



**INSTITUTE FOR ADVANCED COMPUTING  
AND SOFTWARE DEVELOPMENT (IACSD)  
AKURDI, PUNE**

Documentation On

**AutoHub**  
**Online Vehicle rental system**  
PG-DAC March 2023

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Project Guide

## **ABSTRACT**

Our project AutoHub includes registration of customers and vehicles, storing their details into the system, and also booking their appointments for vehicles.

Our application has the facility to give a unique id for every Customer and vehicle and stores the details of every customer and vehicle automatically. A registered customer can make appointments. The web application can be entered using email and password. It is accessible either by an administrator or registered Customers. All the given data will be stored into the database, that data can be retrieved easily. The interface is very customer-friendly. The data are well protected for personal use and makes the data processing very fast.

It has mainly three modules. One is at Administration Level and one is of Customer and one is Vehicle i.e. of admin, customer, vehicle. The Application maintains authentication in order to access the application. The customer can view vehicles and book their services and schedule appointments via our application. Admin can approve vehicles to be added.

## **ACKNOWLEDGEMENT**

Apart from the efforts of the team, the success of any project depends largely on the encouragement and guidelines of many others. We take this opportunity to express our gratitude to the people who have been instrumental in the successful completion of this project.

The completion of any inter-disciplinary project depends upon cooperation, coordination and combined efforts of several sources of knowledge.

We are eternally grateful to our guide Mrs. Rupali Thorat for her even willingness to give us valuable advice and direction under which we executed this project. Her constant guidance and willingness to share her vast knowledge made us understand this project and its manifestations in great depths and helped us to complete the assigned tasks. . I extend my sincere thanks to our respected Centre Co-ordinator Mr. Rohit Puranik for allowing us to use the facilities available. I would like to thank the other faculty members also, at this occasion. Last but not the least,I would like to thank my friends and family for the support and encouragement they have given me during the course of our work.

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## INTRODUCTION

The project AutoHub is an online vehicle rental system application which includes registration of customers storing their details into the system. The software has the facility to give id for every customer, vehicle and stores the details of every customer and vehicle. Admin can approve vehicles to be added as well as remove any vehicles.

AutoHub web application can be entered using a customer username and password. It is accessible either by administrators or customers . Only they can add data into the database. The data can be retrieved easily. The interface is very customer-friendly. The data is well protected for personal use and makes the data processing very fast. The AutoHub is an online vehicle rental system which is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to customers.

This web application is designed for management purposes for admin to manage booking and vehicles as well as for customers to rent a wide range of vehicle.

It is a software product suite designed to improve the quality and management of online vehicle rental system. This web application enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of customer services and helps you manage your processes.

## **1.1 PROJECT OBJECTIVE**

- 1) Enhanced Service Accessibility
- 2) Effortless Booking Process
- 3) Quality Assurance through Reviews
- 4) Efficient Booking Management

These are the various jobs that need to be done in AutoHub web application.

## **1.2 PROJECT OVERVIEW**

Developing an online platform is a job that requires equal share of technological expertise and sound decision making. This website offers smoother experience to use provided services. Developers make it sure that the site is high on responsiveness and low on tech errors, which is the most favourable selling point of this web application.

Also from the service perspective, users usually get the blood bank services with ease on websites, as they get all the details available there.

## **1.3 PROJECT SCOPE**

This System allows Customer to rent a car or bike for travelling, function or personal use based on their availability and requirement. Customer will be able to view available cars/bike, book a car/bike in available list of areas and may be able to cancel booking before 24 hours of booking date/time.

The System will be able to show live Business Operation statistics, trends through Customized dashboard for stakeholders.

## **1.4 STUDY OF THE SYSTEM**

### **1.4.1 MODULES:**

The application after careful analysis has been identified to be presented with the following modules and roles. The modules involved are:

- Administrator
- Customers

#### **1.4.1.1 Administrator:**

DESCRIPTION - The admin can add vehicles, update vehicles status, create/update/delete vehicles.

#### MAIN FLOW OF EVENTS

1. Admin logs in the system.
2. Admin can add vehicles.
3. Admin maintains vehicle record.
  - 3.1 List of registered vehicle details is displayed.
4. Admin View the vehicles available and also can manage them.
5. Admin can add vehicle and manage and see them in a list form.



➤ **Add vehicles**

Admin can add new vehicles and register him with details like name,model,rent,etc.

➤ **Edit vehicles**

Admin will have a list view of all the existing vehicles. He can also edit for a particular.

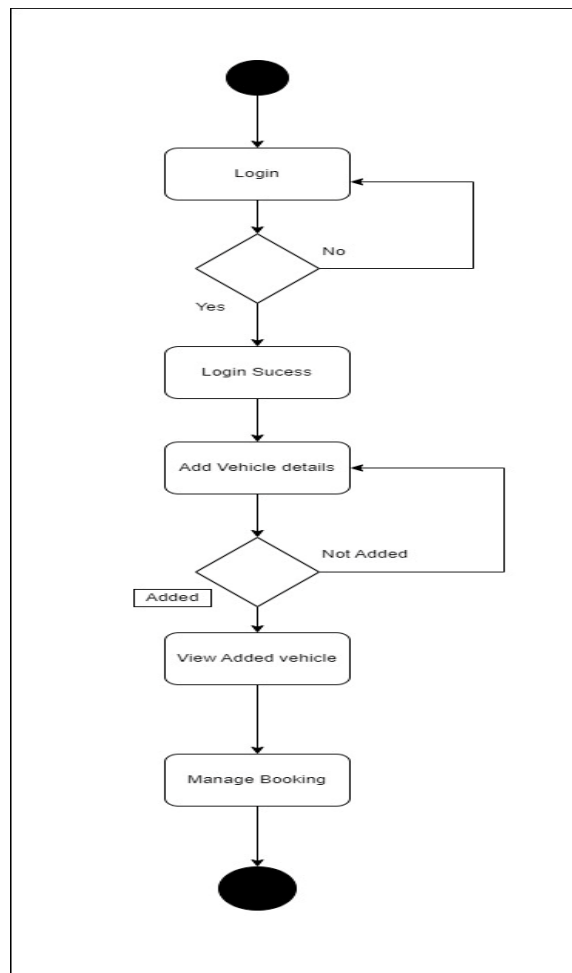
➤ **Add/Remove vehicles**

Admin can add /remove vehicle.

➤ **View vehicles**

Admin will have a dashboard where he/she can view all the vehicles.

Activity Diagram:

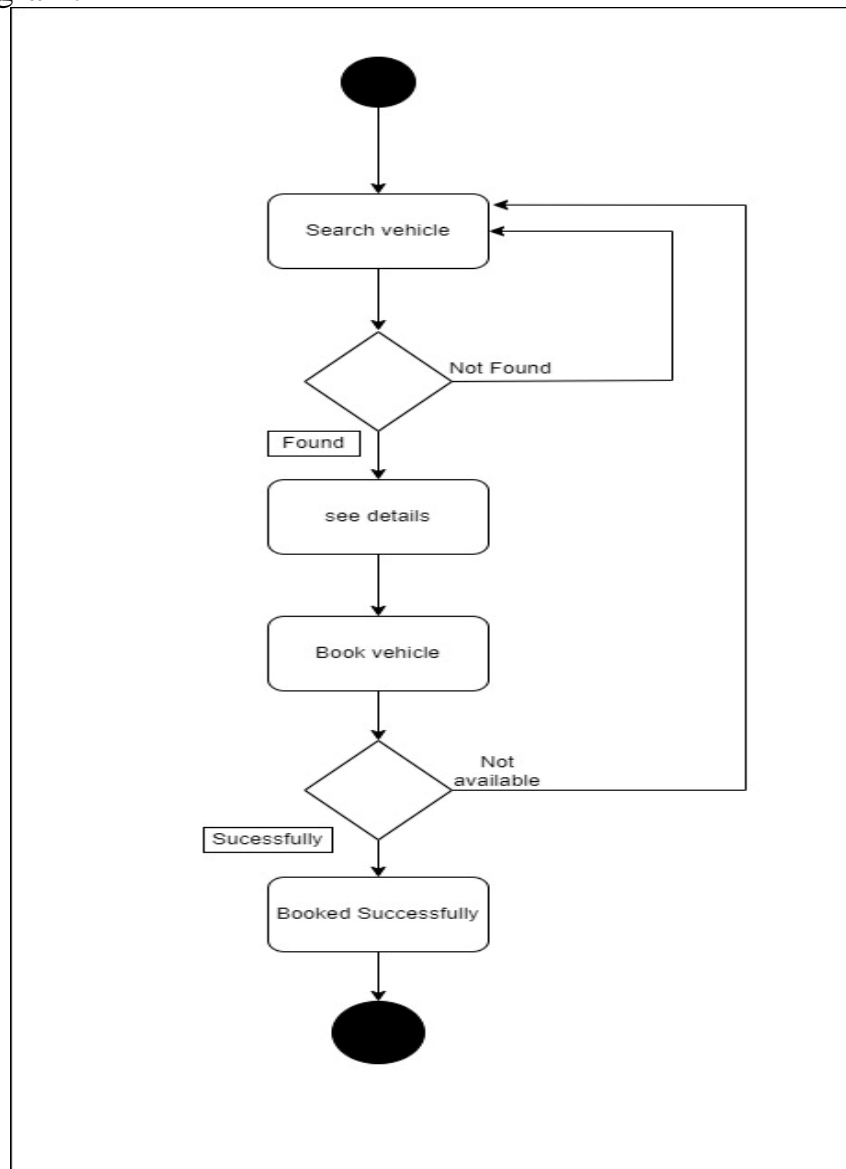


### **1.4.1.2 Customers:**

#### MAIN FLOW OF EVENTS

1. Customers can sign up in the system.
2. Customers can sign up by filling their details like name, Email, age, mobile number , etc.
3. Customers can sign in to the application and manage their profile.
4. Customers can view a list of all appointments.
5. Customers can update and cancel their app(bookings).

## Activity Diagram:



**Create Account**

Customers can create an account by filing proper details.

➤ **List All Bookings**

Customers will have a list view of all the bookings of him/her.

➤ **Manage Profile**

Customers can manage their profile and can update their details.

➤ **Book Appointments**

Customers can book vehicle according to their preference.

**1.4.1.3 Vehicles:**MAIN FLOW OF EVENTS

1. Vehicles can add with correct details.
2. Vehicles can be search by using their name or type

## **SYSTEM ANALYSIS**

System analysis is the process of gathering and interpreting facts, diagnosing problems, and using information to recommend improvements on the system. System analysis is a problem solving activity that requires intensive communication between the system customers and system developers.

System analysis or study is an important phase of any system development process. The system is viewed as a whole, the inputs are identified, and the system is subjected to close study to identify the problem areas. The solutions are given as a proposal. The proposal is reviewed on customer request and suitable changes are made. This loop ends as soon as the customer is satisfied with the proposal.

### **2.1 EXISTING SYSTEM**

In the existing system online vehicle rental system functionalities are handled manually by admin by keeping the records of every vehicle in a register. There is no record present for billings of customers and no history is available for bookings.

- It is less customer-friendly.
- It is difficult to know the customer's history.
- Difficult to maintain a customer record.

### **2.2 PROPOSED SYSTEM**

In the proposed system, we are developing a web application for online vehicle rental system. In which two modules have access to the system. The proposed system allows to keep the record for every customer and vehicle. It will also have all the records of customers and vehicles booking and appointment.

## **2.3 SYSTEM REQUIREMENT SPECIFICATION**

### **2.3.1 GENERAL**

#### **DESCRIPTION**

##### **Product Description:**

An AutoHub is a vehicle rental system that can be used to get vehicle on rent 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.

##### **Problem Statement:**

- **Inefficient Service Booking Process:**

Many customers face challenges when seeking vehicle for rent due to the lack of a streamlined and customer-friendly platform. Traditional methods of finding and booking vehicle can be time-consuming and frustrating. There is a need for a solution that simplifies the process, allowing customers to quickly find and schedule services based on their preferences.

- **Lack of Reliable Vehicles:**

Locating maintained and good vehicles for rent can be a daunting task. Customers often struggle to find vehicles who offer quality services, leading to concerns about safety and service quality. Addressing this issue requires a platform that connects customers with certified and reliable vehicles .

- **Complexity in Managing Appointments:**

Company offering rent services often struggle with managing their bookings efficiently. Balancing their availability, accepting bookings, and organizing schedules manually can lead to errors and overlaps. The application needs to address this challenge by offering vehicles a platform to manage their appointments effectively.

## SYSTEM OBJECTIVES

- To provide a Web application for online vehicle rental system
- To provide a web app for customers to book and avail services by various vehicles.
- To provide a web app for vehicles to showcase their services and manage bookings and appointments.

## 2.3.2 SYSTEM REQUIREMENTS

### **2.3.3.1 NON-FUNCTIONAL REQUIREMENTS**

Following Non-Functional Requirements will be there in the insurance to the internet:

1. Performance:

- The application shall respond to customer interactions within 2 seconds.
- The platform shall support a minimum of 500 simultaneous customers.

2. Security:

- Customer passwords and sensitive data shall be securely encrypted.
- Secure authentication and authorization mechanisms shall be implemented.
- Payment transactions shall be processed securely using encryption.

3. Usability:

- The customer interface shall be intuitive and customer-friendly for customers and vehicles.
- The application shall be accessible to customers with disabilities, conforming to relevant accessibility standards.

4. Reliability:

- The platform shall have an uptime of at least 99.9%.
- Regular data backups shall be performed to ensure data integrity.

5. Compatibility:

- The application shall be compatible with major web browsers (Chrome, Firefox, Safari, Edge).
- The platform shall be responsive and usable on various devices, including mobile phones and tablets.

6. Documentation:

- Customer documentation shall be provided, including customer guides and

#### FAQs.

- Administrator documentation shall cover customer management and platform maintenance.

#### 7. Scalability

- The application architecture shall support scalability to accommodate a growing customer base.

#### 8. Privacy and Compliance

- The application shall adhere to relevant data protection and privacy regulations.
- Customers' personal and payment information shall be kept private and secure.

#### 9. Data Integrity:

- Customer-generated data (appointments, reviews) shall be stored securely and accurately.

#### 10. Performance Monitoring:

- The application shall have monitoring tools to track system health and performance.



### **2.3.3.2FUNCTIONAL REOUIREMENTS**

#### **1. Customer Management:**

- Customers, administrators can register and create accounts.
- Customers can log in using their registered credentials.
- Customers can update their profile information.

#### **2. Booking and Appointments:**

- Customers can request bookings.
- admin can view and manage appointment requests.
- Customers can view bookings.

#### **4. Communication:**

- Customers can communicate through real-time messaging.
- Vehicles and customers receive notifications for new messages and updates.

#### **5. Administrator Tools:**

- Administrators can manage customers, and bookings.
- Administrators can resolve disputes and address platform issues.

#### **6.Booking management:**

- Customer after login or registration can book or cancel booking of the vehicle from the booking list.

#### **7.Logout:**

- After completion of booking or surf the product the customer will be logged out.

## SYSTEM DESIGN

System design is the solution for the creation of a new system. This phase focuses on the detailed implementation of the feasible system. Its emphasis is on translating design specifications to performance specification. System design has two phases of development.

- Logical Design
- Physical Design

During logical design phase the analyst describes inputs (sources), outputs (destinations), databases (data stores) and procedures (data flows) all in a format that meets the customer requirements. The analyst also specifies the needs of the customer at a level that virtually determines the information flow in and out of the system and the data resources. Here the logical design is done through data flow diagrams and database design. The physical design is followed by physical design or coding. Physical design produces the working system by defining the design specifications, which specify exactly what the candidate system must do. The programmers write the necessary programs that accept input from the customer, perform necessary processing on accepted data and produce the required report on a hard copy or display it on the screen.

### 3.1 INPUT AND OUTPUT DESIGN

#### 3.1.1 INPUT DESIGN:

Input design is the link that ties the information system into the world of its customers. The input design involves determining the inputs, validating the data, minimizing the data entry and provides a multi-customer facility. Inaccurate inputs are the most common cause of errors in data processing. Errors entered by the data entry operators can be controlled by input design. The customer-originated inputs are converted to a computer-based format in the input design. Input data are collected and organized into groups of similar data. Once identified, the appropriate input media are selected for processing. All the input data are validated and if any data violates any conditions, the customer is warned by a message. If the data satisfies all the conditions, it is transferred to the appropriate tables in the database. In this project the student details are to be entered at the time of registration. A page is designed for this purpose which is customer friendly and easy to use. The design is done such that customers get appropriate messages when exceptions occur.

### **3.1.2 OUTPUT DESIGN:**

Computer output is the most important and direct source of information to the customer. Output design is a very important phase since the output needs to be in an efficient manner. Efficient and intelligible output design improves the system relationship with the customer and helps in decision making. Allowing the customer to view the sample screen is important because the customer is the ultimate judge of the quality of output. The output module of this system is the selected notifications.

## **DATABASE DESIGN**

### **3.2 DATABASE**

Databases are the storehouses of data used in the software systems. The data is stored in tables inside the database. Several tables are created for the manipulation of the data for the system. Two essential settings for a database are

- Primary key - the field that is unique for all the record occurrences
- Foreign key - the field used to set relation between tables

Normalization is a technique to avoid redundancy in the tables.

### **3.3 SYSTEM TOOLS**

The various system tools that have been used in developing both the front end and the back end of the project are being discussed in this chapter.

#### **3.3.1 FRONT END:**

React is a library which is developed by Face book is utilized to implement the frontend. React (also known as React.js or React JS) is a free and open-source front-end JavaScript library for building customer interfaces or UI components. It is maintained by Face book and a community of individual developers and companies. React can be used as a base in the development of single page or mobile applications. However, React is only concerned with state management and rendering that state to the DOM, so creating React applications usually requires the use of additional libraries for routing, as well as certain client-side functionality.

Version-React18.2.0

### **3.3.2 BACKEND:**

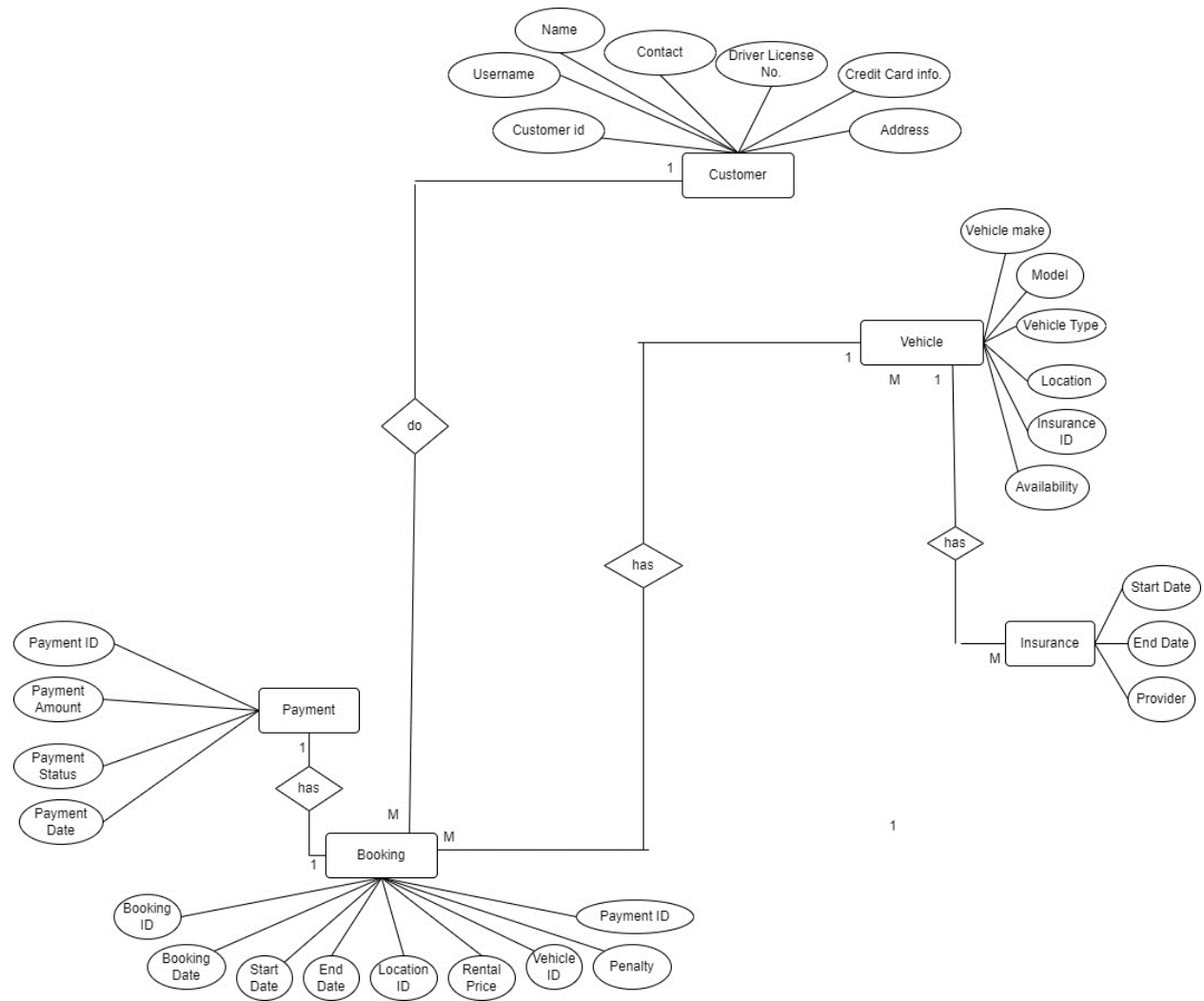
The back end is implemented using MySQL which is used to design databases.

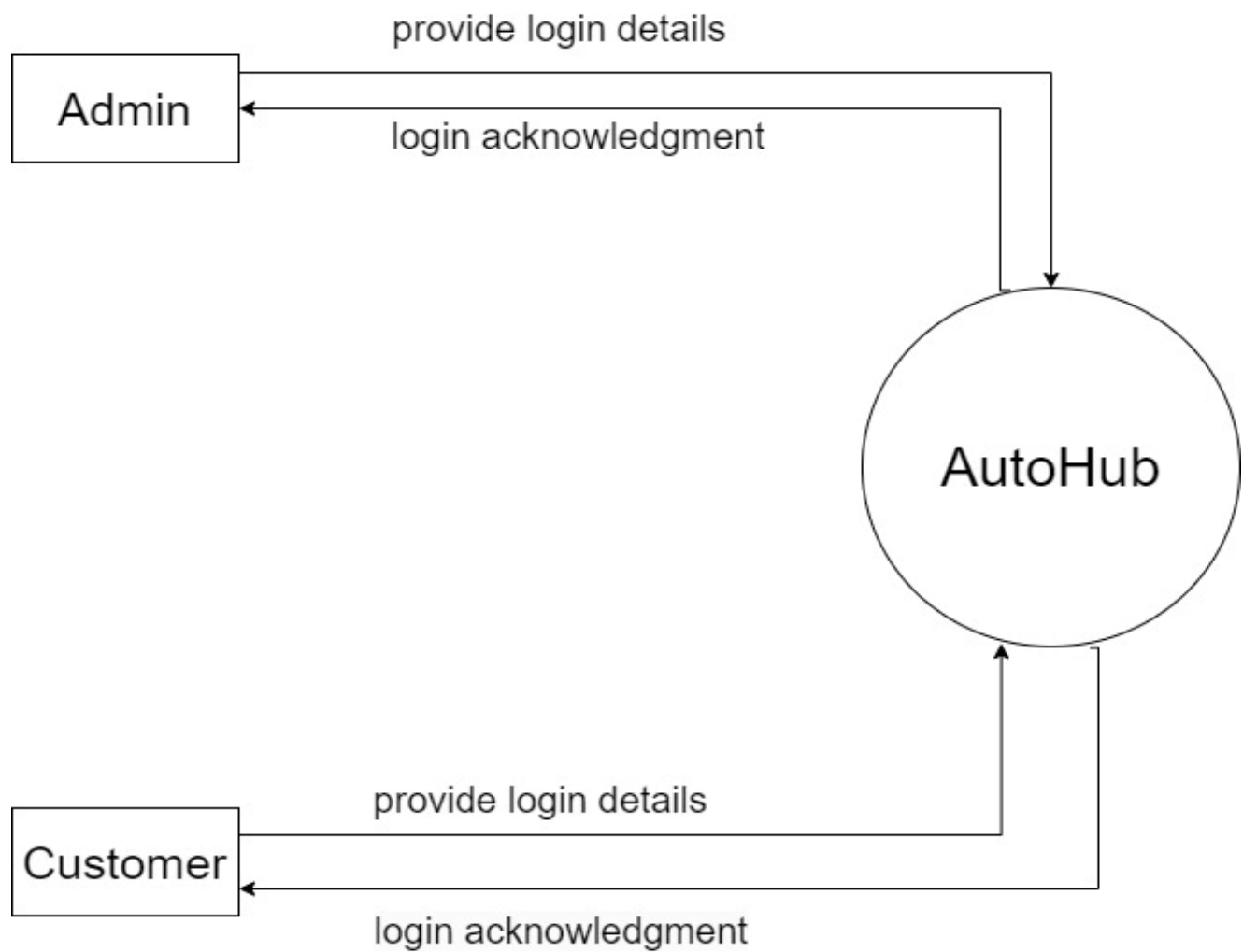
#### **MySQL:**

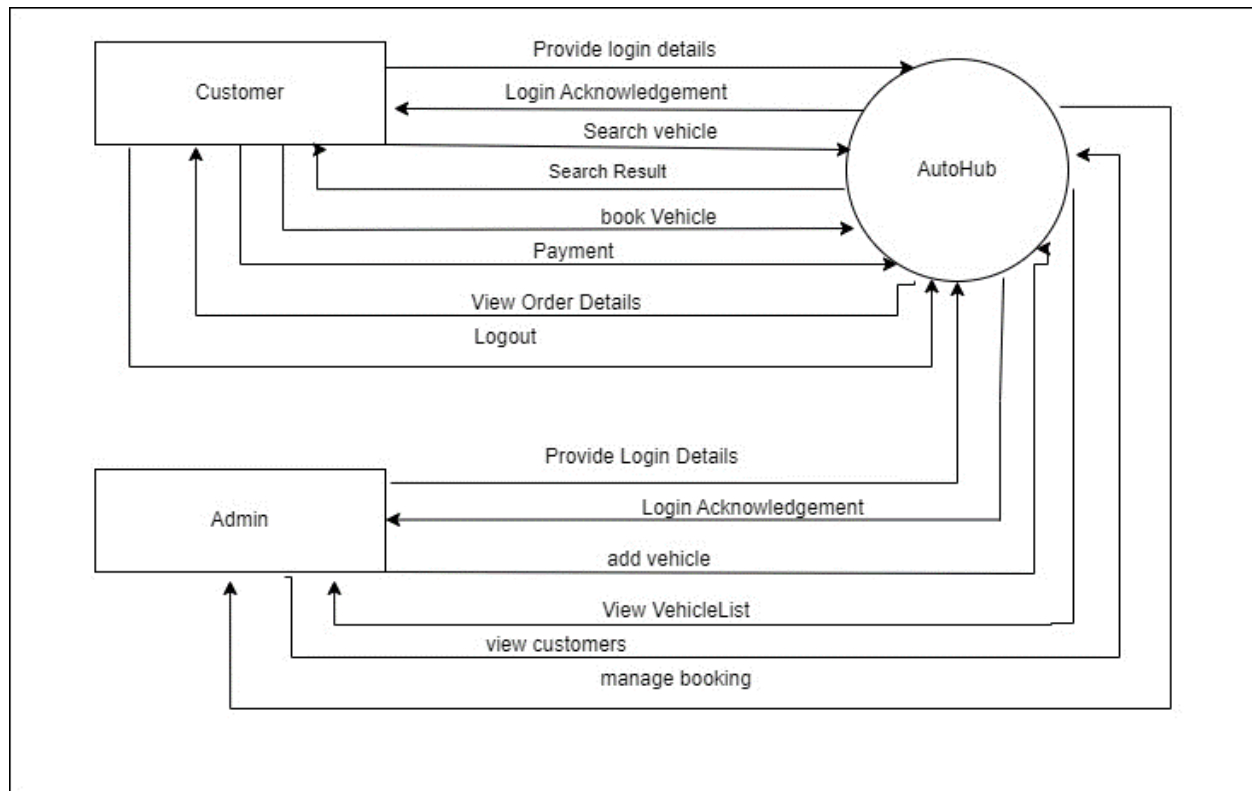
MySQL is the world's second most widely used open-source relational database management system (RDBMS). The SQL phrase stands for Structured Query Language.  
Version-8.1.0

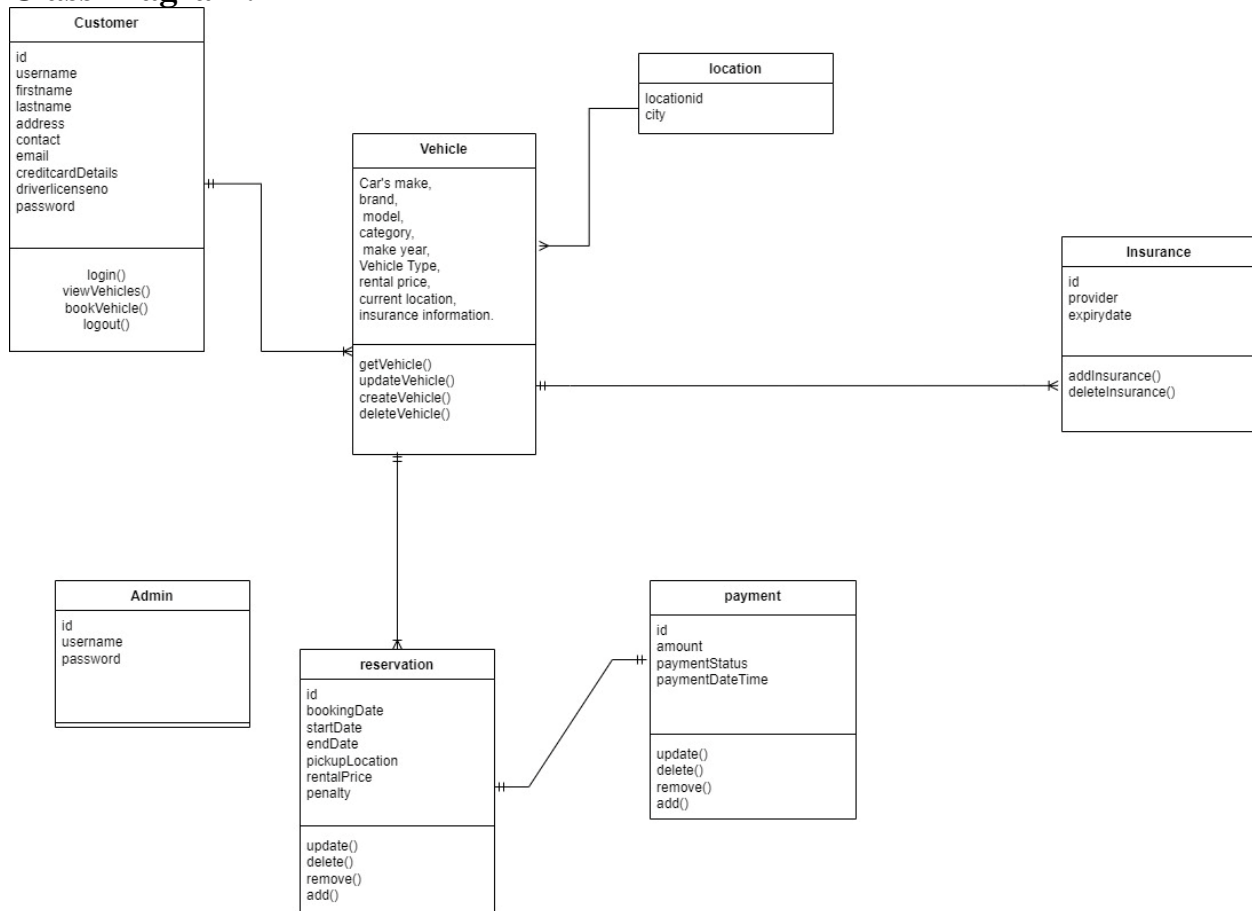
#### **Spring-Boot:**

This is used to connect MYSQL and fetch data from database and store the data in database. The Spring Framework is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE (Enterprise Edition) platform. Although the framework does not impose any specific programming model, it has become popular in the Java community as an addition to the Enterprise JavaBeans (EJB) model. The Spring Framework is Open-source Framework.  
Version-2.7.15

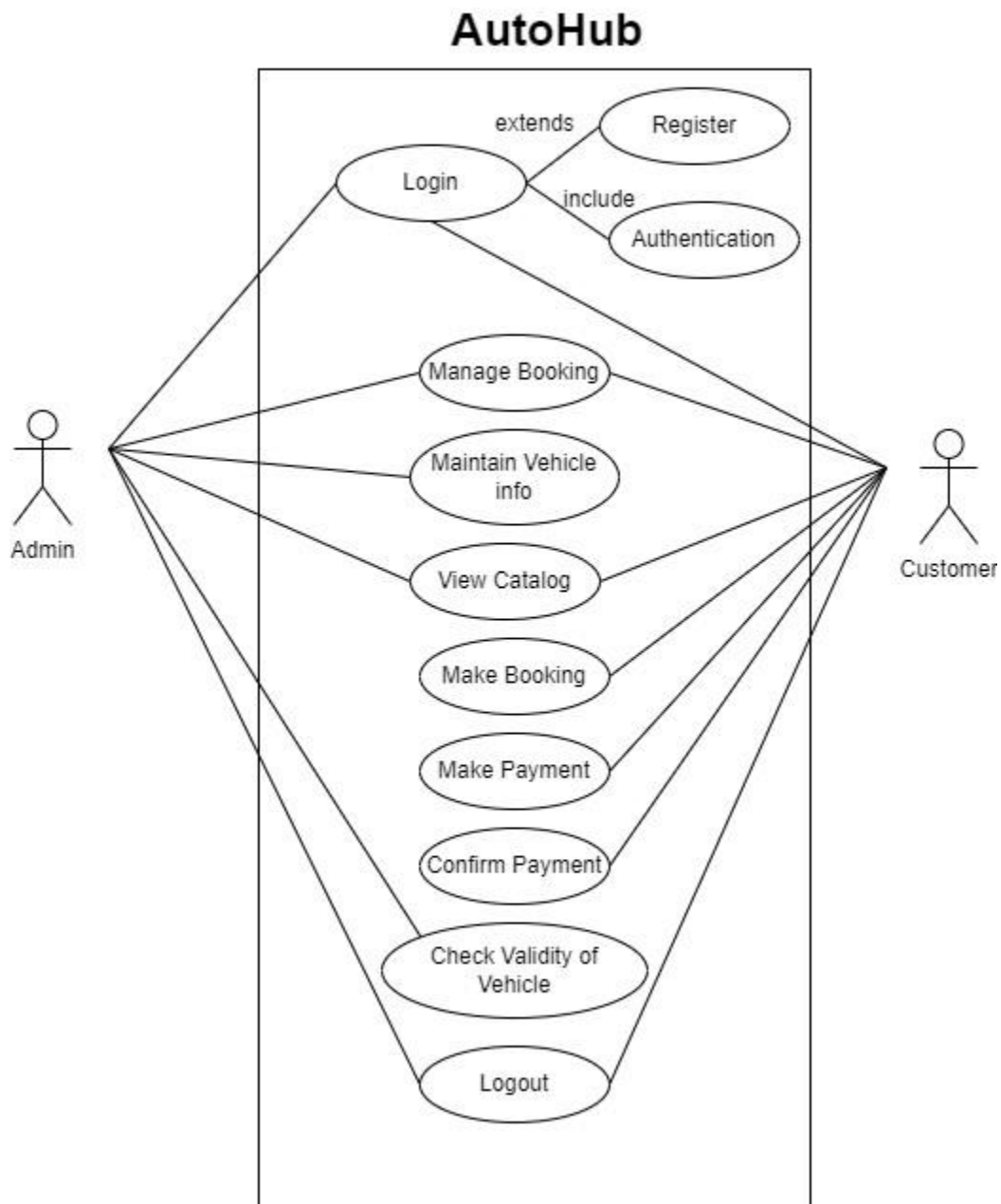
**ER Diagram:**

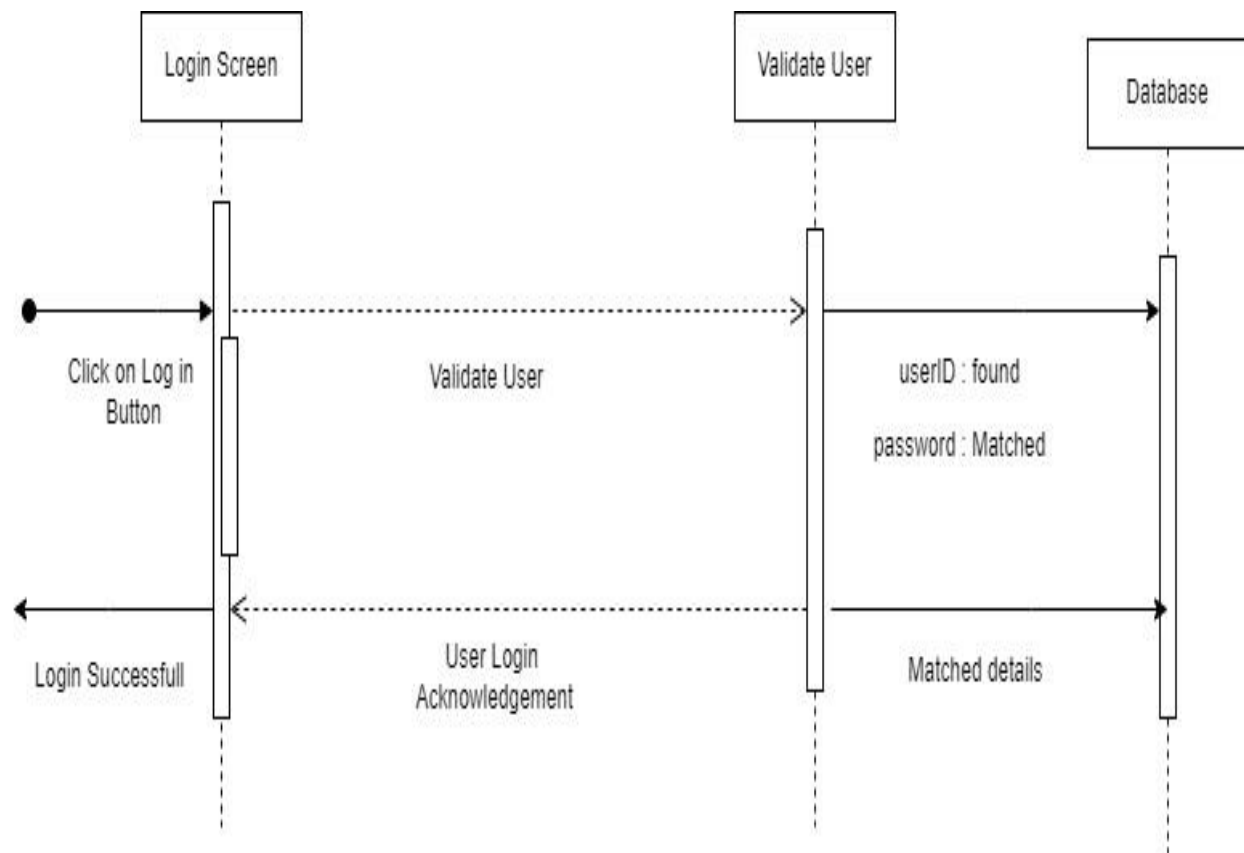
**Data Flow Diagram (DFD):****Level 0 DFD**

**Level 1 DFD**

**Class Diagram:**



**Use Case Diagrams:**

**Sequence Diagram:**

## TABLE STRUCTURE:

### Admin:

```
mysql> desc admin;
```

Field	Type	Null	Key	Default	Extra
admin_id	bigint	NO	PRI	NULL	auto_increment
email	varchar(60)	YES		NULL	
password	varchar(10)	YES		NULL	
username	varchar(20)	YES		NULL	

4 rows in set (0.01 sec)

### Customers:

```
mysql> desc customers;
```

Field	Type	Null	Key	Default	Extra
customer_id	bigint	NO	PRI	NULL	auto_increment
address	varchar(255)	YES		NULL	
contact	varchar(10)	YES	UNI	NULL	
credit_card_details	varchar(255)	NO		NULL	
driving_license_number	varchar(255)	NO		NULL	
email	varchar(255)	NO	UNI	NULL	
first_name	varchar(50)	NO		NULL	
last_name	varchar(50)	NO		NULL	
password	varchar(255)	YES		NULL	
username	varchar(255)	NO		NULL	

10 rows in set (0.01 sec)

**Vehicles:**

```
mysql> desc vehicle;
```

Field	Type	Null	Key	Default	Extra
vehicle_id	bigint	NO	PRI	NULL	auto_increment
availability	bit(1)	NO		NULL	
brand	varchar(255)	NO		NULL	
category	varchar(255)	NO		NULL	
model	varchar(255)	NO		NULL	
rate	double	NO		NULL	
vehicle_type	varchar(255)	YES		NULL	
insurance_id	bigint	YES	MUL	NULL	
location_id	bigint	YES	MUL	NULL	
location	varchar(255)	YES		NULL	

```
10 rows in set (0.01 sec)
```

**Insurance:**

```
mysql> desc insurance;
```

Field	Type	Null	Key	Default	Extra
insurance_id	bigint	NO	PRI	NULL	auto_increment
expiry_date	date	YES		NULL	
provider	varchar(255)	NO		NULL	

```
3 rows in set (0.00 sec)
```

**Payment:**

```
mysql> desc payment;
```

Field	Type	Null	Key	Default	Extra
payment_id	bigint	NO	PRI	NULL	auto_increment
amount	double	NO		NULL	
payment_date_time	datetime(6)	YES		NULL	
payment_status	bit(1)	NO		NULL	
reservation_id	bigint	YES	MUL	NULL	

```
5 rows in set (0.01 sec)
```

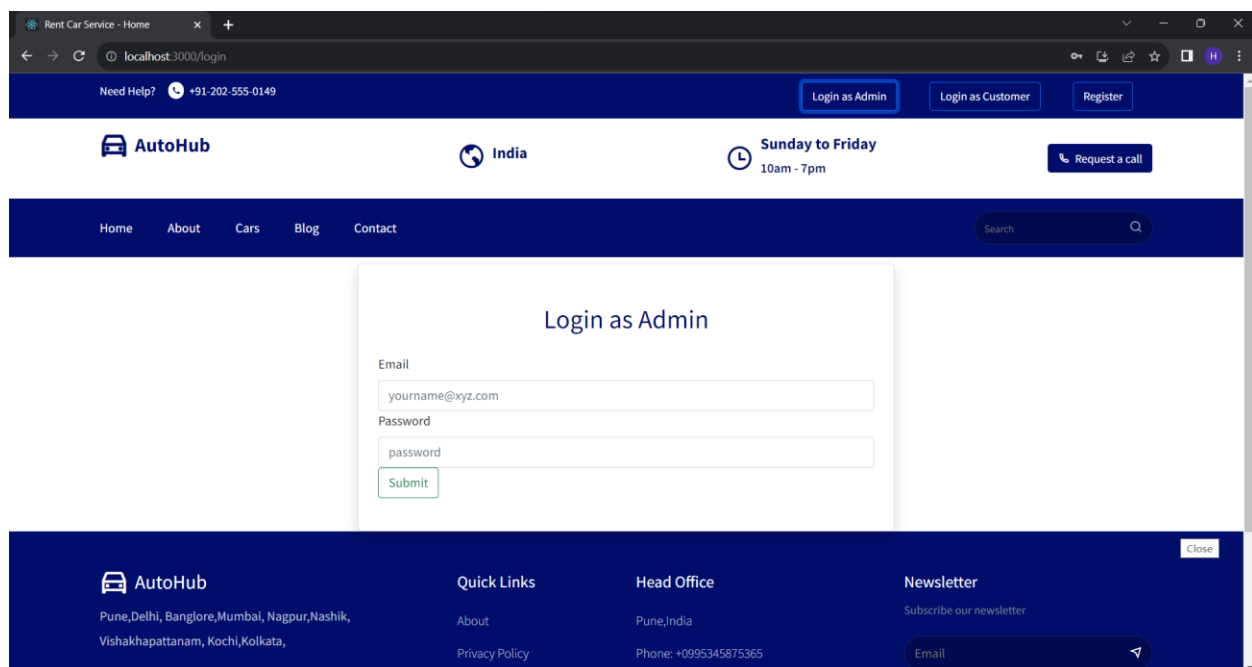
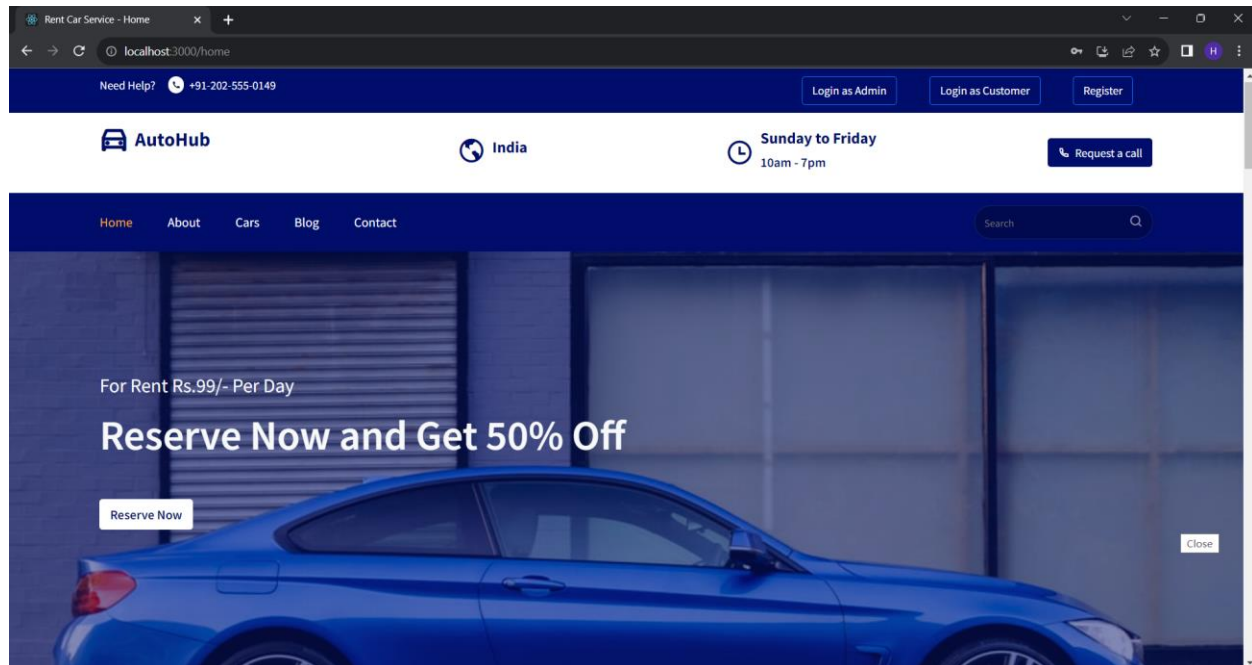
**Reservation:**

```
mysql> desc reservation;
```

Field	Type	Null	Key	Default	Extra
reservation_id	bigint	NO	PRI	NULL	auto_increment
booking_date	date	YES		NULL	
end_date	date	YES		NULL	
penalty	double	NO		NULL	
pick_up_location	varchar(100)	YES		NULL	
rental_price	double	NO		NULL	
start_date	date	YES		NULL	
customer_id	bigint	YES	MUL	NULL	
vehicle_id	bigint	NO	MUL	NULL	

```
9 rows in set (0.01 sec)
```

## Project Screenshots:



Rent Car Service - Home

localhost:3000/vehicleadmin

Need Help? +91-202-555-0149

Login as Admin

Login as Customer

Register

AutoHub

India

Sunday to Friday  
10am - 7pm

Request a call

Home

About

Cars

Blog

Contact

Search

List of Vehicles

Add new vehicle

Id	Brand	model	category	vehicleType	city	rate	
1	suzuki	swift	SEDAN	CAR	Pune	2000	<div>Update</div> <div>Delete</div>

Close

AutoHub

Pune,Delhi, Bangalore,Mumbai, Nagpur,Nashik, Vishakhapattanam, Kochi,Kolkata,

Quick Links

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Pune,India

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Rent Car Service - Home

localhost:3000/edit/1

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Login as Admin

Login as Customer

Register

AutoHub

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Brand

suzuki

model

swift

category

SEDAN

type

CAR

city

Pune

Rate

2000

Close

Rent Car Service - Home x +

localhost:3000/logincustomer

Need Help? +91-202-555-0149

Login as Admin Login as Customer Register

**AutoHub** India Sunday to Friday 10am - 7pm Request a call

Home About Cars Blog Contact Search

### Login as Customer

Email  
harshal@gmail.com

Password  
\*\*\*\*\*

Login Close

**AutoHub** Quick Links Head Office Newsletter

Rent Car Service - Home x +

localhost:3000/vehicle

Need Help? +91-202-555-0149

Login as Admin Login as Customer Register

**AutoHub** India Sunday to Friday 10am - 7pm Request a call

Home About Cars Blog Contact Search

### List of Vehicles

Id	Brand	model	category	vehicleType	city	rate	
1	suzuki	swift	SEDAN	CAR	Pune	2000	Book

**AutoHub** Quick Links Head Office Newsletter

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Browser: Rent Car Service - Home | localhost:3000/register

Need Help? +91-202-555-0149 | Login as Admin | Login as Customer | Register

AutoHub | India | Sunday to Friday 10am - 7pm | Request a call

Home | About | Cars | Blog | Contact | Search

### Register

Username  
Enter username

Email  
Enter valid email id

Password  
Enter password

First Name  
Enter First Name

Last Name  
Enter Last Name

Contact

Close


---

Browser: Rent Car Service - Mercedes Malibu | localhost:3000/cars/Mercedes%20Malibu

Need Help? +91-202-555-0149 | Login as Admin | Login as Customer | Register

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### Mercedes Malibu

**Rs500.00 / Day** ★★★★★ (112 ratings)

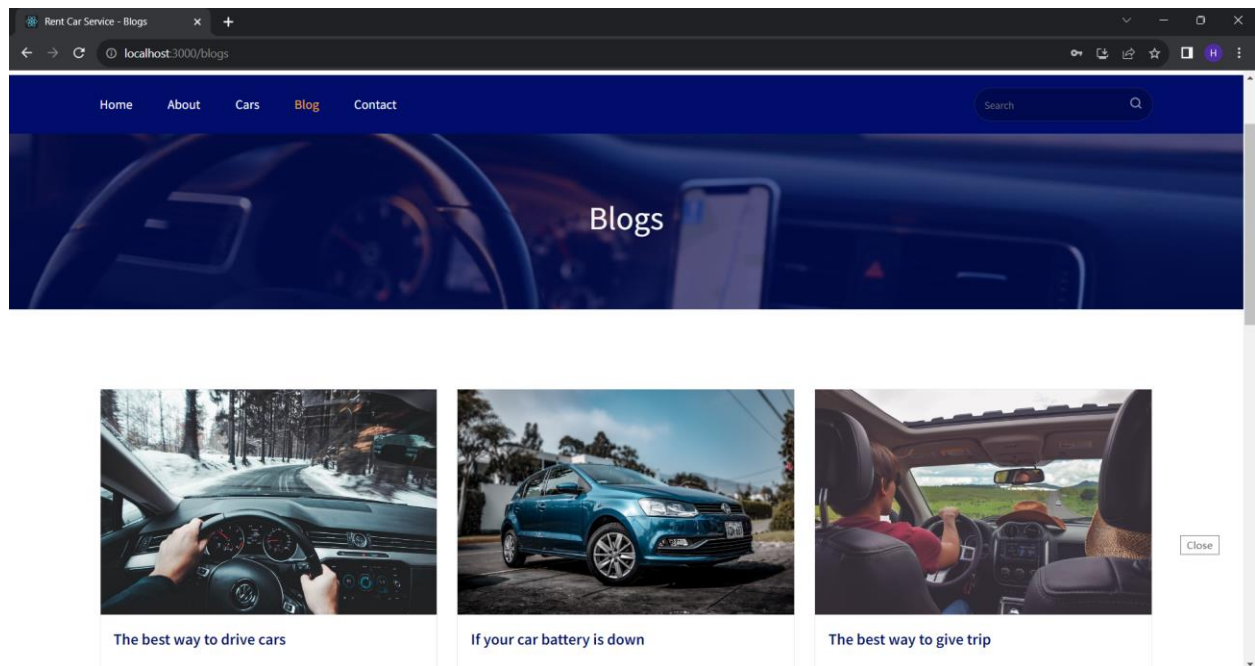
Dolor labore lorem no accusam sit justo sadipsicing labore invidunt voluptua, amet duo et gubergren vero gubergren dolor. At diam. Dolor labore lorem no accusam sit justo sadipsicing labore invidunt voluptua, amet duo et gubergren vero gubergren dolor. At diam.

Model 3 | Automatic | 100kmpl

GPS Navigation | Heated seats | Mercedes

Close

**Booking Information**



## CONCLUSION

In conclusion, the journey of developing the AutoHub online vehicle rental system application has been one of innovation and dedication. Through a rigorous process of analysis, design, and implementation, we have successfully crafted an application that defines how customers access and rent vehicles. The various features, customer-centric design, and robust architecture converge to create an ecosystem that simplifies vehicle booking, enhances communication, and elevates the overall customer experience.

The application's commitment to security and privacy ensures that customers can engage with confidence, while the transparent feedback mechanism establishes accountability and trust within the service community. Furthermore, the administrative control tools empower platform moderators to uphold service quality and maintain the integrity of the system.

The AutoHub application not only addresses the challenges faced by customers and admin in the vehicle rental service domain but also paves the way for future scalability and enhancements. This journey has been marked by lessons learned, challenges overcome, and a collective effort to create a lasting impact. As we move forward, we remain dedicated to refining and expanding the application, continuously striving to provide efficient and innovative solutions to the evolving landscape of online vehicle rental service.

## Future scope

- **IoT and Telematics Integration:** Internet of Things (IoT) technology and telematics can enable real-time tracking, remote diagnostics, and predictive maintenance of rental vehicles. This enhances fleet management, minimizes downtime, and provides a better user experience.
- **Subscription Models:** Offering subscription-based services where customers pay a recurring fee for access to a variety of vehicles could become more popular. This provides flexibility and eliminates the need for repeated booking processes.
- **Peer-to-Peer Rentals:** Building a platform that allows private vehicle owners to rent out their cars when not in use can create a shared economy within the rental system, providing more choices for customers.

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