A

PROJECT REPORT

ON

CARDOC AUTOMOTIVE
(CAR SERVICING MANAGEMENT SYSTEM)

Submitted in partial fulfillment for the award of

Post Graduate Diploma in Advance Computing

(PG-DAC) from

INSTITUTE OF EMERGING TECHNOLOGIES

Authorized Training Centre

Under the Guidance of

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CERTIFICATE

This is to certify that the project report entitled **CarDoc Automotive** is a bonfire work carried out by **Ms. Sakshi Singh, Ms. Shital Sinnarkar, Ms. Yashika Tanwar, Ms. Yukta Mahajan** and submitted in partial fulfilment of the requirement for the C-DAC ACTS, DAC course in Institute of Emerging Technology in the batch of September 2022.

Course Co -ordinator **External Examiner**

ACKNOWLEDGEMENT

This project **CarDoc Automotive** was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC).

We are very glad to mention **Mrs. Prachi Godbole** for her valuable guidance to work on this project. Her guidance and support helped us to overcome various obstacles and intricacies during project work.

Our most heart full thanks go to ***Mr. Sangram Patil*** **(Director, IET)** who gave all the required support and kind coordination to provide all the necessities like required hardware, internet facility and extra lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

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Abstract

The car service management system project aimed to develop a software solution to manage the activities and operations of a car servicing business. The system was designed to automate various processes such as appointment scheduling, vehicle inspections, maintenance records, billing and invoicing, and inventory management.

The system was developed using an agile software development approach, which allowed for iterative development and continuous feedback from stakeholders. The project team used various tools and technologies such as Java EE, MySQL, JavaScript, and HTML/CSS to build the system.

The car service management system was successfully deployed and tested in a car servicing business, where it demonstrated significant improvements in operational efficiency and customer satisfaction. The system's user-friendly interface, automated processes, and real-time reporting capabilities were highly appreciated by both the staff and customers.

The project report provides a detailed overview of the system's design, development, testing, and deployment processes. It also discusses the challenges faced during the project and the lessons learned, along with recommendations for future improvements. Overall, the car service management system project report serves as a valuable resource for businesses looking to streamline their car servicing operations and enhance customer experience.

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1. INTRODUCTION

CarDoc Automotive is a web-based system designed to provide an effective and efficient management for car service station. This system facilitate to minimize the work, increase efficiency, identify the day-to-day bookings and view daily, monthly and annual reports.

This system provides a user-friendly interface. Customers can register and login on the website and can easily book an appointment. Administrator can also easily login and check the appointments for the day, customer and vehicle details, previous servicing records of the respective customers and also inventory details. Station owner can also login and view daily, monthly and annual reports.

2. PROBLEM DEFINITION & SCOPE

2.1 Problem Definition & Scope

Car servicing businesses often face challenges in managing their day-to-day operations and providing quality services to their customers. These challenges include appointment scheduling, vehicle inspections, maintenance records, billing and invoicing, and inventory management, which can be time-consuming and error-prone when done manually. These inefficiencies can lead to delays, errors, and customer dissatisfaction.

Furthermore, traditional methods of managing car servicing operations often lack real-time reporting and analytics capabilities, making it difficult to track performance and identify areas for improvement.

To address these challenges, the car service management system project was initiated to develop a software solution that automates various processes and provides real-time reporting and analytics capabilities. The system aims to improve operational efficiency, reduce errors, and enhance customer satisfaction by providing a user-friendly interface for customers to book appointments and track their vehicle's service status, as well as for staff to manage various operations seamlessly.

The problem definition, therefore, highlights the need for a software solution that can streamline car servicing operations and enhance customer experience, leading to improved business outcomes.

The scope of the car service management system project is to design, develop, test, and deploy a software solution that automates various processes involved in car servicing operations. The system aims to provide a user-friendly interface for customers to book appointments, track their vehicle's service status, and make payments. Additionally, the system will provide staff with tools to manage operations such as appointment scheduling, vehicle inspections, maintenance records, billing and invoicing, and inventory management.

The project will focus on building a robust system architecture that can handle large volumes of data and traffic. The system will be scalable and extensible, allowing for future enhancements and customization.

The car service management system will be designed to integrate with existing business systems such as accounting and inventory management software. The system will also provide real-time reporting and analytics capabilities to track performance, identify areas for improvement, and make data-driven decisions.

The project team will follow an agile software development approach, allowing for continuous feedback and collaboration with stakeholders. The system will be tested rigorously to ensure its functionality, reliability, and security.

Overall, the scope of the car service management system project is to develop a comprehensive software solution that can automate car servicing operations, improve customer experience, and enhance business outcomes.

2.2 Goals & Objectives

Goals:

1. Automate various processes involved in car servicing operations to improve operational efficiency.
2. Enhance customer experience by providing a user-friendly interface for appointment booking, status tracking, and payments.
3. Provide real-time reporting and analytics capabilities to track performance and make data-driven decisions.
4. Ensure the system's scalability and extensibility for future enhancements and customization.
5. Integrate with existing business systems such as accounting and inventory management software.
6. Ensure the system's security and reliability to protect sensitive data and ensure continuity of operations.

Objectives:

1. Design and develop a system architecture that can handle large volumes of data and traffic.
2. Develop a user-friendly interface for customers to book appointments, track their vehicle's service status, and make payments.
3. Develop tools for staff to manage operations such as appointment scheduling, vehicle inspections, maintenance records, billing and invoicing, and inventory management.
4. Integrate the system with existing business systems such as accounting and inventory management software.
5. Implement real-time reporting and analytics capabilities to track performance and make data-driven decisions.
6. Test the system rigorously to ensure its functionality, reliability, and security.

7. Deploy the system in a real-world car servicing business environment and monitor its performance.
8. Provide training and support to staff and customers to ensure the system's successful adoption and usage.
9. Overall, the goals and objectives of the car service management system project aim to develop a comprehensive software solution that can streamline car servicing operations, enhance customer experience, and improve business outcomes.

2.3 Major Constraints & Outcomes

A car service station management system, can have several constraints and outcomes, including:

Constraints:

1. Technology: The online car service station management system relies heavily on technology, and any technical glitches or issues can impact the system's effectiveness.
2. Internet connectivity: An online car service station management system requires a stable and reliable internet connection, which can be a challenge in some areas.
3. Data security: With sensitive customer and financial data being stored online, data security is a major concern for online car service station management systems.
4. User adoption: The system may not be as effective if it is not adopted by all employees, including mechanics and administrative staff.

Outcomes:

1. Accessibility: With an online car service station management system, customers can easily book appointments, access repair status updates, and make payments from anywhere with an internet connection.
2. Efficiency: The system can help streamline processes by automating tasks such as appointment scheduling, inventory management, and invoicing.
3. Data analysis: The system can provide insights into key performance indicators such as customer satisfaction, employee productivity, and revenue, allowing the service station to make data-driven decisions.
4. Scalability: An online car service station management system can scale easily to accommodate growing business needs, such as adding new locations or expanding services.

3. SOFTWARE REQUIREMENT SPECIFICATION

Document:

System Requirement Specification Document

Title:

System Requirement Specification for CarDoc Automotive – Car Service Station Management System.

Team:

Direct Customer, Indirect Customer, Architect, Business Analyst, Quality Assurance Team, System Analyst

Objective:

The objective of a Car Service Station Management System is to provide a streamlined and efficient management system for car service stations to manage their operations effectively. This system should automate the process of managing cars that need to be serviced, track the services provided, manage technician assignments, and generate invoices for the services provided.

The key objectives of a Car Service Station Management System include:

1. Efficient Car Management: The system should enable the service station to manage cars efficiently, from the time they enter the station until the service is complete and the car is ready for pickup.
2. Streamlined Service Management: The system should enable the service station to provide services to cars in a systematic and organized manner, with automated processes for service scheduling, assignment of technicians, and tracking of service progress.
3. Technician Management: The system should provide the ability to manage the technicians' schedules and assignments, based on their skills and experience, and ensure that the services are performed to the highest standards.
4. Inventory Management: The system should enable the service station to manage their inventory of spare parts and consumables, ensuring that the required items are available when needed and tracking the inventory levels to ensure timely replenishment.

5. Invoice Generation: The system should generate invoices for the services provided to the cars, ensuring accuracy and completeness of the invoicing process.

Overall, the objective of a Car Service Station Management System is to provide a comprehensive and efficient solution for managing car services, enabling the service station to provide the highest level of service to their customers while optimizing.

Scope:

A car servicing management system is a software tool used to manage and schedule maintenance and repairs for vehicles. It can be used by car service centers, to track service history, schedule appointments, and generate invoices for customers. The system may also include features such as inventory management, customer management, and reporting capabilities. This can help to streamline the servicing process and improve efficiency for businesses that manage a large number of vehicles.

It can be used by customers to login and book appointments for car service and repair and choose the service packages without having the need to visit the service center.

Intended audience:

The intended audience of this document would be the client and specific employees like administrator and mechanics of the CarDoc Automotive, and project team, supervisor with the objective to refer and analyze the information. The SRS document can be used in any case regarding the requirements of the project and the solutions that have been taken. The document would finally provide a clear idea about the system that is building.

Requirements:

Functional Requirements:

Appointment scheduling: The system should allow customers to schedule appointments with the service center online or by phone. The system should be able to display available appointment times, and the customer should be able to choose a convenient time slot.

Work order management: The system should allow service center staff to create and manage work orders for each customer. The work order should include information such as the customer's name, vehicle information, and details of the services required.

Technician assignment: The system should assign technicians to work orders based on their availability, skills, and workload. The system should also allow service center staff to reassign technicians as needed.

Spare parts inventory management: The system should track the service center's inventory of spare parts, including their quantity and location. The system should be able to generate alerts when inventory levels fall below a certain threshold.

Customer billing: The system should generate invoices for customers based on the services provided and the spare parts used. The system should also be able to calculate taxes and discounts as applicable.

Reporting: The system should provide reports on service center operations, including appointment scheduling, work order management, and spare parts inventory management. Reports should be customizable and easy to understand.

Customer communication: The system should allow service center staff to communicate with customers regarding their appointments, work orders, and billing. The system should provide notifications via email or SMS, and should allow customers to track the progress of their work orders online.

These functional requirements will help ensure that the car service station management system meets the needs of its users and provides a valuable tool for managing service center operation.

Non-Functional Requirements:

Following are the non-functional requirements fulfilled by our project:

- Since the application uses lightweight and established software components that are also cross-platform, it is remarkably performant and has good support for every operating system.

- The use of React for front end and Spring Boot, Spring Data JPA and Hibernate for back end delivers quick response times to admins and users alike.

- Card-style UI and well-known icons and symbols used throughout the application provides a consistent theme and user-friendly interface that anyone can grasp easily, even without a technical background.

4.PERFORMANCE REQUIREMENT

4.1 Hardware Requirements

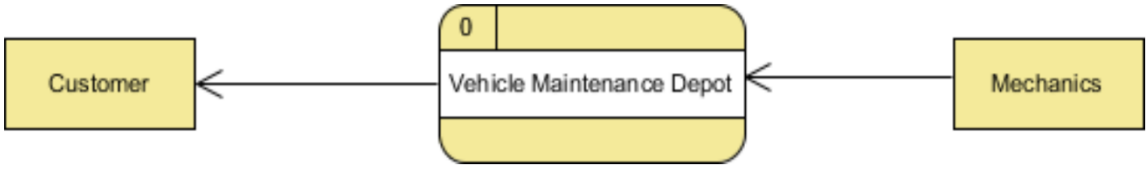
1. Intel i3 processor 3rd generation or later / AMD Ryzen 200 2nd generation or later
2. 4GB RAM.
3. Windows 7 Home edition or later.
4. 200 GB data HDD Space
5. Data Connection 200 kbps

4.2 Software Requirements

1. Eclipse 4.7
2. MySQL 5.7 with Workbench 8.0
3. Google Chrome version 79.0
4. Apache Tomcat Server 8.5
5. Maven Dependencies
6. Visual Studio Code

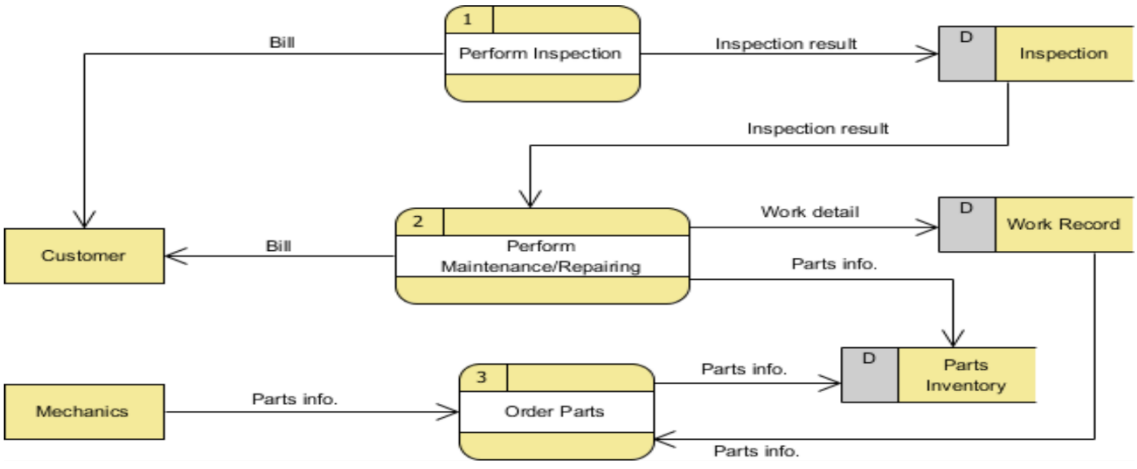
5. UML DIAGRAM

5.1 DFD Diagram



Data Flow Diagram of CarDoc Automotive

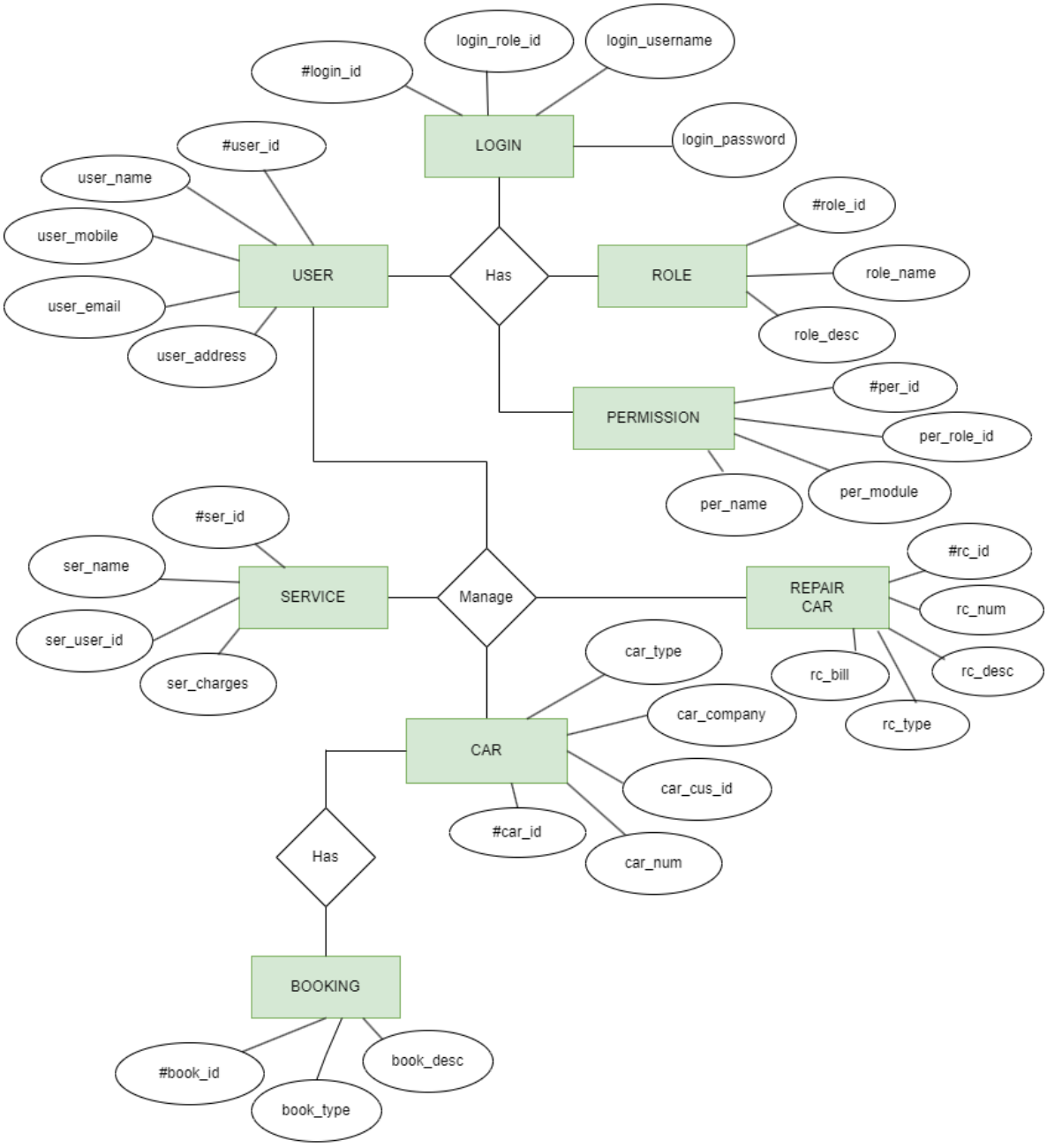
(Level-0)



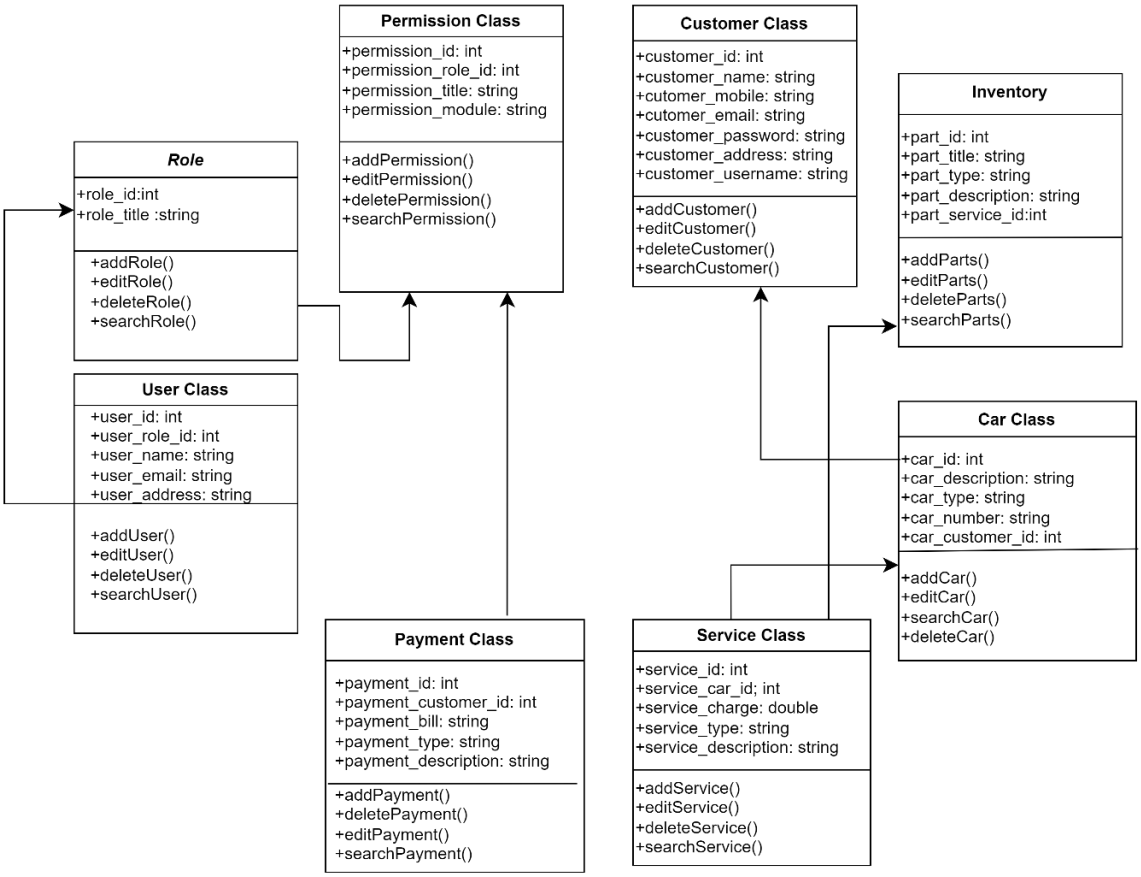
Data Flow Diagram of CarDoc Automotive

(Level-1)

5.2 ER Diagram

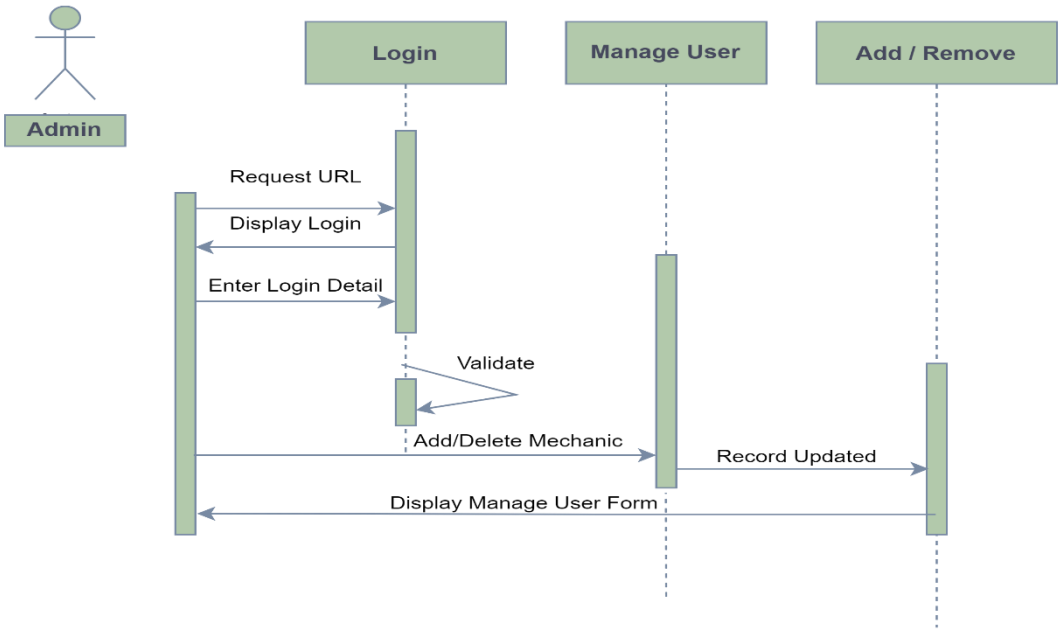


5.3 Class Diagram



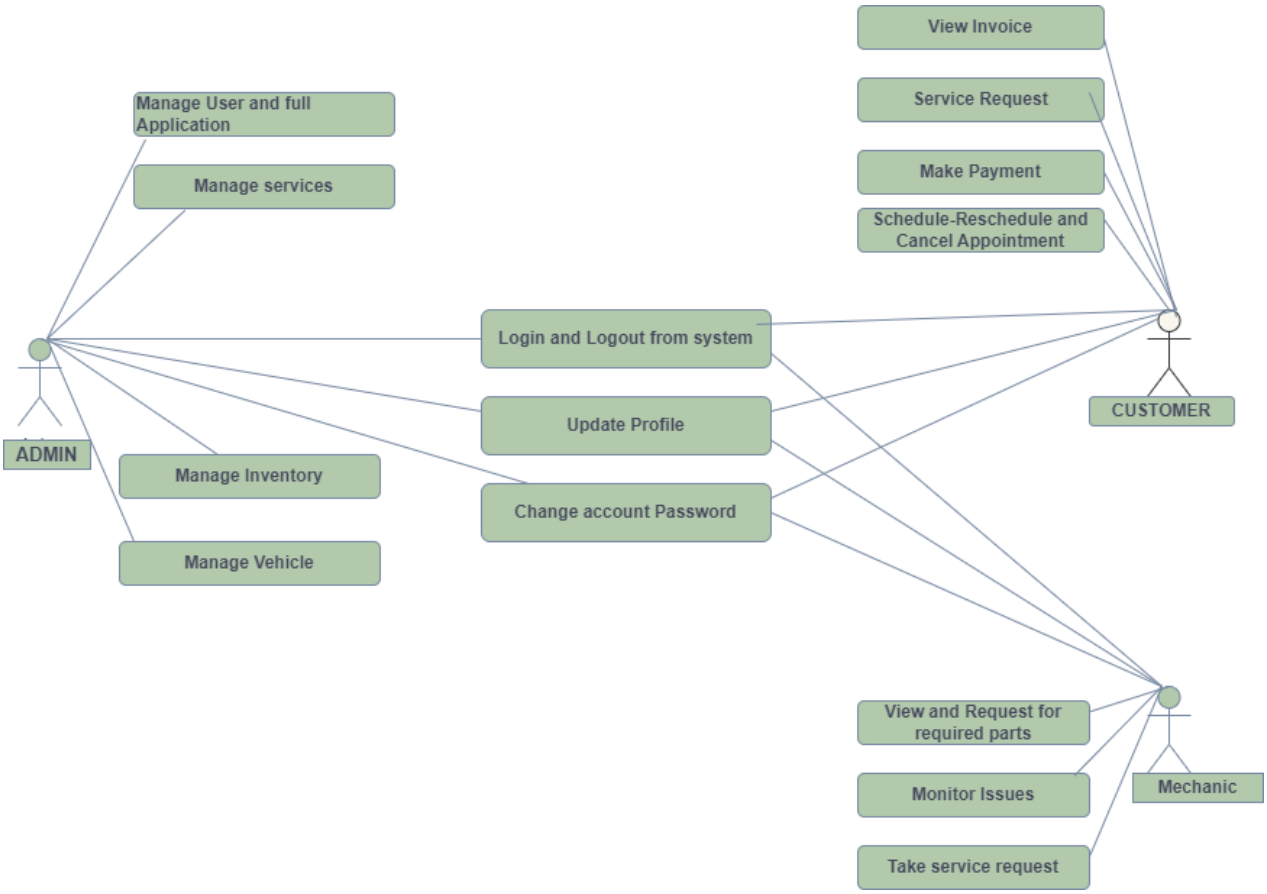
Class Diagram of CarDoc Automotive

5.4 Sequence Diagram

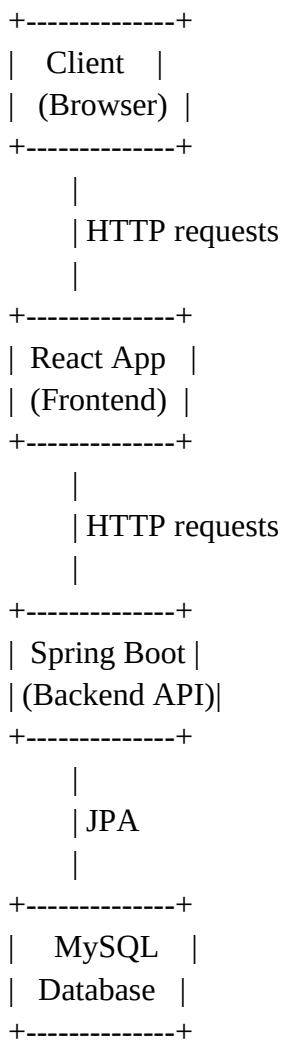


Sequence Diagram of CarDoc Automotive

5.5 Activity Diagram



5.6 Deployment Diagram



6. SCREENSHOTS

1. Home Page

This is a welcome page for our CarDoc Automotive. Here we have given following components:

- Home
- Sign In
- Sign Up
- Contact Us
- About Us

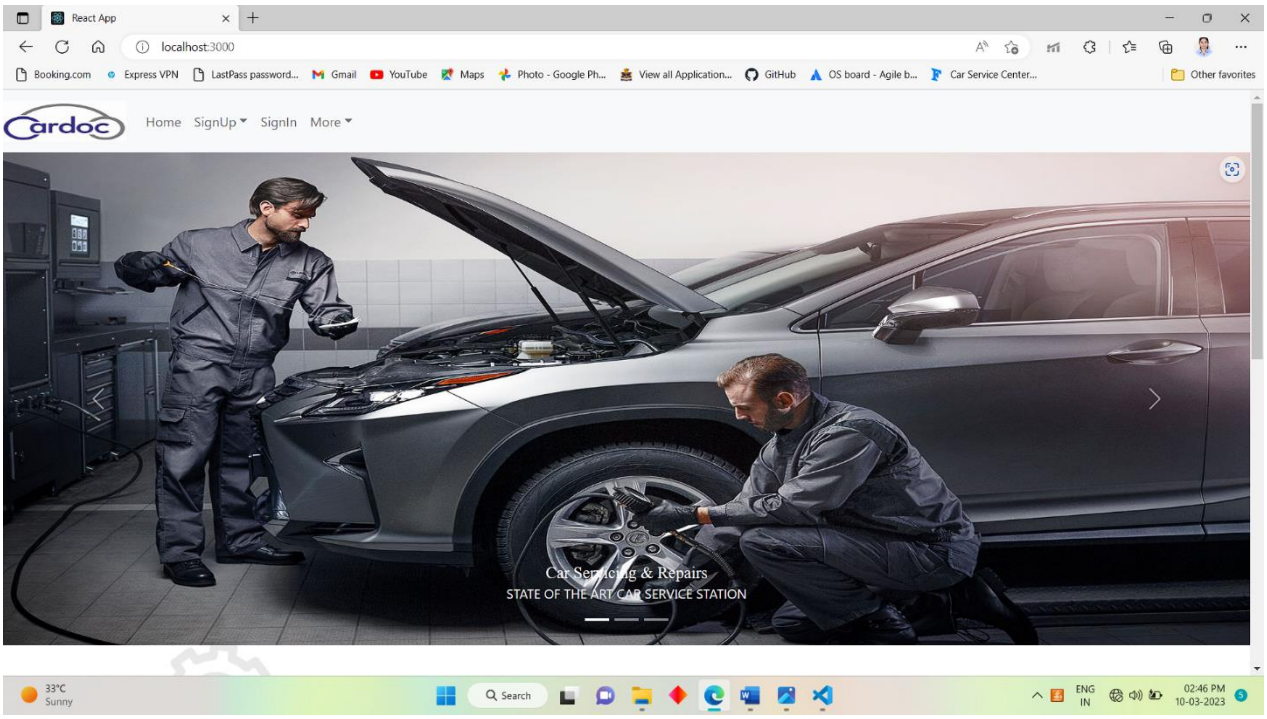
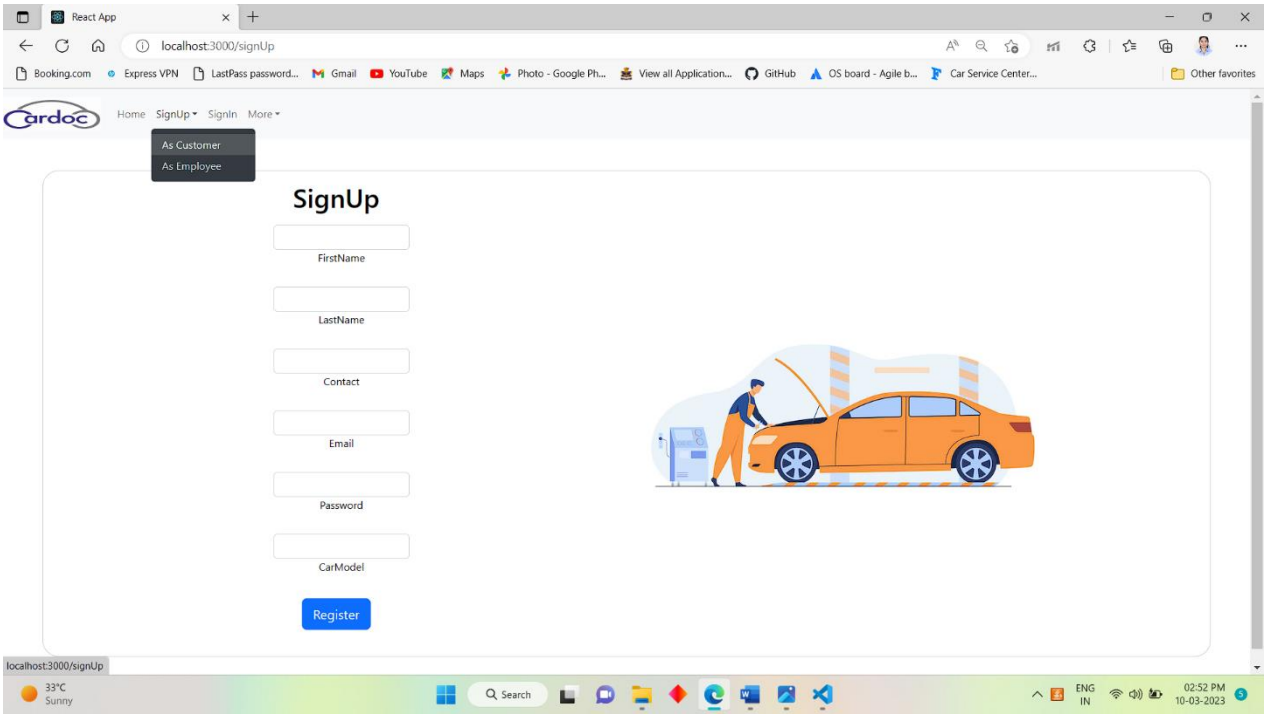


Image 1. Home Page

2. Sign Up Page

On this page user can make registration for our system. We have given dropdown of two roles



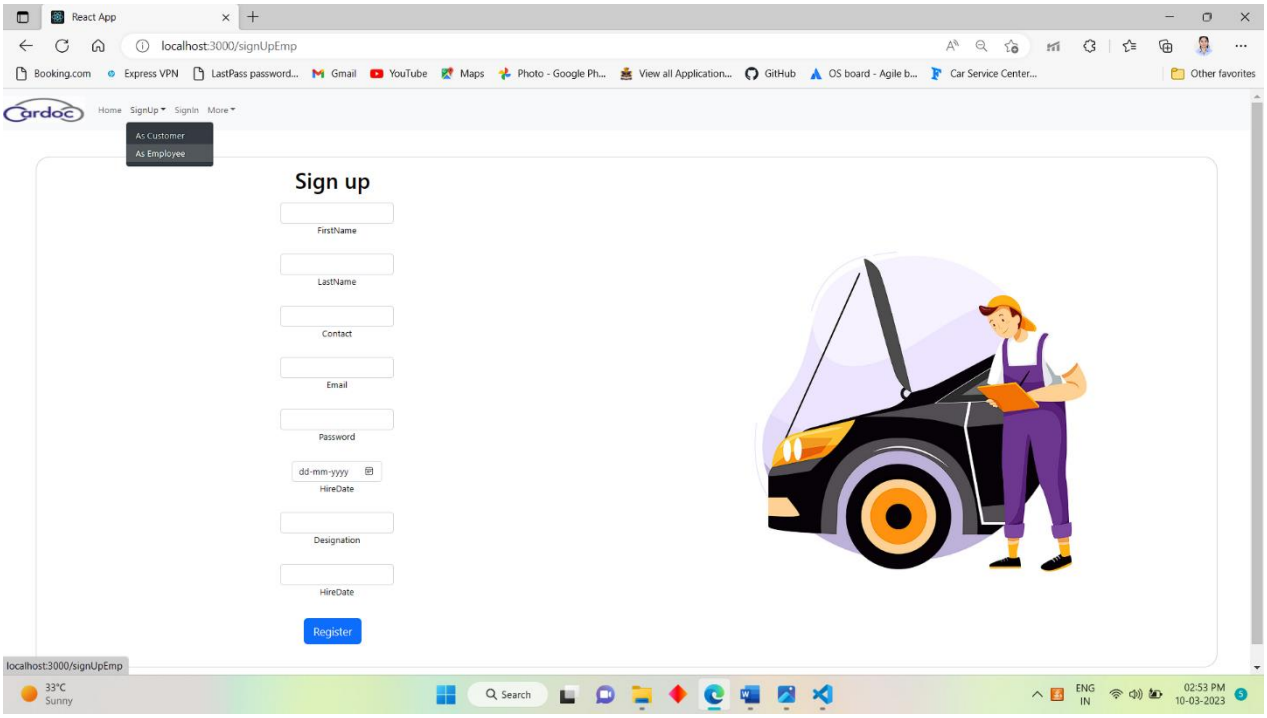


Image 2. Sign Up Page

3. Login Page

On this page user can login into our system. User will redirect to the page as per their roles.

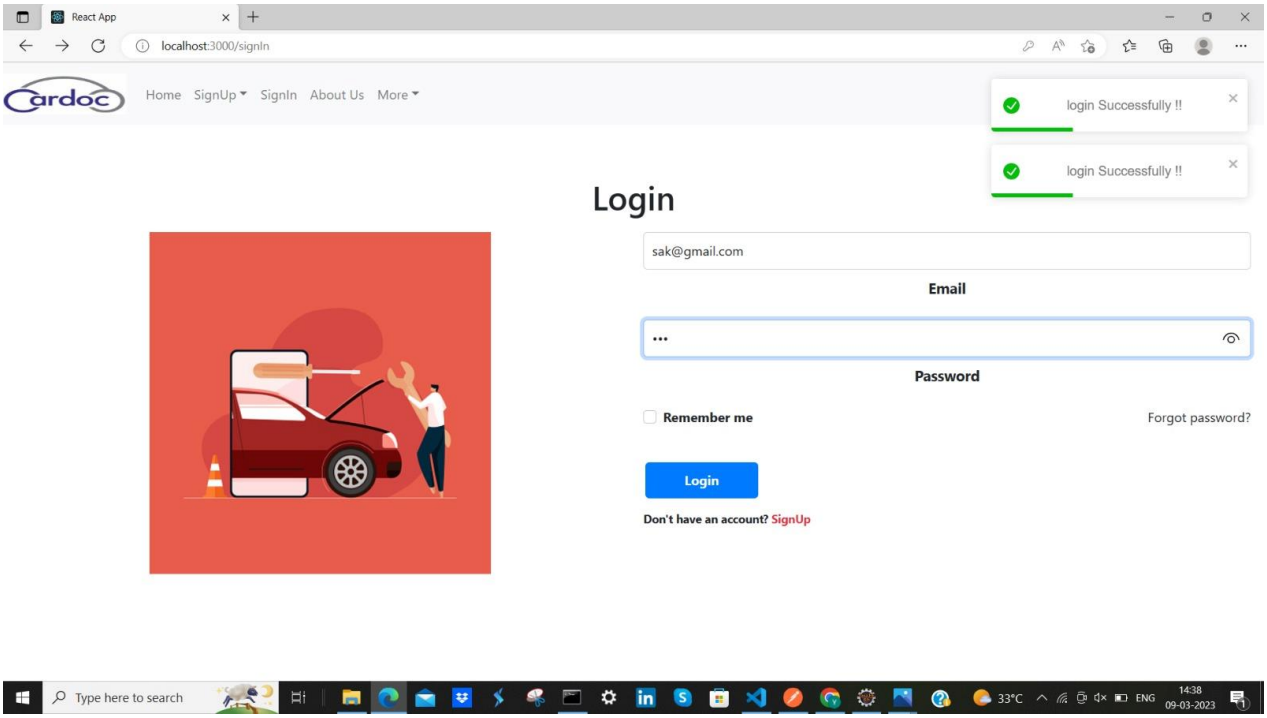


Image 3. Login Page

4. Contact Us

Here, customers or owners can contact us through the details that have given.

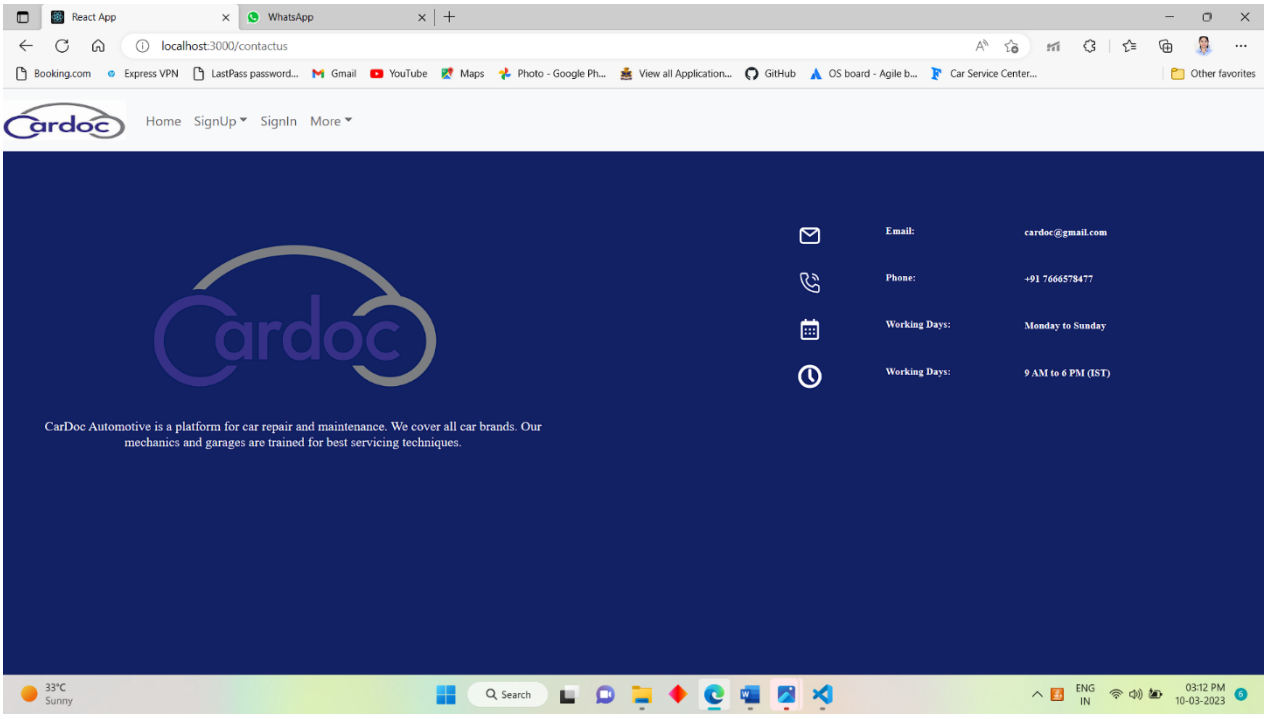


Image 4. Contact Us Page

5. About Us

On this page we have given information of our CarDoc Automotive system.

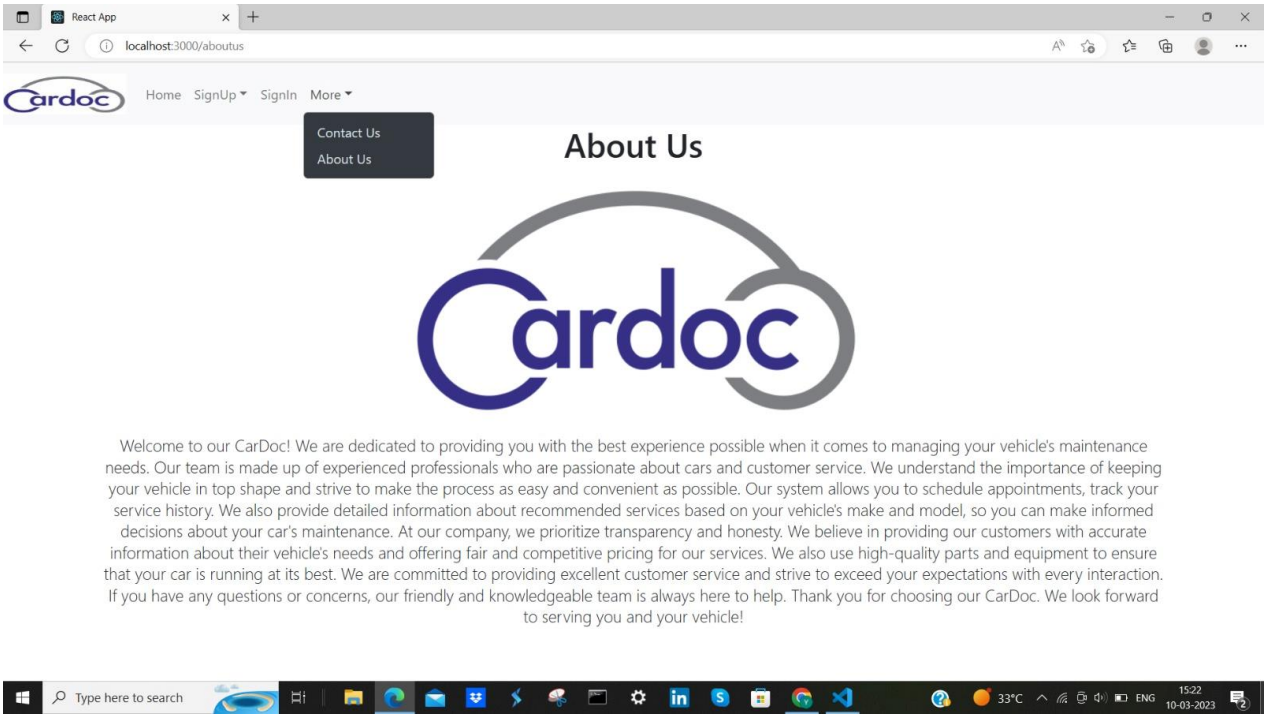


Image 5. About Us Page

6. Appointment Form

Customer can fill the given details in the form to take the appointment as per their need.

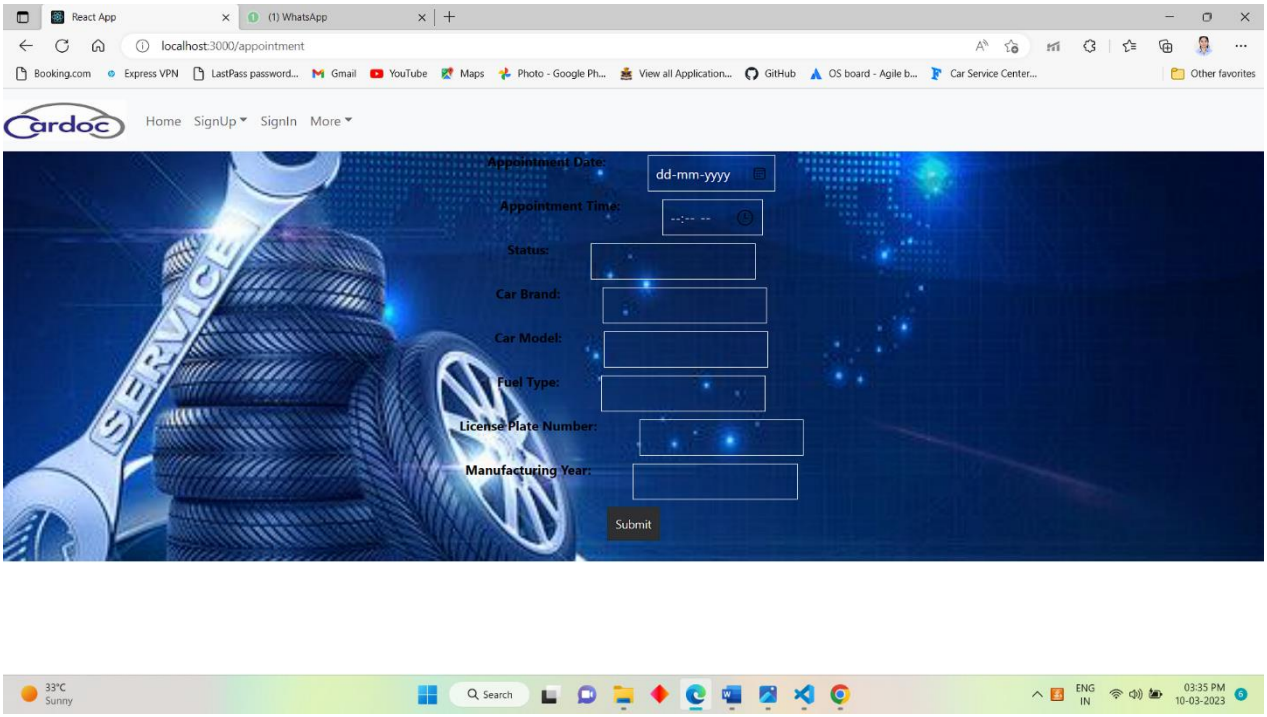


Image 6. Appointment Form

7. Services List For Customer

User can add to cart service list and choose the service he/she wants to take .

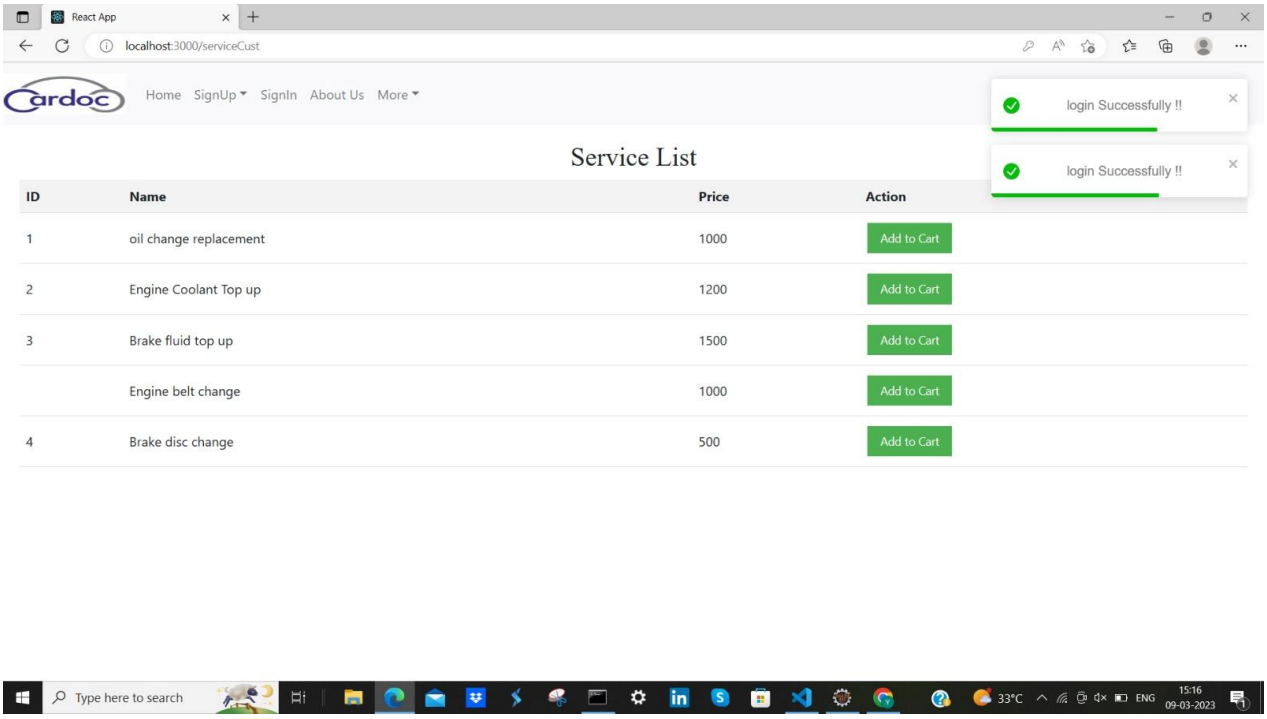


Image 7. Services List

8. List of Services

Only admin can see the list of services and also he can take action against the services from this page.

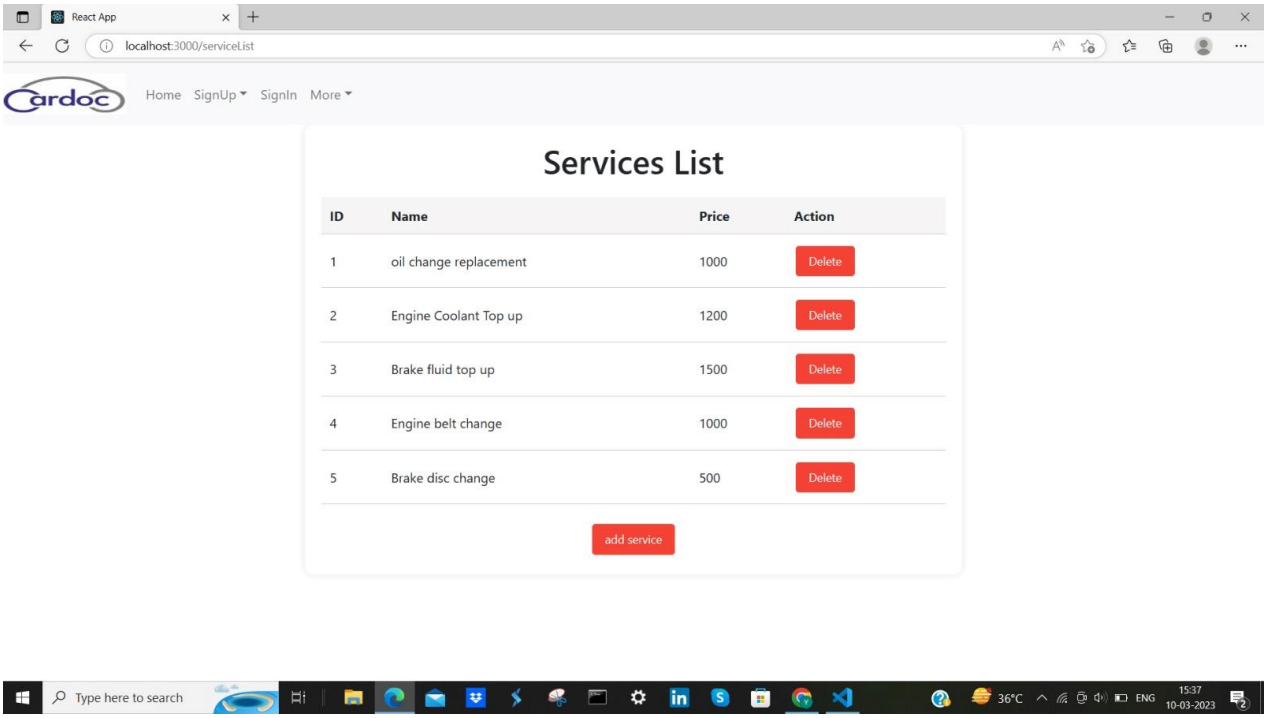


Image 8. List of Services

9. Add Service Page

Admin can add service to list.

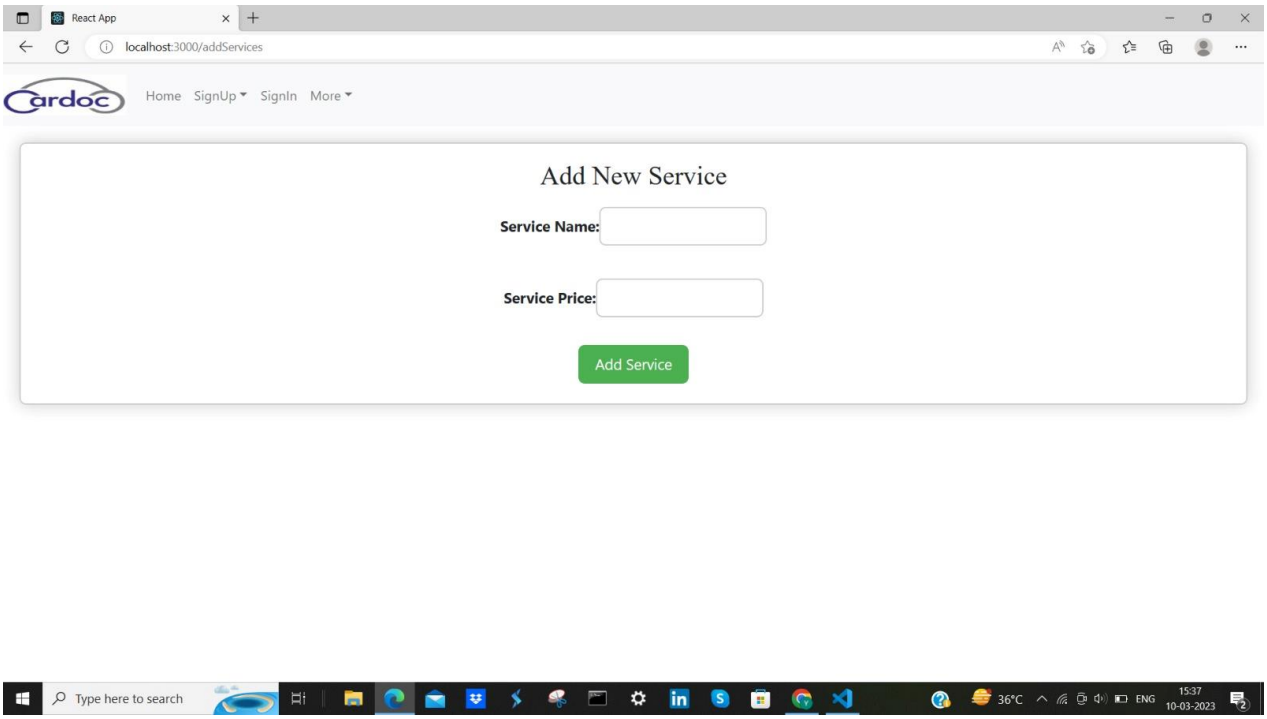


Image 9. Add Service Page

Conclusion

In conclusion, a car servicing management system is a crucial tool for the automotive industry, as it helps streamline the maintenance process for vehicles. The system allows for efficient management of customer records, scheduling of appointments, and tracking of vehicle service history. By implementing a car servicing management system, businesses can improve their operational efficiency, reduce costs, and provide better customer service. Additionally, the system can provide valuable data insights, which can be used to improve decision-making and overall business performance. Overall, a car servicing management system is a valuable investment for any automotive business looking to improve its operations and customer satisfaction