



Car Rental Integrate Palo Alto

Sushant Sharma and Dr. Ritu Kadyan

Department of CSE

Ganga Institute of Technology and Management, Jhajjar

Abstract:

Customers will be able to make bookings for their cars using the car rental system from any location in the world. Customers who submit information to this website must fill out personal information. Prior to using the automobile website, users must create an account with the portal. A fully integrated online portal serves as the website or portal solution. It continues to simplify laborious operations. This automated method aids customers by letting them fill in the information as necessary. It contains information on the area and the sort of vehicle they wish to hire. The system's or website's goal is for users to be able to reserve a car and utilize it whenever they wish.

Overview

It is a practical and economical method of transportation, particularly when using public transit is impractical or unavailable. Customers may pick from a variety of vehicles offered by car rental businesses, from little automobiles to luxury cars, depending on their demands.

The rental agreement outlines the terms and conditions of the rental, including the length of the rental period, mileage limits, insurance coverage options, and any additional fees or charges.

Car rental services are available at airports, train stations, and other transportation hubs. They are also available at standalone locations throughout cities and towns. Many car rental companies offer online booking options for added convenience.

Overall, car rental provides an excellent option for travelers who need flexibility in their transportation plans. With its wide range of vehicle options and convenient locations, it has become an essential part of modern travel.

Need for Car Rental

Car rental is the biggest advancement in society. Earlier we have to face many problems or challenges in our transportation system but with the help of car rental, we can remediate this. the transportation industry has undergone significant changes with emerging technological advancements. car rental helps the user to meet their transport demand at a very reasonable price. Car Rental help user to lend auto and car at a very minimal price

Objective of Car Rental System

The objective of car rental is providing user flexibility to rent the car and plan their activity. The car rental should also provide a simple and convenient way for customers to reserve and pick up the vehicle they need. Users can select the vehicle from the portal and the vehicle will deliver to their home .user can rent the vehicle according to their demand and rent them.

Methodology/Procedure

For building up this project we have used JavaScript for scripting and react for building up the web pages and we have also used HTML and CSS for creating the website to look good. Web based application is also follow agile methodologies to control the flow of application it also consists of various models as well.

Project Framework

This project basically developed upon various programming language which makes it more flexible and the framework which is used here make it more understandable for user. It used to encompass the key components required for planning, managing, and governing projects.

Data Integration

Data play a very important role in this project as we have to collect data from the client and present it back to the user. so, we have used a database to store the information of client and user signing.

Security

For security features we have used Palo Alto firewall to mitigate the effect and when we deploy this project in the live environment so security is an important aspect.

Tools Used

- 1) XAMPP: It is basically used to host the application.
 - a) *Apache*: (Application Server) It is used to host the application on web server and it is non-profit organization that help to host your website.
 - b) *MySQL*: It is used to collect the data of car rental and maintain it and it also perform sorting of data and provide the report of data .it provide various security feature like authentication and encryption. *MySQL* is an open-source data base management system which manage your data and protect it.
- 2) *Palo alto*: It provide additional security feature to the website. It protects against the threat prevention and user monitoring. It provides cyber security solutions to the environment.
- 3) *Web Browsers*: any web browser we can use to run application.
- 4) *HTML/CSS*: It provides a way to structure content on a webpage by using tags to denote different types of content. *HTML* is the foundation of every webpage and provides the basic structure for every website on the internet. *CSS* is used to define styles for web pages, including the layout, colors, fonts, and other visual elements. The main advantage of *CSS* is that it separates the content of a webpage from its presentation.
- 5) *JavaScript and React*: It is scripting language that are used to develop the webpage and very light weighted programming language. *JavaScript* is a powerful programming language that has revolutionized the way websites are built and used. One of the many areas where *JavaScript* has made a significant impact is in the car rental industry. With its ability to create dynamic and interactive web

pages, JavaScript has enabled car rental companies to offer their customers a more user-friendly and streamlined experience.

6) Visual studio: The Visual Studio IDE is used as an editor here to write the code

IMPORTANTLY WORK

Problem Description

Car rental provide user a flexibility to rent the car for long duration as well which was not there in cab .user will also the feature to drive the car by own if they want. if any user wants to rent a car, they can search the car from the portal. Car rental also provide flexibility on the price of car and user have to fill the petrol tank according to their demand for travel. Some policy is also made which benefit the user and company.

Proposed Solution

This is solution for those people who don't want to buy their vehicle or they don't have vehicle so they opt is web-based portal and make use of it. This portal help in automate the transport facility in our country.

Scope and Features

This project covers a good business opportunity and beneficial for user and client .it will automate the transport facility for the user. Car rental is integrated with the mobile no and then SMS technology is used to book the car then OTP is sent to user mobile no to authenticate whether this is authorized or not.

Functional Requirements

Car rental companies have become an essential part of the transportation industry. They provide a convenient and cost-effective way for people to travel, whether it's for business or pleasure. To ensure that these companies operate smoothly, they must have functional requirements in place.

The first functional requirement is the ability to make reservations. Customers should be able to book a car online or over the phone, and the company should confirm the reservation promptly. The second requirement is vehicle availability. The company must have enough cars in its fleet to meet demand and ensure that they are well-maintained.

Another important functional requirement is customer service. Car rental companies should provide excellent customer service by answering questions promptly, resolving issues quickly, and providing clear instructions on how to use their services.

Finally, billing and payment processing are critical functional requirements for car rental companies. They must provide accurate billing statements and process payments securely.

In conclusion, functional requirements are essential for car rental companies to operate efficiently and effectively. By meeting these requirements, they can provide a high-quality service that meets customers' needs while maintaining profitability.

Non-functional Requirements

Car rental is a service that has become increasingly popular over the years. It provides individuals with the opportunity to rent a car for a specific period of time, allowing them to travel without having to worry about the cost of owning and maintaining a vehicle. However, there are certain non-functional requirements that must be met in order for car rental services to be successful.

One of the most important non-functional requirements in car rental is reliability. Customers expect their rented vehicles to be in good condition and ready for use at all times. This means that car rental companies must ensure that their vehicles are well-maintained and regularly serviced.

Another important non-functional requirement is security. Customers need assurance that their personal information will be kept safe and secure while using car rental services. Car rental companies must have proper security measures in place to protect customer data from theft or misuse.

Lastly, convenience is also an important non-functional requirement in car rental. Customers expect easy access to vehicles, simple booking processes, and flexible payment options.

In conclusion, meeting these non-functional requirements is crucial for any successful car rental service provider. By prioritizing reliability, security, and convenience, companies can build trust with customers and establish themselves as leaders in the industry.

System Analysis

System analysis is an essential process of any business. Car is no exception. System analysis in car rental involves a thorough examination of the company's operations and processes to identify areas that need improvement. The goal is to optimize efficiency, reduce costs, and improve customer satisfaction.

One critical aspect of system analysis in car rental is the reservation process. A well-designed reservation system should be easy to use, reliable, and secure. It should allow customers to book cars online or through a mobile app, with real-time availability updates.

Another important area for system analysis is fleet management. Car rental companies need to ensure that their vehicles are well-maintained and available for rent when needed. A good fleet management system should track vehicle usage, maintenance schedules, fuel consumption, and other key metrics.

Finally, customer service is a crucial part of any car rental business. System analysis can help identify areas where customer service can be improved by streamlining processes or providing better training for staff.

In conclusion, system analysis is essential for the success of any car rental business. By identifying areas for improvement and implementing changes based on data-driven insights, car rental companies can optimize their operations and provide better service to their customers.

Problem Analysis

Car rental services have become an essential part of our lives, especially for those who travel frequently. However, like any other service, car rental companies face several problems that can affect their business and customer satisfaction. Therefore, it is important to conduct a problem analysis to identify the issues and find solutions.

One of the major problems faced by car rental companies is the lack of transparency in pricing. Customers often complain about hidden fees and charges that are not mentioned upfront. This leads to dissatisfaction and mistrust among customers, which can ultimately harm the company's reputation.

Another issue is the quality of cars provided by rental companies. Customers expect well-maintained vehicles that are clean and in good condition. However, some companies fail to meet these expectations, leading to complaints from customers.

Furthermore, long wait times during peak seasons can also be a problem for car rental companies. Customers may have to wait for hours before they can rent a car, which can lead to frustration and dissatisfaction.

In conclusion, conducting a problem analysis in car rental services is crucial for identifying issues that affect customer satisfaction and business operations. By addressing these issues promptly and effectively, car rental companies can improve their services and enhance customer loyalty.

A. Design and Development Problem

- 1) Running XAMPP is problematic.
- 2) To fix the error during the development process.
- 3) To demonstrate a relationship between two or more entities.
- 4) An insignificant mistake exists within a database table.

Feasibility Analysis

Feasibility analysis is a crucial process in determining the viability of any business venture. In the car rental industry, it is essential to conduct a feasibility analysis to identify potential challenges and opportunities before starting the business. This essay will discuss the importance of feasibility analysis in car rental.

Firstly, conducting a feasibility analysis helps to determine whether there is a demand for car rental services in the target market. This involves analyzing factors such as population density, income levels, and transportation infrastructure. The analysis will help to identify potential customers and their needs.

A feasibility analysis also aids in identifying market rivals, as well as their advantages and disadvantages. Using this knowledge, strategies that set the company apart from its rivals may be created.

Thirdly, conducting a feasibility analysis helps to determine the financial viability of the business. It involves analyzing costs such as vehicle acquisition, maintenance, insurance, and marketing expenses against projected revenues.

In conclusion, conducting a feasibility analysis is critical in ensuring success in the car rental industry. It helps businesses make informed decisions based on market research and data-driven insights. By identifying potential challenges and opportunities early on, businesses can develop effective strategies that enable them to thrive in an increasingly competitive market.

Economic Analysis

Car rental is a thriving industry that has been growing rapidly over the years. It is an essential service for people who travel frequently or need a car temporarily. The economic analysis of car rental is crucial in understanding the dynamics of this industry.

The demand population density, and tourism activities in a particular region. The pricing strategy adopted by car rental companies also plays a significant role in determining demand. For instance, offering discounts during off-peak seasons can attract more customers.

On the supply side, car rental companies must consider various costs such as maintenance, insurance, and fuel expenses when setting prices. These costs vary depending on the type of vehicle and location. Companies must also consider competition from other firms within the industry.

Additionally, technological advancements have significantly impacted the car rental industry. Online booking platforms have made it easier for customers to reserve cars from anywhere at any time. Car rental companies have also invested in modernizing their fleets to meet customer demands.

In conclusion, economic analysis plays a critical role in understanding the dynamics of the car rental industry. Companies must keep up with changing trends and adapt their strategies accordingly to remain competitive and profitable in this ever-evolving market.

Software Analysis

Car rental companies have been using software analysis to improve their business operations. Software analysis is the process of examining software systems to identify and solve problems. In car rental, it involves analyzing the rental process from reservation to return.

One of the benefits of software analysis in car rental is improved customer service. By analyzing customer feedback and complaints, car rental companies can identify areas for improvement in their processes. For example, if customers frequently complain about long wait times at the counter, the company can use software analysis to identify bottlenecks in the process and make changes to reduce wait times.

Another benefit is increased efficiency. By analyzing data on vehicle usage and availability, car rental companies can optimize their fleet management and reduce costs associated with over- or under-utilization of vehicles.

Finally, software analysis can also help with fraud prevention. By monitoring transactions for suspicious activity, car rental companies can detect and prevent fraudulent rentals.

In conclusion, software analysis is a valuable tool for improving operations in the car rental industry. Its benefits include improved customer service, increased efficiency, and fraud prevention.

Data Conversion

Data conversion is a crucial process in the car rental industry. It involves the transformation of data from one format to another, ensuring that it can be easily accessed and utilized by different systems. Data conversion in car rental is essential for efficient operations, accurate reporting, and seamless customer experience.

Car rental companies collect vast amounts of data on their customers, vehicles, reservations, and transactions. This data needs to be converted into a standardized format that can be used across different platforms such as booking engines, fleet management systems, and accounting software. Without proper data conversion processes in place, car rental companies may face challenges such as inaccurate reporting or lost revenue due to missed reservations.

Furthermore, data conversion plays a significant role in enhancing customer experience. By converting data into a user-friendly format that can be easily accessed by customers through online portals or mobile

applications, car rental companies can provide their customers with real-time information about their reservations and vehicle availability.

In conclusion, data conversion is an essential process in the car rental industry that ensures efficient operations and seamless customer experience. Car rental companies must invest in robust data conversion processes to stay competitive in today's digital age.

Operational Feasibility

Operational feasibility is a critical aspect of any business venture, and the car rental industry is no exception. Car rental companies must ensure that their operations are feasible, efficient, and profitable to remain competitive in the market. Operational feasibility refers to the practicality of implementing a particular system or process within an organization.

In the car rental industry, operational feasibility involves several factors such as fleet management, customer service, maintenance, and logistics. Fleet management is crucial for car rental companies as it involves managing a large number of vehicles efficiently. Companies must ensure that they have enough vehicles available for rent at all times while also ensuring that their fleet is well-maintained and up-to-date.

Customer service is another critical factor in operational feasibility. Car rental companies must provide excellent customer service to attract and retain customers. This includes offering convenient pick-up and drop-off locations, providing clear pricing information, and resolving any issues promptly.

Maintenance is also essential for operational feasibility in car rentals. Companies must ensure that their vehicles are regularly serviced to prevent breakdowns and minimize downtime.

Finally, logistics play a crucial role in operational feasibility by ensuring that vehicles are delivered to customers on time and in good condition.

In conclusion, operational feasibility plays a vital role in the success of car rental businesses. Companies must focus on fleet management, customer service, maintenance, and logistics to remain competitive in the market. By doing so, they can provide an excellent experience for their customers while also maximizing profitability.

ER/EER Diagram

An Entity-Relationship Diagram (ERD) is a graphical representation of entities and their relationships to each other. It is used in database design to model the data requirements of an organization or system. ERDs are essential tools for understanding complex data structures and ensuring that they are organized in a logical and efficient manner.

The ERD consists of three main components: entities, attributes, and relationships. Entities represent objects or concepts within the system, such as customers, orders, or products. Attributes describe the characteristics of these entities, such as name, address, or price. Relationships define how entities are related to each other, such as one-to-one, one-to-many, or many-to-many.

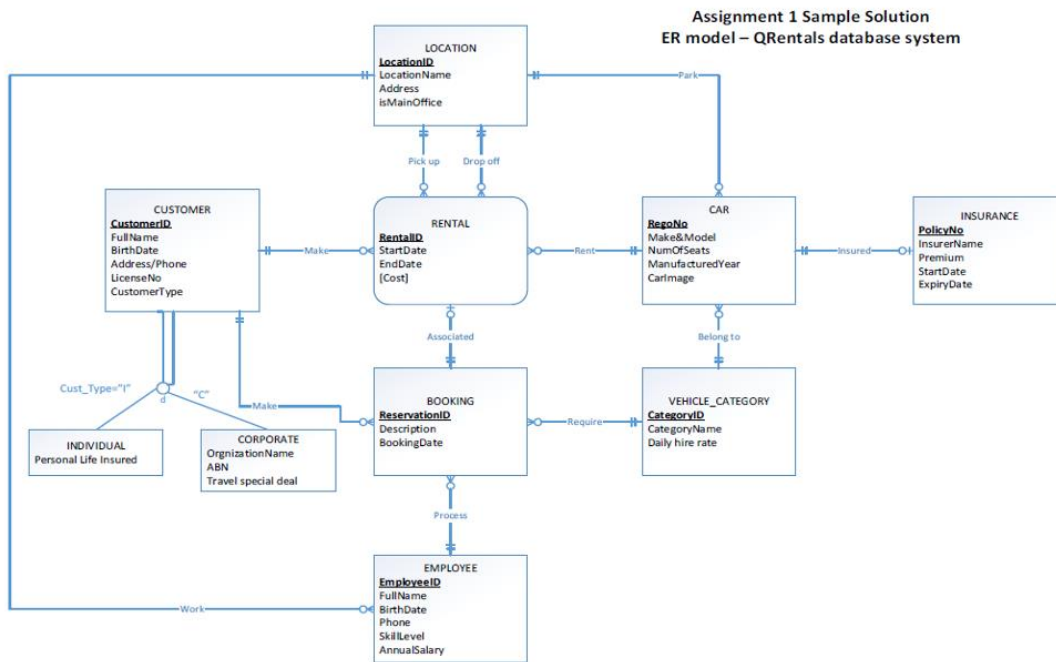


Fig 2.1: ER

MODEL Relationship Model

The relationship model in MySQL is a crucial aspect of database management. It defines how tables in a database are related to each other, allowing for efficient and organized data storage and retrieval. There are three types of relationships that can exist between tables: one-to-one, one-to-many, and many-to-many.

In a one-to-one relationship, each row in one table corresponds to exactly one row in another table. This type of relationship is useful when storing additional information about an entity that cannot fit into the original table. For example, a user may have additional contact information stored in a separate table.

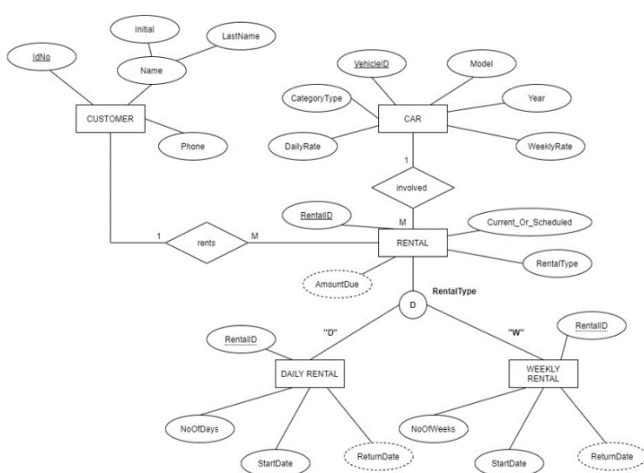


Fig 2.2: Entity Diagram

Sequence Diagram

A sequence diagram is a type of interaction diagram that shows the interactions between objects or components in a system. In the context of a car MySQL database, a sequence diagram can be used to represent the flow of data and actions between different components of the system.

The sequence diagram for a car MySQL database would typically include several actors, such as the driver, the car itself, and various sensors and systems within the car. These actors would interact with each other through various messages and actions, which would be represented by arrows on the diagram.

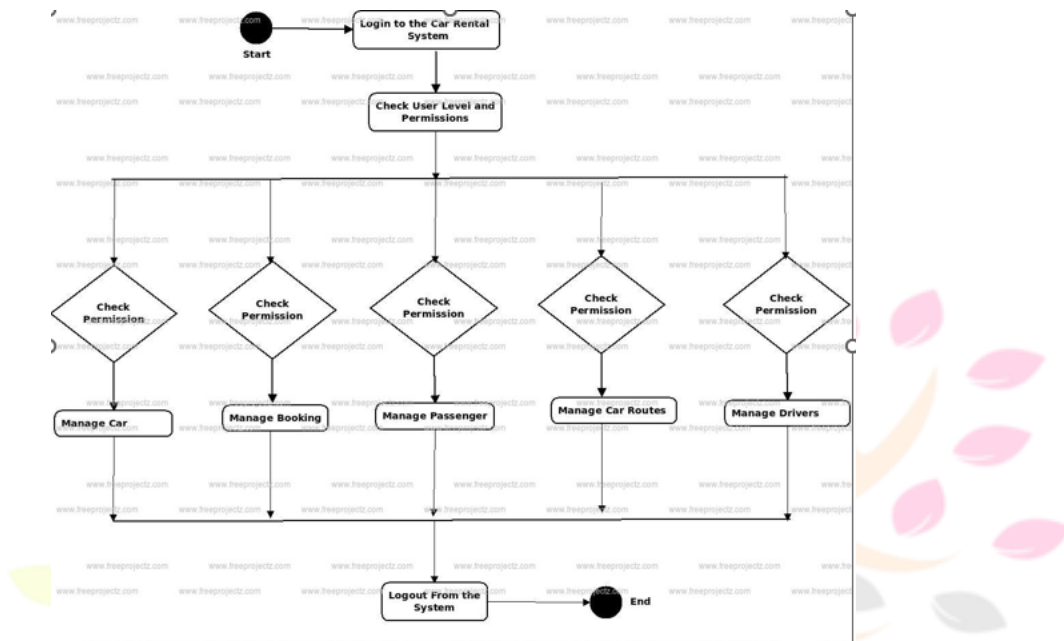


Fig 2.3: Sequence Diagram

Design Process

Design process of this project is very simple we have used multiple programming language to develop the website and user will be able to understand the website easily and the UI of the website is very good. The database connectivity and ER Diagram will make the website more flexible and we have also created a customer portal as well for support.

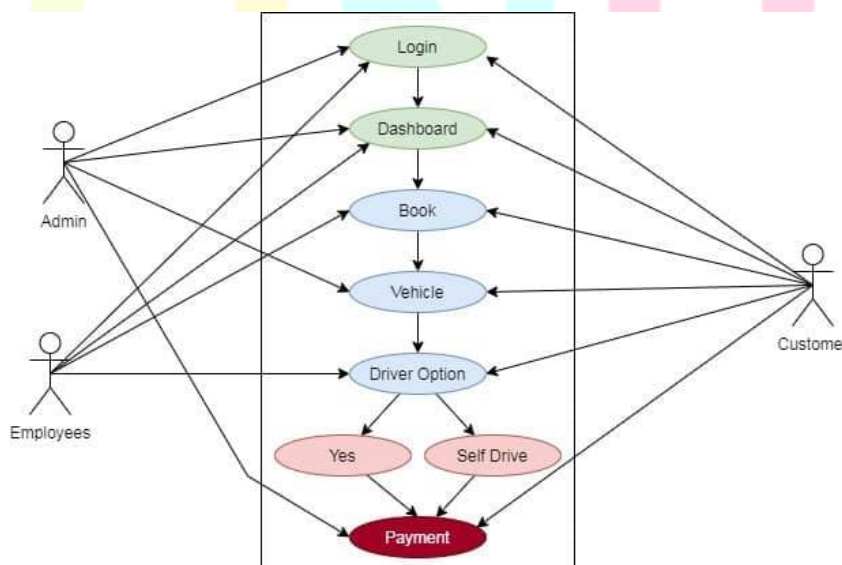


Fig 3.1: Design Process

Data Flow Diagram

Car rental companies are businesses that rely heavily on data flow to operate efficiently. Data flow in car rental refers to the movement of information between different departments, systems, and stakeholders involved in the car rental process. This includes customer data, vehicle information, reservation details, payment processing, and more.

One of the most critical aspects of data flow in car rental is the reservation system. Customers can make reservations online or through a call center, and this information needs to be transmitted accurately to the appropriate location for vehicle pickup. The reservation system also needs to communicate with other systems such as inventory management and pricing databases to ensure availability and accurate pricing.

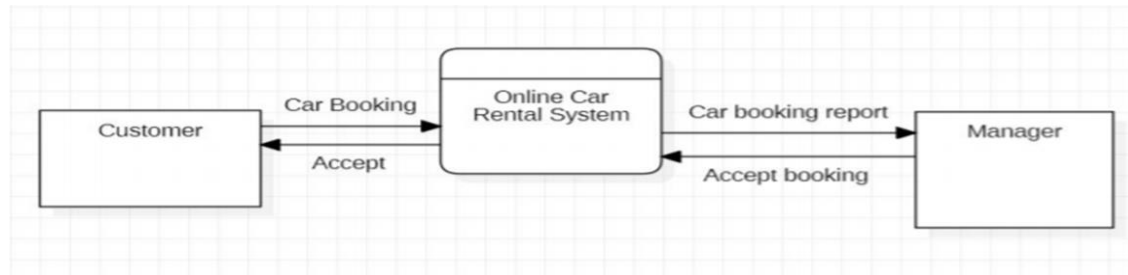


Fig 3.2: Data Flow Process

User Case Diagram

This will help you in understand the interface of project which tells about how we are engaging our website . It will consist of many tabs and under this tab you will find other tab which makes this project more interesting and easy .user will able to understand the website with in seconds and familiar with them .

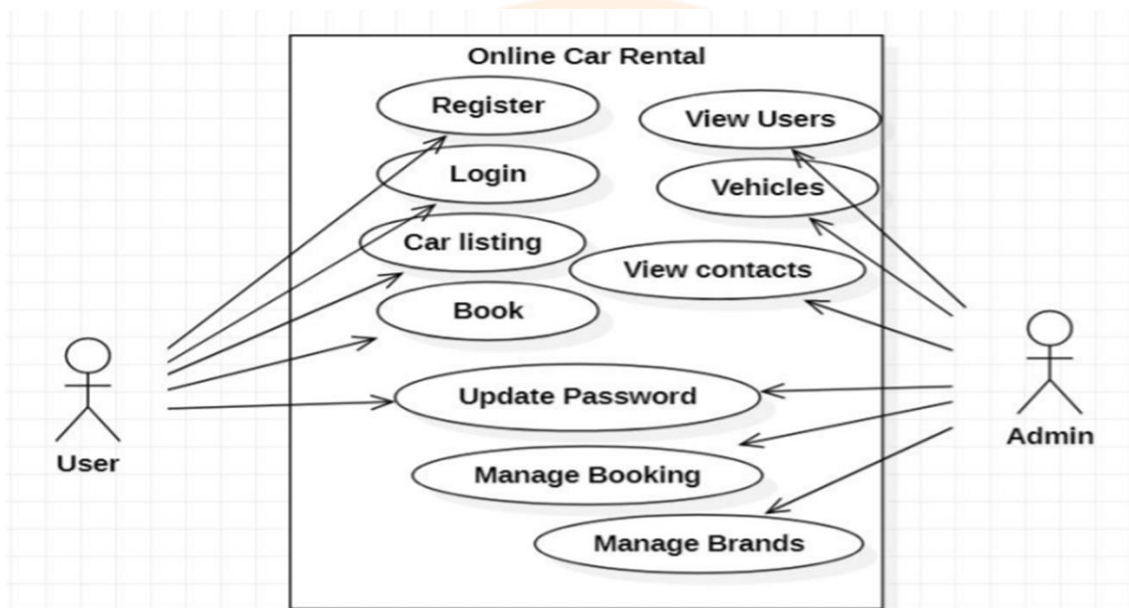


Fig :3.3 User View

Source Code:

```
import React, { useState } from "react";
```

```

export default function Login({ setisLogin }) {
  const [email, setEmail] = useState("");
  const [password, setPassword] = useState("");

  function loginfun(e) {
    e.preventDefault();
    if (!email && !password) return;

    if (
      email.toLocaleLowerCase() === "sharmasushant358@gmail.com" &&
      password === "sushant12"
    ) {
      setisLogin(true);
    } else {
      alert("not authorized");
    }
  }

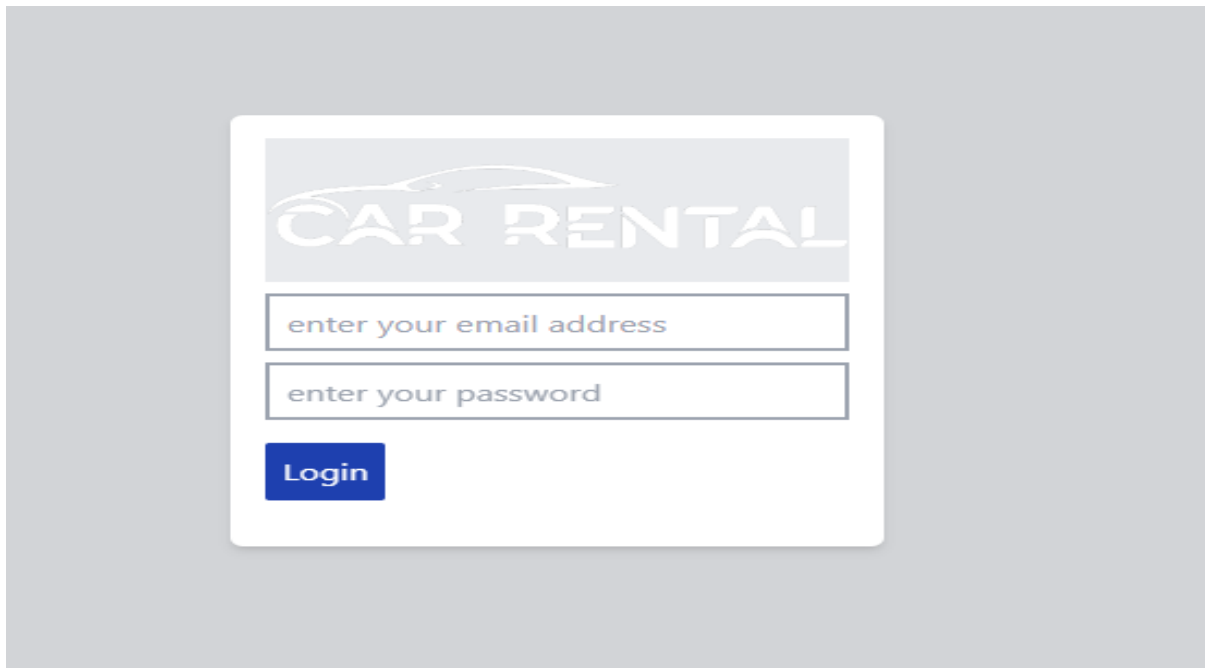
  return (
    <div className="fixed left-0 top-0 z-50 flex h-[100%] w-[100%] items-center justify-center bg-gray-800/20">
      <div className="h-[300px] w-[300px] rounded-md bg-white p-4 shadow-md">
        <form className="formboxform">
          <div className="input_Label">
            

            <input
              onChange={(e) => setEmail(e.target.value)}
              value={email}
              placeholder="enter your email address"
              className="my-2 h-[40px] w-[100%] border-2 border-gray-400 px-2 outline-none"
            />

            <input
              onChange={(e) => setPassword(e.target.value)}
              value={password}
              placeholder="enter your password"
              minLength="8"
              maxLength="14"
              className="h-[40px] w-[100%] border-2 border-gray-400 px-2 outline-none"
            />
          </div>

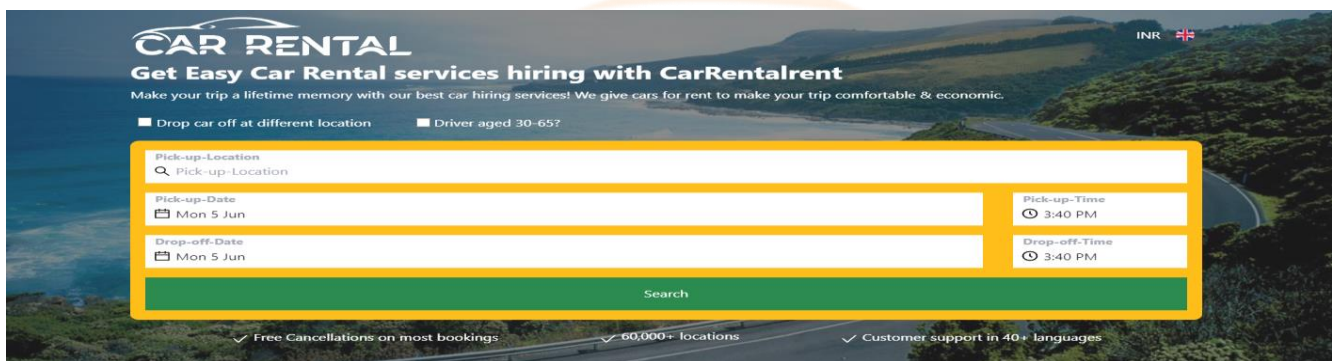
          <div className="btnBox mt-4 w-fit rounded-sm bg-blue-800 p-2 text-white">
            <button type="submit" className="btn" onClick={loginfun}>
              Login
            </button>
          </div>
        </form>
      </div>
    </div>
  );
}

```



Dashboard: -

Our website's home page is located here. You may simply acquire your ideal automobile by providing basic information, such as the pick-up location, the pick-up and drop-off dates, and the final pick-up and drop-off times.



Research Through Innovation

Fig 6.1: Homepage

Note: - We have selected location London and tap the search button then website shows some option of cars like Small, Middle, SUV, Luxury, Convertible and you can select according to your comfort.

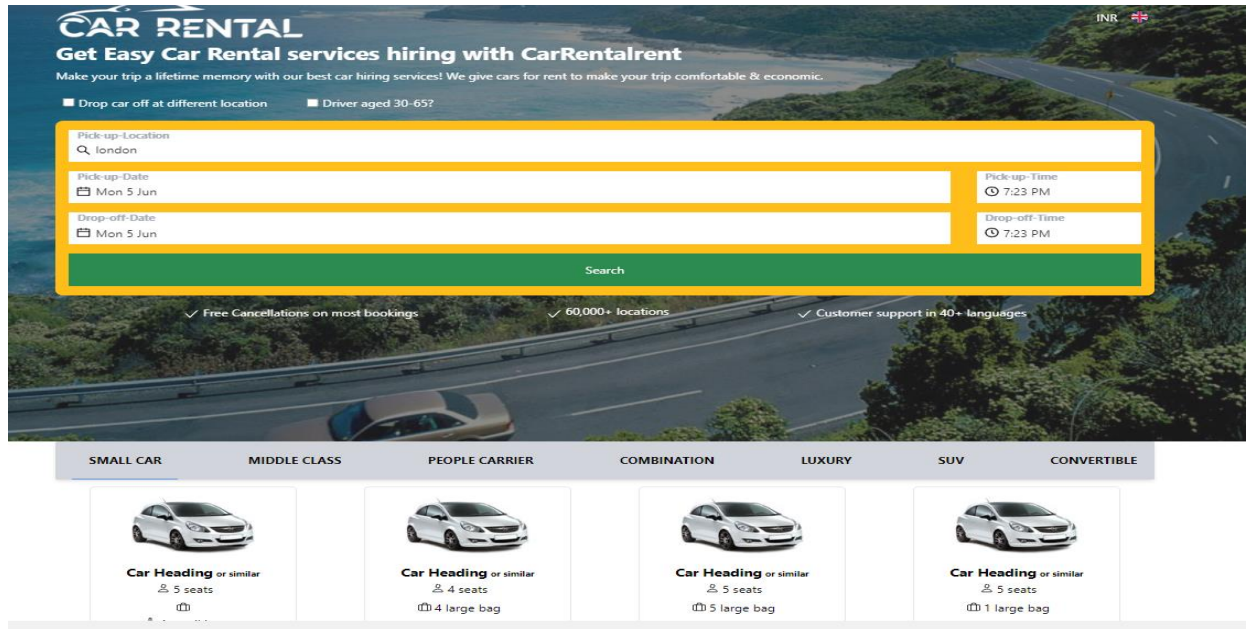


Fig 6.2: Result

Note: This is the extra feature we added so we can more explore some beautiful location from the website and go through some other features.

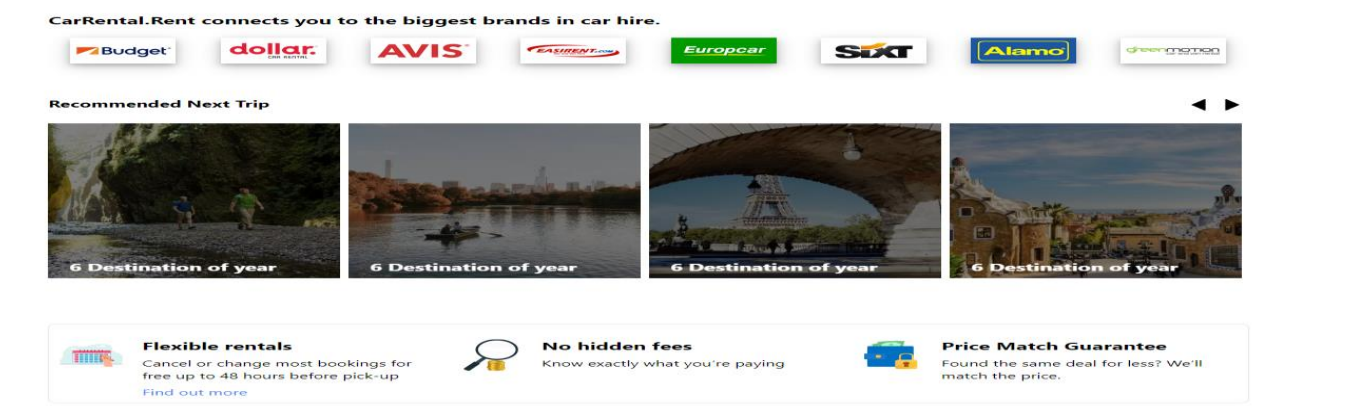


Fig 6.3: Additional page

