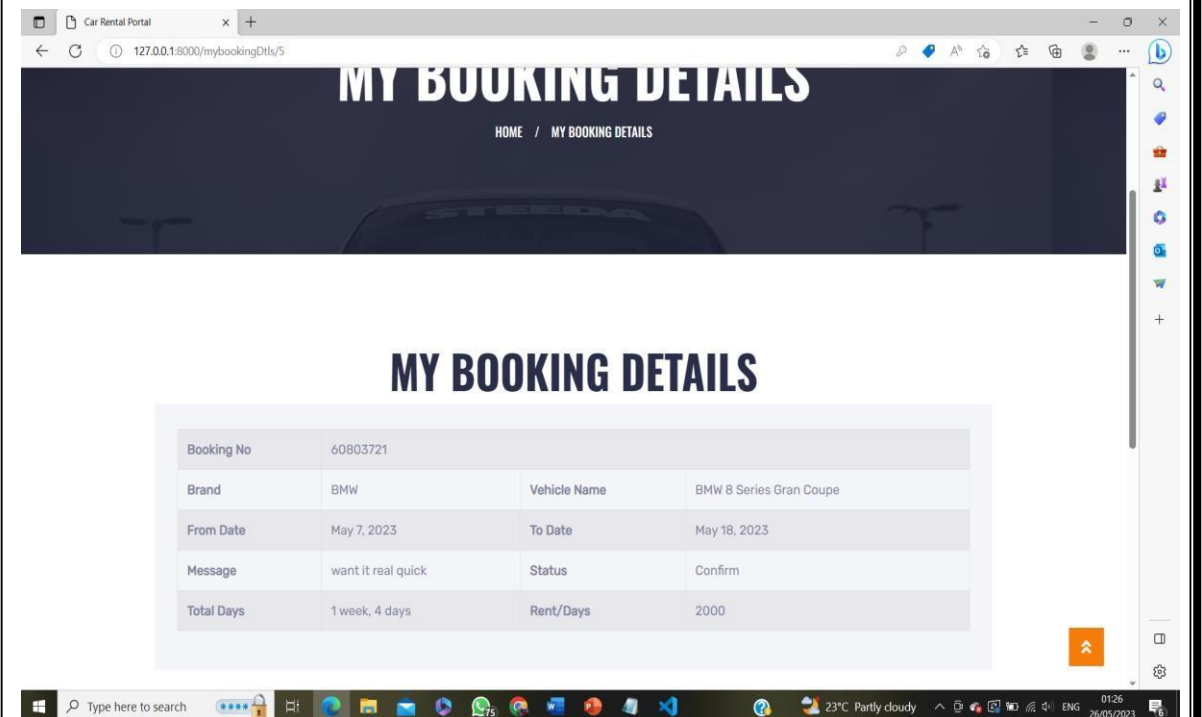
### 4. Car list page



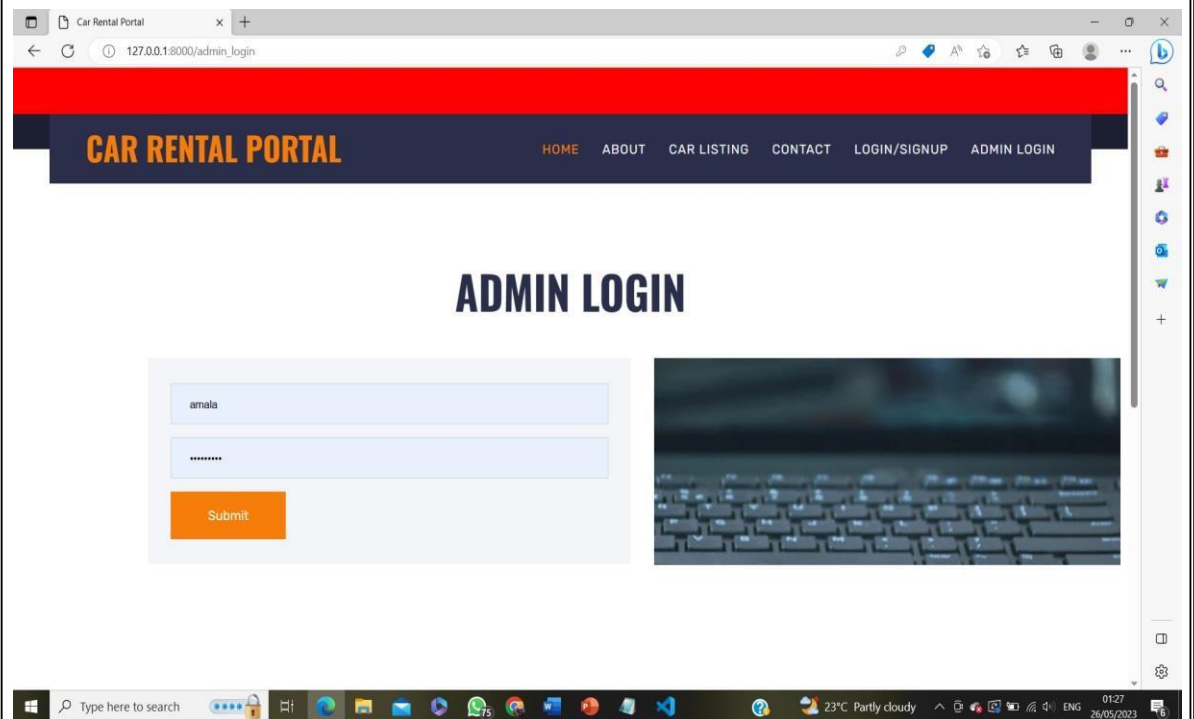
## 5. Car detail page



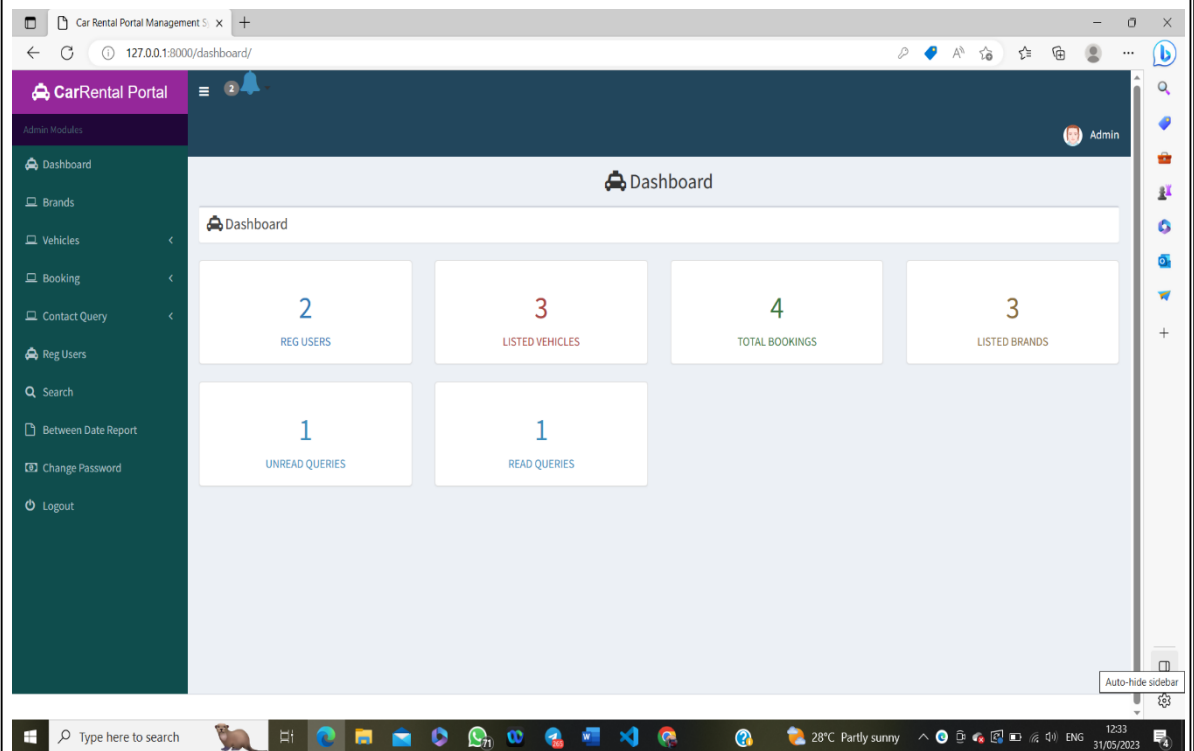
## 6. Bookings page



## 7. Admin Login



## 8. Admin home page



## 9. Brands page

**Manage Brands**

Show 10 entries

Search:

#	Brand Name	Creation Date	Action
1	Toyoto	April 15, 2022, 6:27 a.m.	<a href="#">Edit</a> <a href="#">Delete</a>
2	Maruti	April 15, 2022, 6:31 a.m.	<a href="#">Edit</a> <a href="#">Delete</a>
3	BMW	April 15, 2022, 6:31 a.m.	<a href="#">Edit</a> <a href="#">Delete</a>
4	Ford	May 8, 2023, 2:55 a.m.	<a href="#">Edit</a> <a href="#">Delete</a>
5	Volkswagen	May 8, 2023, 2:56 a.m.	<a href="#">Edit</a> <a href="#">Delete</a>
6	audi	May 8, 2023, 5:58 a.m.	<a href="#">Edit</a> <a href="#">Delete</a>

Showing 1 to 6 of 6 entries

Previous 1 Next

## 10. Vehicle page

**Manage Vehicles**

Show 10 entries

Search:

#	Vehicle Title	Brand	Price Per Day	Fuel Type	Model Year	Action
1	Maruti Dzire	Maruti	1500 Rs.	Petrol	2019	<a href="#">Edit</a> <a href="#">Delete</a>
2	BMW 8 Series Gran Coupe	BMW	2000 Rs.	Petrol	2020	<a href="#">Edit</a> <a href="#">Delete</a>
3	Alto	Maruti	1200 Rs.	Petrol	2020	<a href="#">Edit</a> <a href="#">Delete</a>

Showing 1 to 3 of 3 entries

Previous 1 Next

## 11. Add vehicle

**Vehicle Title**  
Enter Vehicle Title

**Brand**  
Select Brand

**Vehicle Overview**

**Price Per Day(In Rs.)**

**Select Fuel Type**  
Select Fuel Type

**Model Year**

**Seating Capacity**

**Upload Images**

Image 1: Choose File No file chosen

Image 2: Choose File No file chosen

Image 3: Choose File No file chosen

Image 4: Choose File No file chosen

Image 5: Choose File No file chosen

**Accessories**

☐ Air Conditioner ☐ Power Door Locks ☐ AntiLock Braking System ☐ Brake Assist

☐ Power Steering ☐ Driver Airbag ☐ Passenger Airbag ☐ Power Windows

☐ CD Player ☐ Central Locking ☐ Crash Sensor ☐ Leather Seats

**Submit**

## 12. View bookings

**Car Rental Portal** Admin

**All Booking**

Show 10 entries

#	Full Name	Booking No.	Vehicle	From Date	To Date	Status	Action
1	Anu Joseph	60803721	BMW, BMW 8 Series Gran Coupe	May 7, 2023	May 18, 2023	Confirm	<a href="#">Edit</a> <a href="#">Delete</a>
2	Abel George	24407466	Maruti, Maruti Dzire	May 8, 2023	May 10, 2023	Not Update Yet	<a href="#">Edit</a> <a href="#">Delete</a>
3	Aby Thomas	17575054	BMW, BMW 8 Series Gran Coupe	May 8, 2023	May 12, 2023	Not Update Yet	<a href="#">Edit</a> <a href="#">Delete</a>
4	amy jose	58917216	Maruti, Maruti Dzire	May 8, 2023	May 13, 2023	Confirm	<a href="#">Edit</a> <a href="#">Delete</a>

Showing 1 to 4 of 4 entries

Previous 1 Next