



# INSTITUTE FOR ADVANCED COMPUTING AND SOFTWARE DEVELOPMENT AKURDI, PUNE

Documentation On

# Vehicle Service Station Management

PG-DAC MAR 22

**Submitted By:** 

**Group No: 36** 

Roll No. Name:

223047 Bhavanjay Depe 223048 Dhananjay Khuje

Mr. Prashant Karhale

**Centre Coordinator** 

Mrs.Megha.S.Mane

**Project Guide** 

# **ABSTRACT**

Nowadays, the population of human on earth is increase. Most of them have their own vehicle. So, the vehicle service center might be busy especially during festive seasons.

This project is a web-based vehicle service station management system for an existing service station. The project objective is to deliver the service information of service station and application into web platform.

This project is an attempt to provide the service station services to the customers.

It helps consumer to add service request to the service station through internet by using a website device. Thus, the customer will get the service from that service station. This system can be implemented to any service station in the locality.

# **ACKNOWLEDGEMENT**

I take this occasion to thank God, almighty for blessing us with his grace and taking our endeavor to a successful culmination. I extend my sincere and heartfelt thanks to our esteemed guide, Mrs. Megha s Mane for providing me with the right guidance and advice at the crucial juncture sand for showing us the right way. I extend my sincere thanks to our respected Centre Co-Ordinator Mr. Prashant Karhale, 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 theyhave given me during the course of our work.

Dhananjay Khuje (223048)

Bhavanjay Depe (223047)

# **Table of Contents**

# Contents

ABSTRACT	2
ACKNOWLEDGEMENT	3
INTRODUCTION	6
FEATURES	7
1.1 PROJECT OBJECTIVE	8
1.2 PROJECT OVERVIEW	8
1.3 PROJECT SCOPE	9
1.4 STUDY OF THE SYSTEM	9
1.4.1 MODULES	9
SYSTEM ANALYSIS	15
2.1 EXISTING SYSTEM	15
2.2 PROPOSED SYSTEM	15
2.3 SYSTEM REQUIREMENT SPECIFICATION	16
2.3.1 GENERAL DESCRIPTION	
2.3.2 SYSTEM OBJECTIVES	16
2.3.3 SYSTEM REQUIREMENTS	20
SYSTEM DESIGN	
3.1 INPUT AND OUTPUT DESIGN	21
3.1.1 INPUT DESIGN	21
3.1.2 OUTPUT DESIGN	22
DATABASE DESIGN	
3.2 DATABASE	
3.3 SYSTEM TOOLS	
3.3.1 FRONT END	

3.3.2 BACKEND	24
E-R DIAGRAM	25
CLASS DIAGRAM	26
TABLE STRUCTURE	27
PROJECT DIAGRAMS	30
CONCLUSION	39
REFERENCES	40

# LIST OF FIGURES

FIGURE 1: ADMIN ACTIVITY DIAGRAM	10
FIGURE 2: SERVICE CENTER ACTIVITY DIAGRAM	12
FIGURE 3: CUSTOMER ACTIVITY DIAGRAM	14
FIGURE 7: E-R DIAGRAM	25
FIGURE 8: CLASS DIAGRAM	26
FIGURE 9: TABLE STRUCTURE	27
FIGURE 10: PROJECT DIAGRAMS	30

# INTRODUCTION

The increase of vehicles productions in the domestic and worldwide market has boosted the confidence of auto ancillary units and vehicles servicing sector. As the servicing of existing vehicles population is an essential activity, there is large scope in this area given the increasing number of vehicles of the road year after year. A vehicles services station has to have facilities to service the vehicles, such as necessary equipment facilitating, wheel alignment etc. Vehicle Service Station Management System provides necessary services to the service station for efficient management. In India, there are lots of holiday festivals throughout the year. People with families will gather around together to celebrate the holidays. Some will have to travel in order to return home to their families. But sometimes, the car service center might be busy especially during festive seasons since a lot of people decide to service their vehicles at the same time. Staff also will not have enough hands to handle many customers at the same time. The proposed of the Vehicles Service Centre Management System is to help the staffs to manage the tasking. Besides, all the data will be kept in a database of the system. Information can easily be retrieved. Document and report preparation can also be prepared in lesser time as well. This system involved three users which are admin, service center and customers. Admin has authority to add new service station according to the cities. They also can view all the reports that involved in this system. The service center will have their own servicing plans and slots. They also can manage their profile and change the password. The customer can register and log into the system. After that, they can book a service plan and slot for their vehicle. They also can view their vehicle's report and will get the system generated booking confirmation email.

# Features: -

- 1. The system provides efficient way to book the slot and plan in the service center.
- 2. The system provides easy interface that users can easily select service center from respective city.
- 3. System provides better ways for searching service center according to cities and available service slots.
- 4. New service center can be added easily.
- 5. Service center providers can easily communicate to all consumers by sending personalized mail to their respective email id.
- 6. Personalized Dashboard for service center.

# 1.1 PROJECT OBJECTIVE

The objective of the project is to make an application to book vehicle service slot. In order to build such an application complete web support, need to be provided. A complete and efficient web application which can provide the online service booking experience is the basic objective of the project. The web application can be implemented in the form of an application with web view.

# 1.2 PROJECT OVERVIEW

The central concept of the application is to allow the customer book service plan and slot virtually using the internet. The information pertaining to the products are stored on an RDBMS at the server side.

The server processes the service center slots and plans selected by the customer. The application was designed into two modules first is for the customers who requires service for the customer. Second is for the service centers who provide services for the vehicle the application is hosted on the web and the administrator maintains the database. The application, which is deployed on the web. Data entry into the application can be done through various screens designed for various users(Admin, service center, customer). Once the authorized personal feed the relevant data into the system, several reports could be generated as per the security.

# 1.3 PROJECT SCOPE

This system can be used to add any vehicle service station in the locality or in any cities. The system have a facility to manage the service station according to their resources. By the use of this online portal where their customers can enjoy easily adding service request according to their convenience from anywhere, the service station will always know the resources required for a day according to the booked slots.

# 1.4 STUDY OF THE SYSTEM

# **1.4.1 MODULES:**

The system after careful analysis has been identified to be presented with the following modules and roles.

The modules involved are:

- > Admin
- > Service center
- Customer

#### 1.4.1.1 Admin:

The admin is the super user of this application. Only admin have access into this admin page. Admin is the owner of the application. The admin can add the service center to the system

This module is having one sub modules.

- 1. Sign in
- 2. Sign out
- 3. Add service center

# > Sign in

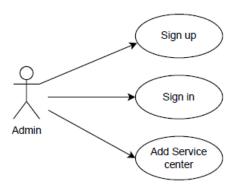
Admin can sign in to the system by using valid credential.

# > Add service center

Only admin has the authority to add service center in the system.

# > Sign out

After completion of task he/she may log out form system.



Admin Activity Diagram

Figure 1 Admin Activity Diagram

#### 1.4.1.2 Service center

- 1. Sign in
- 2. Sign out
- 3. Add slots
- 4. Update slots
- 5. Delete booking
- 6. Update registration
- 7. Add plans

# > Sign in

Service center can sign in to the system by using valid credential.

#### > Add slots

Service center has the authority to add service slots in the system.

# > Update slots

Service center has the authority to update service slots.

# > Delete booking

Service center can delete booking done by the user by entering respective booking id.

# > Update registration details

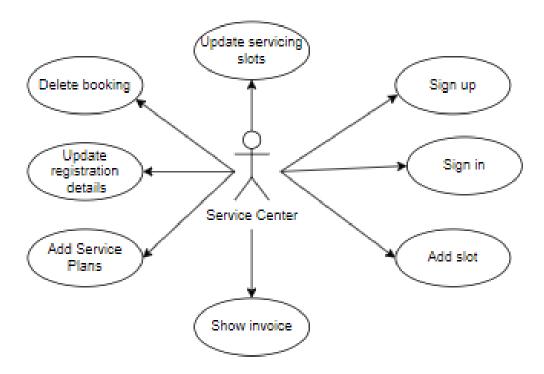
Service center has the authority to update registration details.

# > Add plans

Service center can add service plans according to their available services with chargeable amount.

# > Sign out

After completion of task they may log out form system.



Service Centre Activity Diagram

Figure 2 Service center Activity Diagram

#### 1.4.1.3 Customer

- 1. Sign in
- 2. Sign out
- 3. Select city and service center
- 4. Select date
- 5. See available slots
- 6. Enter vehicle details
- 7. Book slot

# > Sign in

Customer can sign in to the system by using valid credential.

# > Select city and service center

Customer can select city and service center according to his/her convenience.

# > Update slots

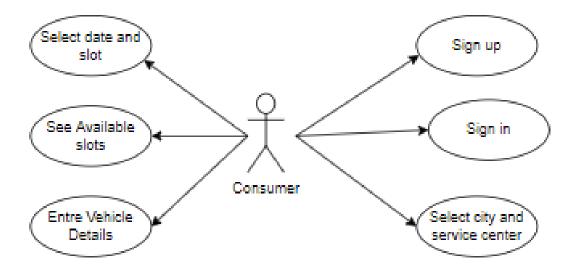
After selecting the city and service center available slots are shown on screen.

# > Enter vehicle details

In order to book the service slot need to enter vehicle details.

# > Book slot

After giving the vehicle details service slot can be booked.



Consumer Activity Diagram

Figure 3 Customer Activity Diagram

# SYSTEM ANALYSIS

System analysis is the process of gathering and interpreting facts, diagnosing problems, and using the information to recommend improvements on the system. System analysis is a problem-solving activity that requires intensive communication between the system users 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 user request and suitable changes are made. This loop ends as soon as the user is satisfied with the proposal.

# 2.1 EXISTING SYSTEM

The current system for vehicle servicing is to visit the shop manually and from the available plans choose the plan customer want and getting the service done by payment of the price of the plan.

- ✓ It is less user-friendly.
- ✓ User must go to service center and select plan.
- ✓ It is difficult to identify the correct proper plan according to budget and services
- ✓ Description of the plan limited.
- ✓ It is a time-consuming process
- ✓ Not in reach of distant users.

# 2.2 PROPOSED SYSTEM

In the proposed system customer need not go to the service center for booking the service slot the. He can book the service slot through the application. Service center can give the servicing slot for respective dates.

# 2.3 SYSTEM REQUIREMENT SPECIFICATION

#### 2.3.1 GENERAL DESCRIPTION

**Product Description:** The system consists of two parts. A web application which can provide the online service booking service slot for vehicle of the customer by accessing the web service from his System. Web application should be able to help the customer for selecting his service plan and to help the service center in managing the orders from the customers.

#### **Problem Statement:**

As online applications became a trend nowadays the regular service providers are losing their customers to online brands. Customers have effortless service experience and saving time through online service management. For competing with those online brands, if service centers are providing an online portal where their customers can book service slot through internet and get the plans and slot confirmation through email it will increase the number of customers.

#### 2.3.2 SYSTEM OBJECTIVES

- ➤ To provide a Web application for online booking of service center plans and slots in an existing service center.
- > To provide an online booking web site for the same service center.

# 2.3.3 SYSTEM REQUIREMENTS

#### 2.3.3.1 NON-FUNCTIONAL REQUIREMENTS

# i. EFFICIENCY REQUIREMENT

When vehicle service center management application implemented customer can Book the service slot and plan in an efficient manner.

# ii. RELIABILITY REQUIREMENT

The system should provide a reliable environment to both customers and service centers. All bookings should be reaching at the service center without any errors.

#### iii. USABILITY REQUIREMENT

The Web application is designed for user friendly environment and ease of use.

# iv. IMPLEMENTATION REQUIREMENT

Implementation of the system using React in front end with Spring Boot as back end and it will be used for database connectivity. And the database part is developed by MySQL. Responsive web designing is used for making the website compatible for any type of screen.

# v.:DELIVERY REQUIREMENT

The whole system is expected to be delivered in one month of time with a weekly Evaluation bythe project guide.

# 2.3.3.2 FUNCTIONAL REQUIREMENTS

#### Customer

# > Login

This feature used by the Customer to login into system. A customer must login with his username and password to the system after registration. If they are invalid, the user not allowed to enter the system.

# **Functional Requirement**

- Username and password will be provided by the customer at the time of registration.
- Password should be hidden from others while typing it in the field.

#### > REGISTER NEW

# **Customer Description of feature**

A new Customer will have to register in the system by providing essential details in order to access services in the system.

# **Functional Requirement**

- System must be able to verify and validate information.
- The system must encrypt the password of the customer to provide security.

# > BOOKING SERVICE SLOT

# **Description of feature**

The customer can select city and service center of his choice and the desired service plan for his vehicles. He can get the confirmation after clicking book-slot button. After confirming the email the user can book the service on specified date.

# **Functional Requirement**

- System must ensure that, only a registered customer can login.
- Admin account should be secured so that only owner of the application can access that account

# **ADMIN**

# > MANAGE

# **SERVICE CENTER**

# **Description of features**

The administrator can add service center.

# **SERVICE CENTER**

# > MANAGE SERVICE CENTRE AND PLANS

# **Description of features**

The service center can manage the service slots and plans. Can update registration details Can delete the booking Can update the slots

# 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 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 sores) and procedures (data flows) all in a format that meets the user requirements. The analyst also specifies the needs of the user 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 specifyexactly what the candidate system must do. The programmers write the necessary programs that accept input from the user, 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 users. The input design involves determining the inputs, validating the data, minimizing the data entry and provides a multi-user 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 user-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 user 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 user friendly and easy to use. The design is done such that users get appropriate messages when exceptions occur.

#### 3.1.2 OUTPUT DESIGN:

Computer output is the most important and direct source of information to the user. Output design

# **IACSD** 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 user and helps in decision making. Allowing the user to view the sample screen is important because the user 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 Facebook are utilized to implement the frontend. React (also known as React.js or ReactJS) is a free and open-source front-end JavaScript library for building user interfaces or UI components. It is maintained by Facebook 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.

# **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. An application software called Navicert was used to design the tables in MySQL.

# **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.

# E-R Diagram:

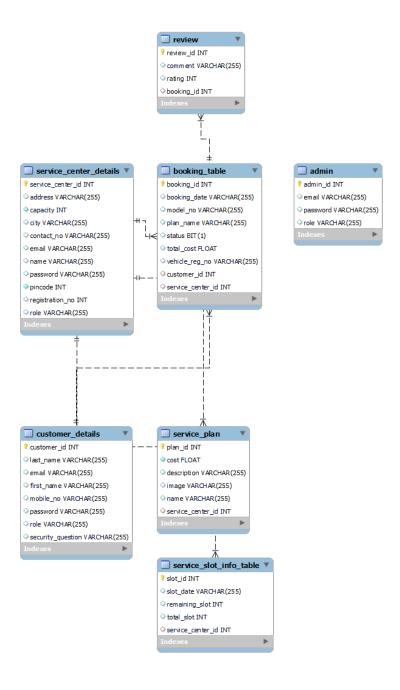


Figure 7 E-R Diagram

# Class Diagram:

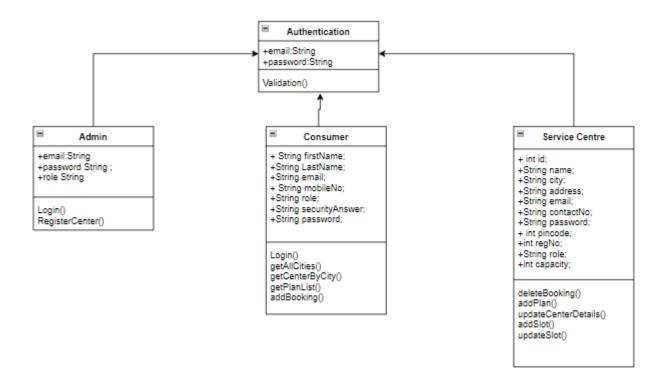


Figure 8 Class Diagram

# **TABLE STRUCTURE:**

# **Tables:**

```
Tables_in_vssm |
| admin |
| booking_table |
| customer_details |
| review |
| service_center_details |
| service_plan |
| service_slot_info_table |
| tows in set (3.54 sec)
```

# Admin:

# **Booking Table:**

```
mysql> desc booking table
 Field
                    Type
                                  | Null | Key | Default | Extra
 booking id
                    int
                                    NO
                                           PRI
                                                           auto increment
                                                 NULL
                     varchar(255)
 booking_date
                                    YES
                                                 NULL
 model no
                     varchar(255)
                                    YES
                                                 NULL
 plan_name
                     varchar(255)
                                    YES
                                                 NULL
                     bit(1)
 status
                                    YES
                                                 NULL
 total cost
                     float
                                                 NULL
                                    YES
                    varchar(255)
 vehicle reg no
                                   YES
                                                 NULL
 customer id
                    | int
                                   YES
                                           MUL
                                                NULL
 service_center_id | int
                                   YES
                                          MUL | NULL
 rows in set (0.00 sec)
```

# **Customer details:**

```
mysql> desc customer_details;
 Field
                    Type
                                 | Null | Key | Default | Extra
 customer_id
                                                         auto_increment
                    int
                                   NO
                                          PRI
                                               NULL
                    varchar(255)
 last_name
                                   YES
                                                NULL
 email
                    varchar(255)
                                   YES
                                               NULL
 first name
                   varchar(255)
                                   YES
                                               NULL
 mobile no
                   varchar(255)
                                   YES
                                               NULL
 password
                    varchar(255)
                                   YES
                                               NULL
 role
                                               NULL
                   varchar(255)
                                  YES
 security_question | varchar(255) | YES
                                              NULL
8 rows in set (0.00 sec)
```

# **Service Centre Details:**

```
mysql> desc service center details;
                  | Type | Null | Key | Default | Extra
 Field
 service_center_id | int
                                             NULL
                                                       auto_increment
                                  NO
                                        PRI |
 address
                    varchar(255)
                                  YES
                                              NULL
                                 NO
 capacity
                    int
                                              NULL
                   varchar(255) | YES
                                             NULL
 city
                  varchar(255)
                                 YES
 contact_no
                                              NULL
                    varchar(255)
                                 YES
 email
                                              NULL
 name
                    varchar(255)
                                 YES
                                              NULL
 password
                    varchar(255)
                                 YES
                                              NULL
                    int
                                 NO
                                              NULL
 pincode
 registration_no
                  int
                                  YES
                                              NULL
 role
                  | varchar(255) | YES |
                                              NULL
11 rows in set (0.00 sec)
```

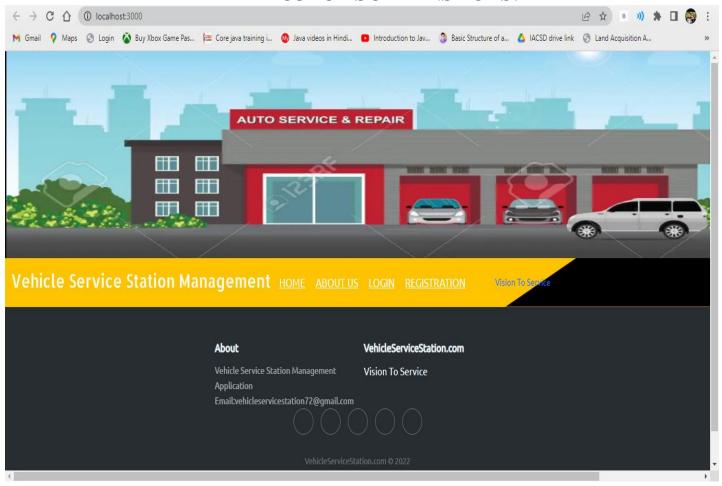
# Service Plan:

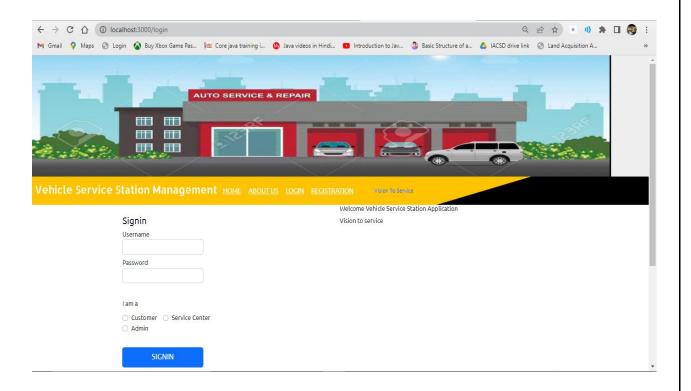
```
mysql> desc service plan;
                                | Null | Key | Default | Extra
 Field
                   Type
 plan id
                  int
                                NO
                                      | PRI | NULL
                                                     auto_increment
                  float
                                NO
 cost
                                             NULL
                  varchar(255)
 description
                                 YES
                                             NULL
 image
                  | varchar(255) | YES
                                            NULL
                  | varchar(255) | YES
                                             NULL
 name
 service center id | int
                                 YES
                                      | MUL | NULL
 rows in set (0.00 sec)
```

# **Service Slot Info:**

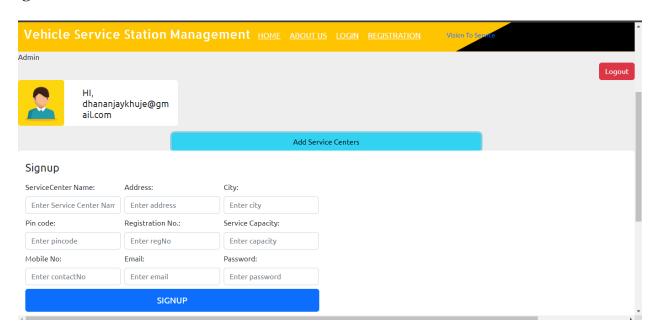
```
mysql> desc service_slot_info_table;
                 | Type | Null | Key | Default | Extra
 Field
 slot_id
                 int
                              NO
                                           NULL
                                                   auto_increment
                                    PRI
 slot_date
                 varchar(255)
                                YES
                                           NULL
                 int
 remaining slot
                                YES
                                           NULL
                 int
 total_slot
                                YES
                                           NULL
 service_center_id | int
                               YES | MUL | NULL
 rows in set (0.00 sec)
```

# **PROJECT SCREENSHOTS:**

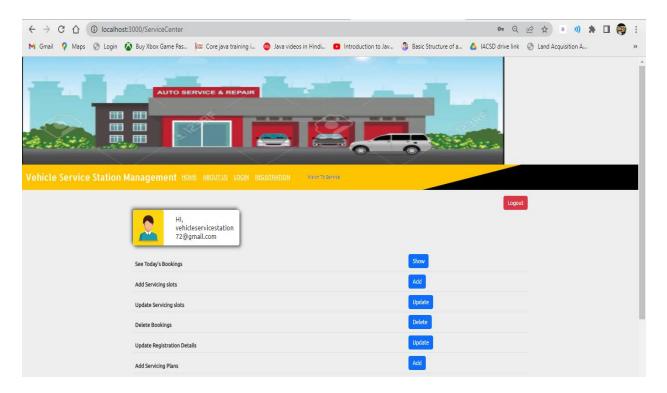


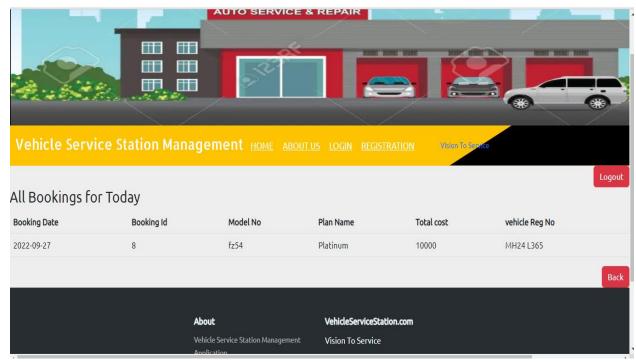


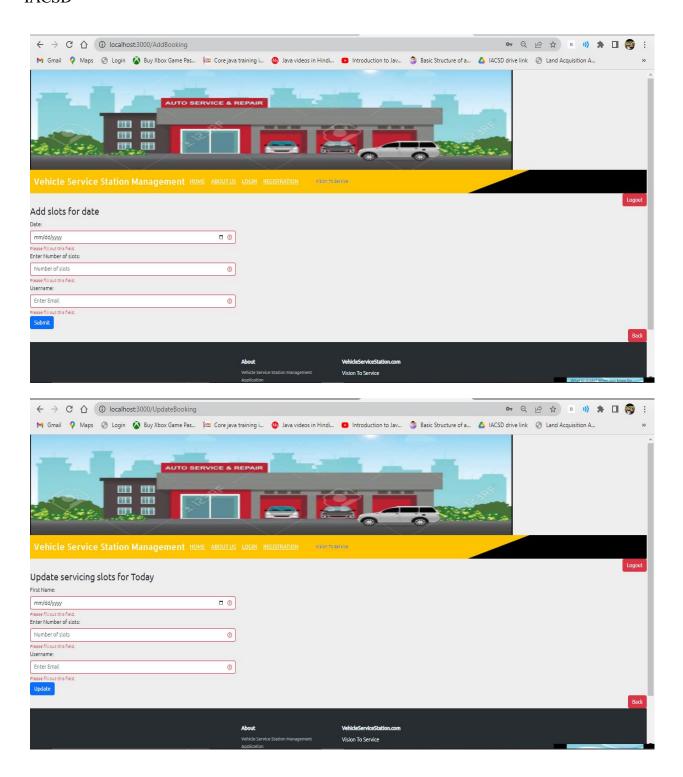
# Admin Login:

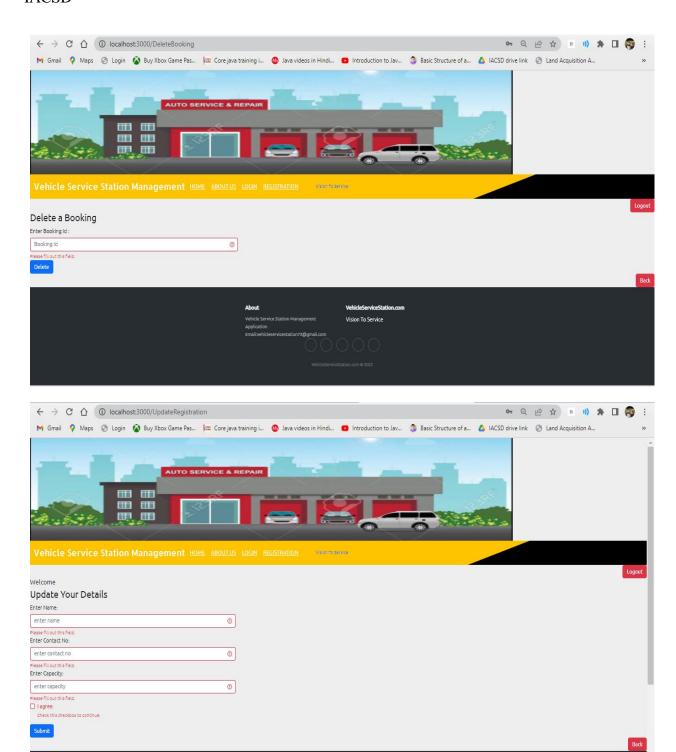


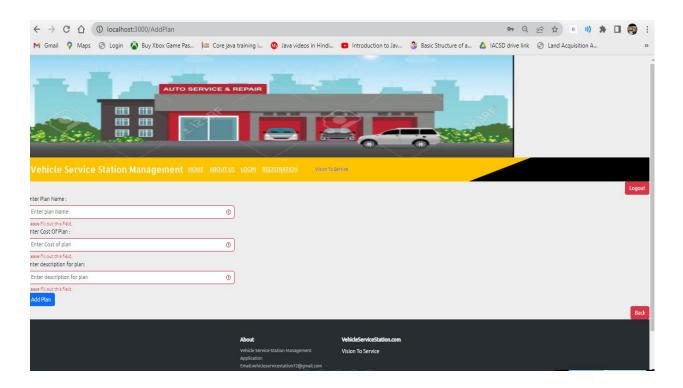
# **Service Station Login:**



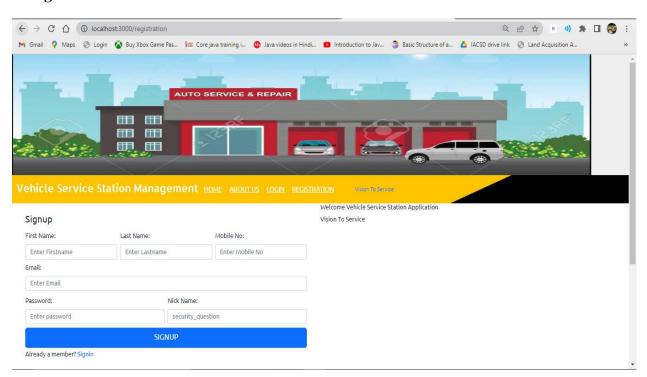






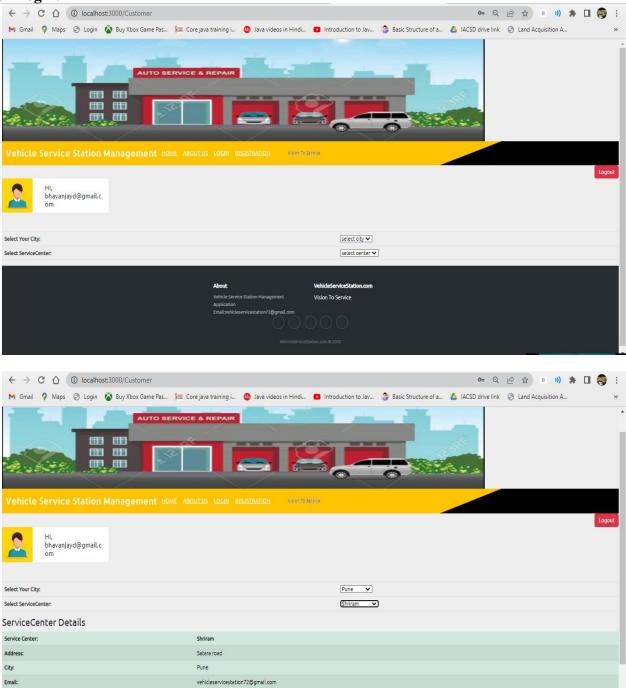


# **Consumer Registration:**

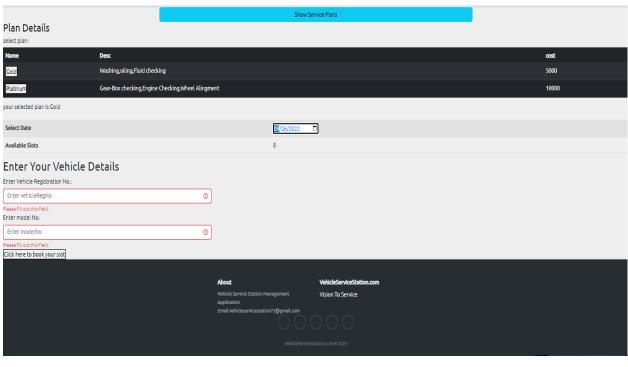


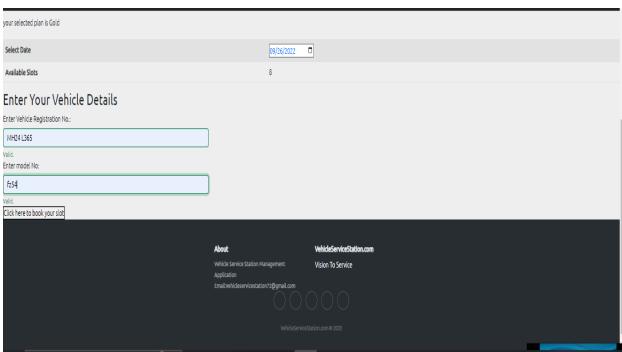
# **Consumer Login:**

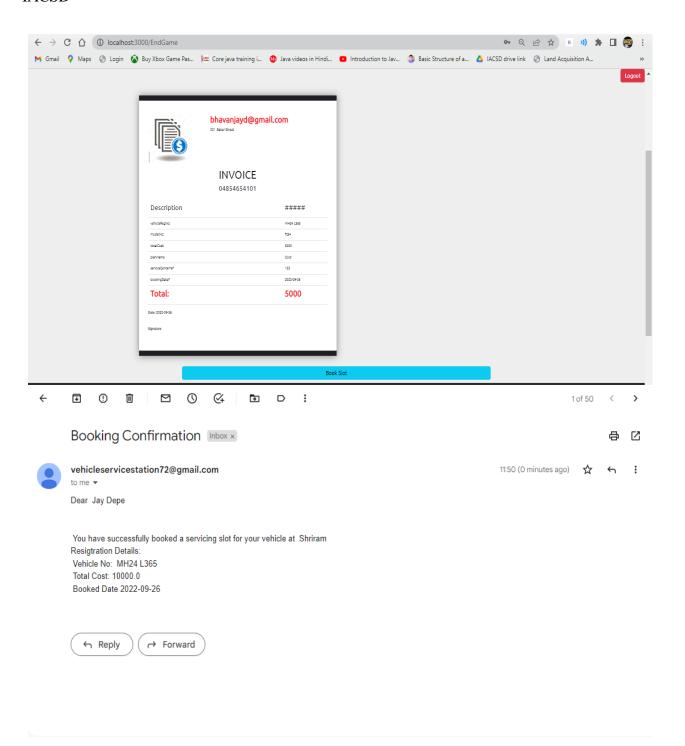
Reg NO:



123







# **CONCLUSION**

The project entitled Vehicle Service Station Management was completed successfully.

The system has been developed with much care and free of errors and at the same time it is efficient and less time consuming. The purpose of this project was to develop a web application.

This project helped us in gaining valuable information and practical knowledge on several topics like designing web pages using React.js, usage of responsive templates and management of database using MySQL. The entire system is secured. Also, the project helped us understanding about the development phases of a project and software development life cycle. We learned how to test different features of a project.

This project has given us great satisfaction in having designed an application which can be implemented to any nearby shops or branded shops selling various kinds of products by simple modifications.

There is a scope for further development in our project to a great extent. A number of features can be added to this system in future like providing review feature and adding mechanic management for service station. These features could have implemented unless the time did not limit us.

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